Public health has a long history of making a profound difference in the lives of Americans. Of the 30 years added to our average life span in the last century, 25 of these years can be attributed to public health initiatives. Some of these achievements include the eradication of smallpox, the dramatic decrease in infant mortality, and the acceptance by the American public of the health risks of tobacco use.

When public health systems work well, people tend not to think about the fact that they exist. But when public health systems do not work optimally, there are costs, both in dollars and quality of life, incurred on an ongoing basis. In this issue brief, we will discuss the top preventable causes of death and illness in Indiana from a public health perspective. We will discuss their prevalence in Indiana, their associated costs, and actions that can be taken to address them, improving the health of the Hoosier population and lowering healthcare costs in the state.

Causes of Preventable Death and Disease in Indiana

The nine leading preventable causes of death, collectively, accounted for about half of all deaths that occurred in the U.S. in 2000. Imagine the possibility of preventing one of every two deaths in our country.

The three leading causes of preventable death in the U.S. are tobacco use; physical inactivity and poor diet; and alcohol consumption. As we will see, these three are particularly destructive in Indiana. The other major causes of preventable death include microbial agents (such as HIV, E. Coli, and tuberculosis), toxic agents and environmental exposure (such as air pollution, radon, and lead in drinking water), injuries, risky sexual behaviors, and illicit drug use.

While death represents the worst outcome, it is only the tip of the iceberg. For every person who dies from these causes, many more suffer illness, reduced productivity, and diminished quality of life from them. The harm to individuals, families, and society is extensive.

Tobacco Use

Tobacco use is the largest single cause of preventable illness and death in the United States, accounting for more deaths than alcohol, AIDS, car crashes, illegal drugs, murders, and suicides combined. It is responsible for 435,000 deaths per year among adults and is known to cause cardiovascular and respiratory diseases, many types of cancer, pregnancy complications, and many other harmful effects. In Indiana, smoking costs the state over $2 billion in healthcare costs each year and an additional $2.5 billion in productivity losses.

What Is Public Health?

“Public Health is the science and art of protecting and improving the health of communities through education, promotion of healthy lifestyles, and research for disease and injury prevention.”

Through organized, interdisciplinary efforts, public health professionals:

- work to prevent epidemics and the spread of disease,
- respond immediately when unusual symptoms or diseases are detected,
- protect against environmental hazards,
- promote safety and prevent injury,
- encourage healthy behaviors,
- work collaboratively to promote sound public policies, and
- respond to disasters by assisting communities in recovery.

Public health professionals work in all levels of government, military, health agencies, hospitals, universities, and private organizations to enhance the health of populations.
Unfortunately, Hoosiers continue to smoke more than residents of most other states, suffering the health and economic consequences. In 2006, Indiana’s adult smoking rate at 24.1%, compared with the national average of 20.1%, ranked 5th highest among the 50 states (see Table I).

Exposure of nonsmokers to second-hand smoke (SHS) is another completely preventable cause of illness and death associated with tobacco use. SHS is a recognized cause of heart disease, accounting for an estimated 3,000 lung cancer deaths per year in adults. In infants and children, exposure to SHS causes middle ear infections and is responsible for 150,000 to 300,000 cases of lower respiratory tract infections annually. It is also known to aggravate asthma symptoms in 400,000 to 1 million cases each year. A 2006 U.S. Surgeon General report concluded that “secondhand smoke causes premature death and disease in children and in adults who do not smoke, … there is no risk-free level of exposure to secondhand smoke.”

Use of proven tobacco cessation therapies roughly double the likelihood that a user can quit successfully. Yet smokers often face obstacles accessing this therapy and paying for it. According to the 2006 Indiana Tobacco Prevention Council annual report, “We do not know what percentage of Indiana’s employers provide cessation therapy and counseling as a part of their employee benefit package, although that number seems to be inadequate.” The report states that:

- among Indiana’s large employers, only 27% provide cessation benefits through their health plan;
- among a sample of Indiana’s large minority employers, only 13 of 119 (11%) provided cessation benefits through employer-provided health plans.

Table I: Indiana Tobacco Statistics, Most Recent Available

<table>
<thead>
<tr>
<th>Tobacco Use</th>
<th>Indiana</th>
<th>State Ranking (1 = best) or U.S Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults who smoke</td>
<td>24.1%</td>
<td>47th; 20.1%</td>
</tr>
<tr>
<td>Women who smoked during pregnancy</td>
<td>19.1%</td>
<td>44th</td>
</tr>
<tr>
<td>High school students who smoke</td>
<td>21.9%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Kids exposed to secondhand smoke at home</td>
<td>420,000</td>
<td>15.5 million</td>
</tr>
</tbody>
</table>

| Tobacco-Related Deaths                         |                                                   |
| Adults who die each year from their own smoking | 9,800 | 40th                                     |
| Adults, children, and babies who die each year from others’ smoking (secondhand smoke and pregnancy smoking) | 1,020 to 1,820 | 38,000 to 67,500 |

| Smoking-Caused Monetary Costs*                |                                                   |
| Annual healthcare costs directly caused by smoking | $2.08 billion | $96.7 billion                            |
| Smoking-caused productivity losses            | $2.49 billion | $97.6 billion                            |

*Smoking-caused monetary costs shown do not include healthcare costs caused by exposure to secondhand smoke, smoking-caused fires, spit tobacco use, or cigar and pipe smoking.


