

Program self-evaluation: the evolution of an injury prevention foundation

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Object. Injuries are a leading cause of morbidity and mortality in the US. The authors provide a brief discussion of a national injury prevention foundation's self-evaluation of its efforts to decrease the incidence of traumatic injuries through educational programs, legislative efforts, and community programming.

Methods. The authors performed a literature review of evaluation studies and activities of the Think First National Injury Prevention Foundation accomplished between 1986 and 2002 and summarized their findings.

Suggestions generated from research studies were incorporated into the foundation's programs. Efficacy studies show that the injury prevention programs have a significant impact on knowledge, attitudes, and practice, and demonstrate the need for injury prevention to be recognized as a valuable component of the US medical system.

Conclusions. After a self-evaluation, the Think First National Injury Prevention Foundation has made strides in developing a multilevel approach to injury prevention by combining education with legislative initiatives, community-wide safety programming, and a large public presence, similar to what has been accomplished with successful smoking cessation programs and seat-belt use campaigns.

KEY WORDS • injury prevention • program evaluation • traumatic brain injury • spinal cord injury

TRAUMATIC brain and spinal cord injuries are two of the most devastating types of injuries an individual can sustain and young people are disproportionately affected in the US. The Centers for Disease Control and Prevention report that at least 1.5 million people sustain TBIs in the US annually,⁸ far more than the number of people affected by breast cancer, human immunodeficiency virus/acquired immunodeficiency syndrome, and multiple sclerosis combined (Fig. 1).² It is estimated that 3000 children 0 to 14 years of age die from TBIs, 29,000 are hospitalized, and 400,000 are treated in emergency departments every year. The estimated cost of TBI-related hospitalizations is \$56.3 billion every year.⁹

Today, nearly 200,000 people in the US live with a disability related to an SCI. Approximately 11,000 Americans are hospitalized every year for these traumatic injuries. The Centers for Disease Control and Prevention report that more than one half of the people who sustain SCIs are between 16 and 30 years of age and most are male. Spinal cord injuries cost the US \$9.7 billion each year.⁹

History of the Think First National Injury Prevention Foundation

The American Association of Neurological Surgeons and the Congress of Neurological Surgeons chose to address the

Abbreviations used in this paper: SCI = spinal cord injury; TBI = traumatic brain injury.

high incidence of TBIs and SCIs in 1985 by developing a national spinal cord and brain injury prevention program based on programs already established in Florida and Missouri.¹⁴

The Think First National Injury Prevention Foundation was first implemented in 1986. Each national program was sponsored by a neurosurgeon committed to public education and injury prevention. The replicable materials consisted of a youth-oriented program, a reinforcement and public education program, and a program designed to influence public attitudes and policy.¹⁴ Think First's initial program, Think First for Teens, was offered to middle- and high-school audiences to teach young people about personal vulnerability and risk taking.

Think First programs were based on Rosenstock's Health Belief Model⁷ and implemented the four widely accepted approaches to injury prevention: delivering education, creating safe environments, using engineered safety products, and supporting safety legislation.

Research Endeavors

Several studies have been published on the efficacy of Think First programs. Research on the Think First for Teens assembly program has demonstrated a statistically significant increase in knowledge ($p < 0.01$) for middle- and high-school participants.^{1,10,13} Data from the original SCI prevention program in Missouri indicated an increase in knowledge and improved attitudes and behavior about

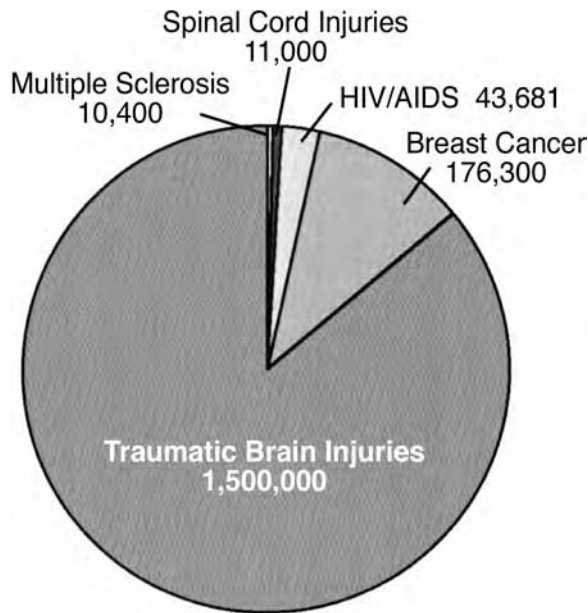


FIG. 1. Pie graph demonstrating the annual incidence of injuries and diseases in the US. AIDS = acquired immunodeficiency syndrome; HIV = human immunodeficiency virus.

