



# THE IHS PRIMARY CARE PROVIDER



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## Introduction to the Second Special Issue on Injury Prevention

To All *IHS Provider* Readers:

As in the first special injury prevention issue of *The Provider* (July 2007), this second effort reflects the diversity of topics and disciplines in the field. Both intentional injuries (intimate partner violence, suicide) and unintentional injuries (motor vehicle crashes, burns) are included. Economics, epidemiology, law, criminology, and public health practice are some of the disciplines that contribute to our understanding of problems and approaches to prevention.

The overview of the IHS Injury Prevention Program by Hicks, et al, highlights four principles that guide activities at the national, regional, and local levels. The importance of reliable data for injury prevention is seen in the articles on economics and severe injury surveillance. Articles on injury prevention in a rural community, domestic violence, and an initiative to reduce motor vehicle injuries illustrate the principles of community-based interventions, capacity-building, and partnerships.

Many challenges remain in our efforts to reduce the burden of injuries in American Indian and Alaska Native communities. Especially in the realm of intentional injuries, there is a paucity of scientific studies documenting effective strategies for prevention. Even in the well-studied arena of motor vehicle crashes, epidemiologic data are lacking for the prevention of injuries in falls from pickup trucks, snowmobiles in Alaska, and crashes occurring on rural reservation roads. New challenges appear, such as methamphetamine-associated violence and injuries involving the increasingly popular all-terrain vehicles. Familiar challenges such as injuries associated with alcohol consumption, firearms, and impaired emotional health continue.

The articles in these two special issues of *The Provider* exemplify the dedication of individuals from throughout the country, and from many disciplines, to address these challenges. Their methods of analysis, approaches to intervention, and models for collaboration can inform the work of clinicians, community health advocates, and policy-makers.

For further information on the IHS Injury Prevention Program, contact Nancy Bill, IHS Injury Prevention Program Manager, at (301) 443-0105, or e-mail [nancy.bill@ihs.gov](mailto:nancy.bill@ihs.gov).

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### Injury Prevention in Indian Country

Lawrence Berger, MD, MPH, Clinical Assistant Professor of Pediatrics at the University of New Mexico School of Medicine, volunteered to coordinate two special issues of *The IHS Provider* dedicated to Injury Prevention in Indian Country. This is the second; the first was published in July. Due to space limitations, two articles could not be included in this issue; they will be published next month. We wish to recognize Dr. Berger's initiative and hard work that made this project possible.

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# Hardrock Chapter's Injury Prevention Program: Building Tribal Capacity in a Rural Navajo Community

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Disabling injuries and injury-related fatalities are among the leading public health issues faced by American Indian/Alaskan Natives communities. They are especially tragic in isolated rural communities, where a lack of medical and rehabilitation resources magnifies the impact of injuries, and close networks of families and neighbors share the suffering of individuals.

The Hardrock Chapter community is one such rural community. Hardrock is one of the thirty Indian Health Service (IHS) Tribal Injury Prevention Cooperative Agreement Program (TIPCAP) sites. The process that led Hardrock to receive IHS injury prevention funding is an interesting journey that inspired positive changes in the community. The community of Hardrock is a story of how a tribal community became empowered to make changes despite the overwhelming challenges of historical trauma, lack of resources, and political land disputes.<sup>1</sup>

The community of Hardrock (*Tse Dildo' ii*) is located in northeast Arizona. It has a population of approximately 1,300 residents. The neighboring Piñon Chapter has 3,000 residents. The Hardrock Chapter is one of the 109 Navajo chapters represented by a delegate who serves on the Council of the Navajo Nation. Permission to publish this report was obtained from the Hardrock Chapter and the Hardrock Council on Substance Abuse.

## Community crisis

Hardrock's history has been one of land disputes and relocations that led to decreases in population size and land base. Despite these challenges, Hardrock residents continue to be resilient in dealing with many of these obstacles. In 1995, Hardrock was experiencing an extraordinary number of injury-related deaths: 19 within a one-year period, including four suicides. The community held meetings to respond to the crisis. Mr. Percy Deal, Chapter President, led the community

in creating an action plan that included timelines and specific steps to address the underlying problems.

## Community assessment

The first step was to assess the needs of the community, and to identify the key issues contributing to the crisis. The community sanctioned a group that became known as the Hardrock Council on Substance Abuse Prevention (HCOSA) to address these issues. HCOSA was comprised of community members from Hardrock, including the local minister. Faced with no resources, HCOSA searched for funding support from county, state, tribal, and federal agencies. HCOSA was successful in securing a mini-grant of \$15,000 from the IHS Injury Prevention Program (IPP). The funding allowed us to conduct a formal community assessment. Technical assistance was provided by the Native American Research and Training Center of the University of Arizona. Dr. Jennie Joe and her staff designed a questionnaire with community input, and provided training of community members to conduct interviews in both the English and Navajo languages. The community assessment involved 100 home visits over a four-month period. The final results were compiled in a report entitled "*Iina Ili*" ("Life is Valuable").<sup>2</sup> A major finding was that alcohol and substance abuse were undermining cultural and family values, and disrupting the family and social support systems. The "*Iina Ili*" report also documented community needs in the areas of job opportunities, education, health, housing, and emergency services (police, EMS, fire). The "*Iina Ili*" report was utilized by HCOSA to seek further resources for the community.

