



# Risk in Perspective

## Kids at Risk



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*"As a nation, our ability to do our best for our children is limited by our lack of a coherent rational strategy for evaluating risks and prioritizing where to spend our limited resources."*

Each of us grapples with managing the risks in our own lives. Parents face the added challenges and responsibilities of managing risks for their children, and empowering their children to make good decisions about risk. Remarkably, while recent news about school shootings present a relatively bleak view of American children facing a violent and hazardous world, an analytical look at children's risks also reveals a striking amount of good news. This issue of **RISK IN PERSPECTIVE** focuses on risks to children. It suggests ten points to keep in mind when using the information reported in the media to evaluate children's risks, put them in perspective, and make good choices.

### 1. Children are living healthier and safer lives than ever before.

If we compare a day in the life of a typical child 100 years ago to a day in the life of a typical child today, we see striking differences.

#### Today's typical American child:

- can expect to live approximately 30 years longer on average
- is six times more likely to finish four years of high school
- will never know the devastation of

polio or spend time in an iron lung

- won't get tuberculosis from milk, rickets from vitamin D deficiency, scurvy from vitamin C deficiency, or cretinism from lack of iodine in the diet
- won't encounter legal abusive child labor practices
- can go to school without concern about small pox and with immunization protection from many diseases like diphtheria, pertussis, measles, mumps, rubella, *haemophilus influenza* B, hepatitis B, and chicken pox
- will be screened for conditions like phenylketonuria, congenital hypothyroidism, and lead poisoning
- will be given antibiotics to treat an infectious disease

This illustration is heartening, but there is no such thing as zero risk. We all risk the possibility of choking or food poisoning every time we eat. We gain the benefits of immunization and medical cures by tolerating side effects and the risks associated with medical complications and errors. Just like our predecessors, we face numerous risks every day. Unlike our predecessors, however, we benefit from knowledge and an increasing array of interventions and products that make our chances of surviving to the next day very high - but not 100%.

For more information on the Harvard Center for Risk Analysis visit our web site at:  
<http://www.hcra.harvard.edu>

Top 10 Leading Causes of Death in 1997 for Different Age Groups of Americans  
Data from the *National Vital Statistics Reports*, Volume 47(19)

Cause	Rank in Leading Cause of Death in			
	Infants (<1)	Children (ages 1-14)	Youth (ages 15-24)	Adults (25+)
Certain conditions originating in the perinatal period	1			
Birth defects (Congenital anomalies)	2	3		
Symptoms, signs, ill-defined conditions	3	6	6	
Unintentional injuries	4	1	1	7
Heart disease	5	5	5	1
Pneumonia and influenza	6	7	8	4
Homicide	7	4	2	
Stroke (Cerebrovascular)	8	10	9	3
Certain infectious and parasitic diseases	9			
Certain intestinal infections	10			
Cancer (Malignant neoplasms)		2	4	2
HIV		8	7	
Chronic obstructive pulmonary disease (Bronchitis/Emphysema/Asthma)		9	10	5
Suicide			3	
Diabetes				6
Nephritis (Kidney disease)				8
Septicemia (Blood infection)				9
Alzheimer's disease				10

## 2. Risks for children and adults differ.

Risks may have significantly different impacts for children than for adults for many behavioral, biological, chemical, physical, and other reasons. Comparing the top ten causes of death for several age groups of Americans provides some evidence of differences in mortality risks. This simple comparison suggests that strategies to reduce mortality risks for adults may not adequately address the important risk factors for children, and vice versa.

Unfortunately, children do not come with instructions. Parents must actively seek information about how best to protect and nurture their kids as they grow, and they must

learn about important stages of development. All parents learn that newborn babies can easily choke, suffocate, drown, or fall, that toddlers may put anything into their mouths, and that they need to talk to their kids about drugs, alcohol, and sex. Parental attention can make the difference between a child's safe exploration of his or her environment and a trip to the emergency room.