SCI among students in treatment schools (schools in which the program was offered) compared with those in control schools (schools in which the program was not offered) 3 years after exposure to the program.^{3,4}

A later evaluation of Think First for Teens showed a significant increase in knowledge scores among middle-school students at 2 weeks and 3 months after a Think First assembly, but no significant increase in knowledge scores for high-school students during the same time periods.¹⁵ The evaluation was based on a convenience sample of three middle schools and three high schools in Seattle, Washington.

In 1996, the Think First National Injury Prevention Foundation launched the Think First for Kids curriculum, a comprehensive program organized into six safe-behavior units taught over a 6-week period.⁵ This program, aimed at first-through third-grade students, is supported by research demonstrating that school-based health education programs that start early and continue through several grades result in significant and sustained effects on health knowledge, attitudes, and practice.^{6,11}

Investigators in three grant-funded school-based studies examined the efficacy of the Think First for Kids curriculum. The results of a three-phase, nonrandom experimental study of Think First for Kids indicated a significant increase ($p < 0.01$) in knowledge of injury prevention in all three grades (first–third grades) at the treatment schools in comparison with the control schools after implementation of the curriculum (Fig. 2).⁵

Gresham, et al.,⁶ performed a randomized comparative pilot study that demonstrated the Think First for Kids curriculum was a significant predictor of an increase in knowledge and positive behavior. A 3-year longitudinal study was subsequently conducted; it demonstrated that sequential exposure to Think First for Kids as the child progressed from one grade to the next led to a significant increase in injury-

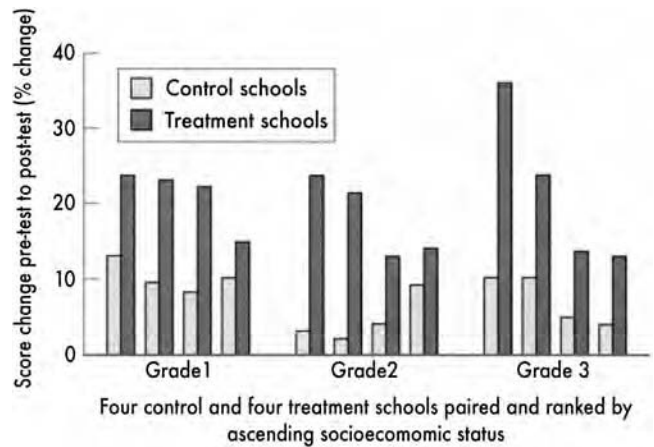


FIG. 2. Bar graph demonstrating increased knowledge of injury prevention among children exposed to Think First for Kids. A published Think First for Kids efficacy study for Grades 1 to 3 demonstrates a statistically significant percentage change in knowledge from pretest to posttest in children in control and treatment schools, which were paired and ordered according to socioeconomic status (shown in ascending order from left to right). The results show that the greatest change in knowledge occurred in schools with the lowest socioeconomic rank.

related knowledge, a reduction in self-reported high-risk behavior, and, importantly, the retention of knowledge and behavior over a 3-year period when compared with children who did not receive the intervention.

In 2000, Life Span Adaptation Projects of the University of Toronto identified Think First as an example of best practice in the category of Comprehensive Community-Based Prevention Strategies.¹² Two years later, the California Department of Education recognized Think First for Kids as a research-validated program and added the program to its California Healthy Kids Resource Center, making the curriculum and its supplementary materials available for loan throughout the California educational system.¹²

Impact of the Think First National Injury Prevention Foundation

The Think First National Injury Prevention Foundation has made strides in developing a multilevel approach by combining education with legislative initiatives, community-wide safety programming, and a large public presence as suggested by Wright, et al.,¹⁵ and Frank and associates.⁴ The Foundation offers a research-validated multilevel educational program that has reached more than eight million young people nationally and internationally, has had major influences in public policy initiatives, and continues to expand to reach those most vulnerable to traumatic injuries.¹² Each of the 240 national and eight international Think First chapters has developed an individual approach to injury prevention to provide the best response to the needs of local communities. Self-sufficient chapters have customized programs, performed successful research projects, organized public awareness and media events, and influenced local and statewide legislation. The Think First National Injury Prevention Foundation received the 1988 Presidential Citation for Private Sector Initiatives and the 1989 Award

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for Excellence in Prevention Education from the American Medical Association. Think First continues to reach a global audience of young people during their most vulnerable years in an effort to reduce the incidence of brain, spinal cord, and other traumatic injuries.

Injury prevention research is often deemed soft science and not awarded the recognition that other disease-related research receives, despite the enormous impact that spinal cord and brain injuries have on the nation's economy, healthcare, and quality of everyday life. Injuries must be recognized as a leading cause of morbidity and mortality, and federal funding should be allotted accordingly. Prevention of injury is as worthy an endeavor as smoking cessation programs and campaigns to encourage the use of seat belts, which have both proved to be effective in the US and have been adequately supported on many levels. Injury prevention efforts can be as effective if given appropriate attention and funding. Federal and private dollars must be directed toward injury prevention efforts aimed to protect our children from devastating injuries and life-long disabilities.

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