Physical Inactivity and Poor Diet

Physical inactivity and unhealthy eating habits contribute to obesity and many chronic diseases, including cardiovascular disease, diabetes, and some cancers. The impact of inactivity and poor diet is second only to tobacco in its effect on illness and death in the U.S., and the impact is increasing across all age groups. In 2000, an estimated 365,000 deaths in the U.S. (15% of all deaths) were attributed to poor diet and physical inactivity. Indiana compares poorly to other states, currently ranked as the 8th heaviest state in the nation (see Figure 1).
Physical activity is known to bestow many health benefits, whether a person is obese, overweight, or normal weight. A 2003 report prepared for Britain’s National Health Service cites research showing that “people who are fit and fat are actually less likely to die than people who have a healthy weight but are not fit or active.” With about 62% of Americans now overweight or obese, the public health community must pursue strategies that enable everyone, not just a select group of high-risk individuals, to make better choices about food and activity on a daily basis. We must create an environment that promotes health.

A summary comparing the annual obesity-attributable medical costs for obese and normal-weight individuals for Indiana and the U.S. is shown in Table II. For total medical expenditures and for Medicare and Medicaid expenditures, the proportion attributable to obesity was higher in Indiana than for the U.S. as a whole. The proportion of the obesity-attributable expenditure in the Medicaid programs for Indiana (15.7%) was nearly three times that for the U.S. as a whole (5.7%).

### Alcohol Consumption

The Centers for Disease Control and Prevention (CDC) rank alcohol as the third leading cause of preventable death in the United States. Experts estimate that alcohol consumption caused 85,000 deaths in the U.S. in 2000, and they say this number would have reached 140,000 if previous alcohol drinkers had been included.

In addition to the disability and disease that accompanies chronic alcohol addiction, social “binge-drinking” (drinking five or more drinks per occasion) results in acute consequences such as traffic fatalities, alcohol poisoning, suicides, homicides, and drowning. Nonfatal, but potentially life-altering consequences, such as sexual assault and violence, also result.

Almost 4 in 10 violent crimes involve alcohol, according to crime victims, as do 4 in 10 fatal motor vehicle accidents. And about 4 in 10 criminal offenders admit that they were using alcohol at the time of their offense. Alcohol and binge drinking are significant problems among Indiana youth. A CDC study published in 2007 showed that 41% of Indiana high school students, grades 9 to 12, said that they had used alcohol in the prior month, and 19% that they had engaged in binge drinking.

Clearly, alcohol consumption is associated with extensive public health burdens (see Table III). Because alcohol-associated disorders (such as fetal alcohol syndrome, alcohol dependence, autism, and drug addiction) tend to manifest early in life, they produce lifelong disability, derailing individuals’ potential and creating tremendous burdens for families and cost to society. In fact, excessive alcohol use alone costs the United States an estimated $185 billion annually.

### Table II. Obesity-Attributable Expenditures, U.S. and Indiana

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>% of Total Medical Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total obesity-attributable medical expenditures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>$75,051 million</td>
<td>5.7%</td>
</tr>
<tr>
<td>Indiana</td>
<td>$1,637 million</td>
<td>6.0%</td>
</tr>
<tr>
<td>Total Medicare obesity-attributable expenditures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>$17,701 million</td>
<td>5.7%</td>
</tr>
<tr>
<td>Indiana</td>
<td>$379 million</td>
<td>7.2%</td>
</tr>
<tr>
<td>Total Medicaid obesity-attributable expenditures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>$21,329 million</td>
<td>5.3%</td>
</tr>
<tr>
<td>Indiana</td>
<td>$522 million</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

Total healthcare spending attributable to obesity is approximately 5% of health insurance expenditures. Obese adults age 18 to 65 incur annual medical expenditures that are 36% higher than those of normal-weight individuals.

Source: Zollinger et al, 2006
Thoughts for Policymakers

From a public policy standpoint, how do we improve our efforts to prevent illness, injury, and death, and thereby reduce our subsequent healthcare needs? For each of the leading causes of preventable disease in Indiana, rigorous scientific reviews have identified successful strategies.

Policies to Reduce Tobacco Use

All of the following strategies for tobacco use prevention and control should be considered:

- smoking bans and restrictions,
- increases in the unit price for tobacco products,
- restrictions on minors’ access to tobacco products,
- mass media education campaigns,
- reducing out-of-pocket costs for effective cessation therapies,
- telephone “quit lines,” and
- systems to remind healthcare providers to counsel smokers to quit.