### Annual mortality risks for children under age 10 (Number of deaths per million children):

Motor vehicles	50	Poisoning	3
Drowning	21	Bicycles	2
Fire	19	Medical care & drugs	2
Suffocation	18		
Guns	5	Toys	0.4

### **3. The amount of exposure to the hazard and how exposure occurs matter.**

In every assessment of risks, it is important to know the extent of exposure to the hazard as well as the potential impact of that exposure. Exposure to some hazards, like air pollutants, may be difficult for individuals to assess because the amounts cannot be easily observed. However, advances in science and technology allow us to measure tiny amounts of some substances, often at levels well below those that cause significant risk.

Too much of a good thing can be worse than a little bit of something bad. For example, taking too many painkillers can kill you, but having a regular alcoholic drink might actually be good for you. Similarly, too much television viewing is correlated with obesity, but a little television might be educational or entertaining.

The manner of exposure also makes a difference in the magnitude of risk. A child can be harmed from a single cigarette if he or she eats it, but smoking a single cigarette in a lifetime is unlikely to cause significant harm. Things add up, however, and smoking a lot of cigarettes can lead to heart disease, cancer, stroke, lung disease, and birth defects.

A common misperception appears to have emerged that children are always more susceptible to health effects than adults; in other words, that a similar exposure will always have greater impact on a child than on an adult. In fact, children can be more or less susceptible to effects than adults depending on the substance. For example, children are much less susceptible than adults to liver toxicity from acetaminophen, but much more susceptible to neurological effects from lead.

A related misperception is that children always have a higher exposure relative to adults. In fact, their exposure can be higher or lower depending on the hazard. For example,

children probably do get more exposure to allergens in carpets and metals in soil, but they generally get less exposure to hazards and substances found in occupational settings.

### **4. Testing substances in animals gives useful, but imperfect, information about the effects of substances in humans.**

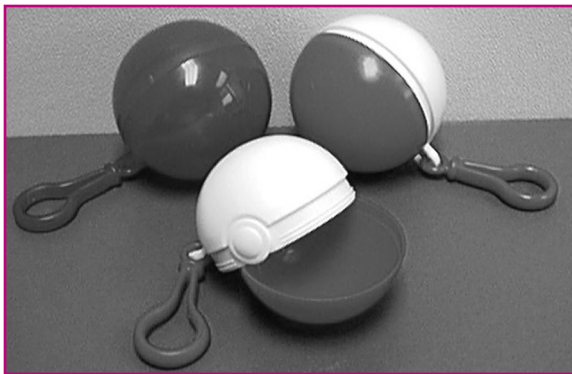
Animal testing can provide information about the types of health effects (good and bad) that humans might expect if similarly exposed to a substance. But because animal testing costs a great deal in human and animal resources, toxicity tests typically use small numbers of animals that are given large amounts of the substance to ensure that an effect will be seen. This necessitates the use of models to estimate the impact of lower amounts of exposure.

Using toxicity tests, we can find adverse health effects for almost any substance, including water and the essential elements. Consumers need to realize that a demonstrated adverse effect of a tested substance does not necessarily mean that effects will occur for humans in the amounts a human typically consumes or is otherwise exposed to. More important, untested substances are not non-toxic. Instead, they are substances for which we are uncertain about effects or the amounts that might cause effects.

### **5. We all want safe products.**

Credibility and consumer confidence are key to surviving in today's market. As part of striving for those objectives, responsible manufacturers consider their liability if they introduce an unsafe product. They often consider reasonably foreseeable misuse when designing a product. Despite their best efforts, however, some uncertainties will remain and accidents will happen. Similarly, responsible doctors strive to deliver quality care, but even simple procedures can go wrong.