Indiana policymakers have several options they can use when attempting to implement some of the recommended evidence-based strategies, including:

- sustaining state-directed tobacco control activities at the funding level recommended by the CDC;
- continuing to support increases in the tobacco excise tax;
- legislating smoking bans in public places in local communities and throughout the state;
- supporting health plan coverage to give all Hoosiers access to cessation therapies and telephone counseling; and
- conducting sustained mass media education campaigns.

Policies to Encourage Weight Control and Physical Activity

While the specifics of effective obesity prevention programs are less well known than those of tobacco cessation, nevertheless, researchers have provided clear guidance for effective policy choices. Policymakers can consider the following options:

- implementing a comprehensive, coordinated, statewide program to promote healthy lifestyle choices among citizens of all ages (an expanded INShape-type program);
- providing access to safe, inexpensive, or free opportunities for physical activity in parks, trails, community centers, and other facilities;
- creating (or recreating) built environments that promote physical activity;
- supporting the Department of Education’s efforts to promote healthier diet and activity choices in schools;
- legislating restrictions on marketing of foods with low nutritional value to children; and
- taxing “junk” food and sodas.12

Policy provisions for obesity programs must include a mandate to provide evaluation and funding to cover it.

Policies to Combat Inappropriate Alcohol Use

We know that inappropriate drinking often starts at an early age and that this is a documented problem in Indiana. (As mentioned, 41% of Indiana high school students, grades 9 to 12, said that they had used alcohol in the prior month, and 19% that they had engaged in binge drinking17). As a result, one particularly

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Table III. Economic Costs of Alcohol Abuse, 1998 Estimates19,21

<table>
<thead>
<tr>
<th>Cost in Millions of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
</tr>
<tr>
<td>Specialty alcohol services</td>
</tr>
<tr>
<td>Medical consequences</td>
</tr>
<tr>
<td>Lost future earnings due to premature deaths</td>
</tr>
<tr>
<td>Lost productivity due to morbidity</td>
</tr>
<tr>
<td>Lost earnings due to crime/victims</td>
</tr>
<tr>
<td>Crime—criminal justice, property damage, etc.</td>
</tr>
<tr>
<td>Social welfare administration</td>
</tr>
<tr>
<td>Motor vehicle crashes—property damage</td>
</tr>
<tr>
<td>Fire destruction—property damage</td>
</tr>
</tbody>
</table>

Note: the most recent year for which these statistics are available in a cohesive form is 1998.

effective way to prevent inappropriate alcohol use is to support education and other actions to combat youth alcohol use.

In February 2008, a representative of the Indiana University Center for Health Policy appeared before the Indiana Senate to discuss strategies to combat underage drinking.

He reported to the Indiana Senate that five significant factors affect underage drinking: retail availability, social availability, the price of alcohol, underage drinking laws, and visible enforcement. However, specific interventions that target only one factor could produce some improvement in that area, while actually worsening the situation in other areas. Ultimately, a community-wide approach directed at all of the identified factors is needed to build an effective and comprehensive policy.

With this in mind, there are some effective actions policymakers could take, including increased enforcement actions against those who sell or provide alcohol to underage youth to reduce alcohol sales to minors. Notably, compliance checks on retail outlets have been shown to cut sales to minors by at least half.\textsuperscript{23-25} Even moderate enforcement can reduce sales of alcohol to minors by 35% to 40%, especially when combined with other community policy activities.\textsuperscript{23}

Note that some states have also enacted social host laws that allow third parties to sue social providers if alcohol leads to injury or death.\textsuperscript{26} However, research is not yet available that shows whether this strategy is effective.

Reductions in alcohol abuse would have far reaching benefits in Indiana, even beyond improvements in health and productivity. Reductions could be accompanied by decreases in crime, motor vehicle accidents, and domestic and child abuse.

As policies are considered, policymakers and the public should keep in mind that many public health interventions are accompanied by a “payback period.” This is the period of time when there is both payment for the intervention and the associated costs of the illness because the intervention program is new and is not yet showing improvements. It takes time and patience for interventions to work.

As Indiana increases its emphasis on public health interventions and prevention tactics for specific issues, policymakers should also consider the overall public health infrastructure. Increased educational opportunities in public health and provisions for a more robust public health workforce will enhance the implementation of any public health policy.
References


About This Report

This report is part of a series on the healthcare system in Indiana. It was created as a result of the work of the Indiana University Healthcare Reform Faculty Study Group, a group of faculty members and analysts from the following Indiana University organizations:

- IU Center for Health Policy
- IUPUI Consortium for Health Policy, Law, and Bioethics
- William S. and Christine S. Hall Center for Law and Health
- IU School of Medicine

The Indiana University Center for Health Policy is an independent, nonpartisan applied research unit within the Indiana University School of Public and Environmental Affairs at Indiana University–Purdue University Indianapolis (IUPUI). CHP researchers work on critical policy issues related to the health of Hoosiers and the quality and accessibility of health care in Indiana. The CHP is part of the Indiana University Public Policy Institute and the Consortium for Health Policy, Law, and Bioethics, a Signature Center at IUPUI. For more information, visit the CHP Web site at http://www.healthpolicy.iupui.edu.

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