When accidents do happen, the media does an important service by quickly informing the public. For example, the potential hazard of airbags for children has been covered well and product recalls are usually covered fast. Unfortunately, however, not all accidents make the news, the news does not always reach all consumers, and news has a much shorter life than most products. Consumers must actively seek information from manufacturers, the Consumer Product Safety Commission (CPSC) ([www.cpsc.gov](http://www.cpsc.gov)), and the Food and Drug Administration's MedWatch program ([www.fda.gov/medwatch/](http://www.fda.gov/medwatch/)). Consumers need to take recalls and adverse events seriously, report problems, repair or get rid of unsafe products, and demand product safety.



CPSC photo of Pokemon balls recalled in 1999.

#### 6. Some really important risks for children do not get enough attention.

We collect information about a number of indicators of children's well-being, but numbers alone don't make good news stories. Everyone knows that smoking is bad for health, so a story that reports this is not news. Opportunities to prevent or reduce the impacts of well-established risks may be overlooked or under appreciated because of the scarce coverage of those risks. Consider that:

- Unintentional injuries, including motor vehicle accidents, continue to be the leading cause of death for children, but not all parents insist on safety belts, car seats, and bicycle helmets.
- Current statistics show that guns kill 10 to 12

children (aged 0-19) in the United States every day on average. Two or three of these children take their own lives, and the other deaths are homicides or unintentional injuries. Other developed nations do not come near these statistics. When 13 kids died in the shootings at Columbine High in April 1999, the nation was outraged, but where is the outrage about the daily toll that guns take?

- Tobacco use continues to contribute significantly to disease. Although our laws prohibit children under age 18 from purchasing cigarettes, nearly 25% of children report smoking a whole cigarette by age 13, and approximately 85% of the Americans who become smokers start before the age of 18. National survey results show that among youth 12-17, smoking is highly correlated with other high-risk behaviors like illicit drug use and heavy drinking.
- Approximately 20% of American children under age 18 are raised in poverty.
- Children continue to be abused and neglected (approximately 1 of every 100 children).
- Sexual behaviors lead to thousands of cases of sexually transmitted diseases and unwanted pregnancies every year.

#### 7. Some speculative, minor risks for children get too much attention.

We depend on a wide range of products and technologies, and consequently, we are intrigued by stories that seem to present striking new evidence of risk associated with a currently trusted product or technology. For example:

- Electromagnetic fields made the news when researchers suggested that they might cause childhood cancer. Subsequent research failed to support the hypothesis, but people still worry about their kids being near power lines. In contrast, risks from electrocution (for example, from fingers in unprotected wall sockets) and the environmental consequences of our ever-growing energy demands don't make the headlines.
- Recently parents may have heard that because of risks from pesticides they should limit the

amounts of fresh produce their children consume. Like any other substance, pesticides in high amounts can have harmful effects. Pesticide poisoning from improper use should always be of concern and, like all potentially hazardous substances, pesticides should be kept out of children's reach. However, we have no scientific basis for believing that the small amounts of pesticide residues typically found on food are harmful. Most consumers also don't realize that there is no scientific evidence to suggest that produce grown with organic farming methods is safer or more nutritious than the same produce grown conventionally. Researchers are looking into these questions, but in the mean time, consumers must remember that eating a diverse diet with a lot of fresh fruits and vegetables improves health, and that children should be encouraged to eat a lot of fruits and vegetables every day.

- In 1999, parents were scared unnecessarily by stories about bisphenol-A in baby bottles and phthalates in children's toys and medical devices. In both cases, risk assessments suggested very small and uncertain potential risks. However, the media ran stories with the theme that any risk is unacceptable for children. Consumers should consider the magnitude of the risks and the available alternatives before reacting to a scare. For example, substituting glass for plastic may lead to an injury if the glass breaks, and substituting a toy that is not intended to be mouthed for one that is designed to be mouthed may lead to a choking hazard. Also, switching from a relatively well-tested, low-risk substance to an untested one may lead to higher risk.

### **8. It is never too soon to start teaching children about risks.**

During the past decade, researchers have documented the importance of early interaction and stimulation in brain development. The evidence now clearly indicates that both nature and nurture are important in healthy child

development. Given that children constantly observe and take in information from their environment, caregivers must send children the message that health is important by exhibiting their own healthy behaviors like hand washing, eating a balanced diet, and exercising. By watching their parents and other people take or avoid risks and by experiencing responses to the risks they take themselves, children learn about what risk taking is expected and develop their own risk-management skills.

Schools play a critical role in educating children about risks. For example, a new curriculum for children developed by the National Fire Protection Association called Risk Watch™ ([www.nfpa.org/education/](http://www.nfpa.org/education/)) engages pre-kindergarten through 8th grade children in developmentally appropriate roles. Children participate as storytellers (Pre-K/K), detectives (1/2), reporters (3/4), promoters (5/6), and coaches (7/8) as they learn about how to respond to hazards and to avoid unintentional injuries.

Children need hope for the future and they need to be empowered with knowledge and confidence. We must teach children how to deal with strangers and to be cautious but not afraid. Our connections with our children have an enormous impact on how they see themselves, the world, and their opportunities in life.

### **9. The media itself can pose risks.**

We all consume media products, and children consume a lot. A recent report on Kids & Media by the Kaiser Family Foundation shows that on average, children age 2-18 are exposed to a total of over 6 hours of various media sources every day.

The evidence is mixed on the impact of violence in the entertainment media on children, and evidence is lacking on the impact



### PROJECT INTERNET SITE:

[www.kidsrisk.harvard.edu](http://www.kidsrisk.harvard.edu)

Check the project Internet site above for a list of over 50 things that parents can do to reduce children's risks.

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violence in the news and information media, print media, and the Internet has on children.

The Internet creates unique risks. For example, children's advocates worry that unsupervised access can pose hazards to children who are exposed to violent or sexually explicit material, or lured into dangerous situations by anonymous people they contact. The growth of the Internet has also created a new forum for the rapid spread of anonymous information; unwarranted product attacks hurt us all by spreading fear and wasting resources.

Specifically in reporting about children's risks, the news media generally do not provide adequate information in stories to put the risk in context. Reducing stories to sound bites is critical to catch people's attention, but consumers must recognize that there is often much more to the story. They must also realize that children risk developing a limited and distorted view of the world if they are not taught to consume media information critically.

Fortunately a growing number of responsible reporters are taking a hard look at health scares and children's health issues. Parents must ask good

questions (see [www.health-insight.harvard.edu](http://www.health-insight.harvard.edu)), ensure that any source of information is credible and accountable, and help their children learn these skills.



Photograph courtesy of Children's Hospital, Boston, MA.

## 10. We need to work together.

Some important recent efforts (like the Annie E. Casey Foundation 1999 Kids Count Data Book) show that a number of children experience multiple risk factors that make them much more vulnerable to bad outcomes. We have a responsibility to make sure that these children don't fall through the cracks.

A number of issues make coordination challenging. Definitions appear to make a huge difference in politics. For example, does the fact that cigarettes and guns are not called consumer products justify widely different allowable levels of risk? Similarly, the lack of standard age-group definitions for children makes characterizing the risks that they experience at different stages of development challenging and limits our ability to make useful risk comparisons. Finally, strategies for improving children's lives are currently evaluated using a wide spectrum of outcomes, and efforts are needed to integrate multiple outcomes into a comprehensive metric.

## Conclusion

As a nation, our ability to do our best for our children is limited by our lack of a coherent, rational strategy for evaluating risks and prioritizing where to spend our limited resources. Efforts should be initiated to promote cooperation between the media, regulators, industry, researchers, consumers, parents, teachers, and children.

For a list of over 50 things parents can do to reduce children's risks see:  
[www.kidsrisk.harvard.edu](http://www.kidsrisk.harvard.edu).