## Hardrock Injury Prevention Program (HIPP)

HCOSA became incorporated as a non-profit agency in 1999. In 2000, HCOSA was awarded a five-year Tribal Injury Prevention Cooperative Agreement grant (2000 - 2005) from the national IHS IPP. A full-time Injury Prevention Coordinator was hired to develop the program. The Hardrock Chapter provided office space for the IPP within the Hardrock Chapter building. The Injury Prevention Coordinator reported on program planning and activities to both the HCOSA Board of Directors and Chapter officials. The current Board of Directors includes Percy Deal, Hardrock Chapter President and Navajo County Board of Supervisors; Larry T. Yazzie, Retired

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Navajo Police Sergeant; Donald Howard, Retired School Counselor; Faith Jelle, Youth Pastor, ROCK Ministries; Germaine Simonson, MSW, University of Arizona; and Lucy Yazzie, parent and community member. HIPP staff have received certification as child passenger safety technicians and have completed injury prevention practitioner training (IHS Injury Prevention Levels I, II, and III courses).

### **Injury Prevention Activities**

Partnerships with the county, law enforcement, schools, the senior citizen center, Head Start, and the Hopi Tribe helped establish prevention programs for the community. Monthly injury prevention activities were scheduled throughout the year. The child passenger safety program distributed 180 child safety car seats during the program's first four years. Additional child safety seats were obtained from state partners like the Intertribal Council of Arizona and the Arizona Governor's Office on Highway Safety. An incentive "buckle-up" program included observations of safety belt use, increased police enforcement, and rewards for people wearing safety belts. The rewards were given by police officers and consisted of coffee mugs with the HIPP logo and t-shirts designed by local students with "buckle-up" themes. The HIPP also conducted programs at after school and summer youth programs. These included presentations and hands-on activities, such as mock fire drills with firefighters from the Hopi Fire Department.

Because the response time of professional emergency services (EMS, police, firefighters) can be so long, and other services (such as social workers) so scarce, the HIPP has promoted training of local community members. Van drivers for senior citizens and bus drivers for children have been taught to recognize signs of high-risk situations, such as family conflicts or deteriorating living quarters. Preschool teachers have taken CPR classes. As part of their certification, home visitors for elder care have received instruction on fire prevention from the Hopi Fire Department.

The Hardrock Injury Prevention Program is unique in its integration of local customs and cultural values into program activities. The Hardrock Injury Prevention Program's theme is, "*We think and live holistically.*" The Hardrock Injury Prevention staff is very diligent about ensuring that program activities are respectful of Navajo traditions and acceptable to the community. Public health terms need to be translated into the Navajo language, often by using descriptive phrases ("prevention of the body being harmed") rather than literal translations ("injury prevention"). Traditional Navajo customs are sometimes at odds with western public health injury prevention or health education practices.<sup>3</sup> For example, referring to deaths and injuries to individuals is unspeakable. Instead, one can encourage occupant restraint use by explaining that seat belts and child safety seats are resources to answer traditional prayers for beauty, long life, and happiness. Respect for traditional lifestyles is also seen in the breadth of injury problems addressed. Many families raise livestock, for

example. Large animals can pose serious hazards, especially during procedures such as immunizations and branding. HCOSA and the HIPP therefore have helped provide modern corrals and devices ("squeeze shoots") to handle cattle and horses safely.

In 2005, the HIPP received a five-year (2005 - 2010) renewal of funding from the IHS TIPCAP. The funds allowed HIPP to expand the program coordinator position to full-time, and to hire a program assistant.

Mary Robertson-Begay, Hardrock Injury Prevention Coordinator, secured funding to participate in the national IHS Sleep Safe program. Sleep Safe is a joint IHS/US Fire Administration fire prevention program targeted at the Head Start age group.<sup>4</sup> Fire prevention safety education was provided to the Head Start staff, parents, and children. Smoke alarms were installed at the homes of all Head Start children. Additional resources became available through the National Fire Protection Agency (NFPA), which provided nearly 2,000 smoke alarms. These resources made it possible for the fire safety program to be extended beyond Head Start, to the homes of elders, remote home sites, and homes in neighboring communities on both the Navajo Nation and the Hopi reservation.

The HIPP has received media coverage in the Navajo Nation's newspaper, the *Navajo Times*.<sup>5</sup> HIPP staff have given presentations at tribal, state, and national meetings, and at international conferences. These have included the International Safe Community School Conference, Piñon Chapter Methamphetamine Conference, National Low Fuels Network Conference, and the Arizona Governor's Highway Safety summit. The HIPP sponsors an annual horse ride in support of the Rocky Ridge School's Red Ribbon week. This event draws attention to the destructive effects of drugs and alcohol. Each year, at least 15 riders participate.

### **Successes**

Observational surveys have documented an increase in seat belt use from 6% (2003) to 64% (2007); and an increase in child safety seat use from 0% (2002) to 54% (2007).

Another achievement has been the smoke alarm project, in collaboration with the NFPA. Some 94% of homes in Hardrock now have two or more alarms in the homes; 80% of homes in the Piñon community (adjacent to Hardrock) have two or more smoke alarms in their homes. This compares to less than 2% of homes having a smoke alarm prior to the start of the program.

Also remarkable are the results of the community surveys. Whereas only 3% of families reported they knew of resources for family assistance in 1995, nearly three-quarters (73%) knew where to turn for help in 2006.

At the Hardrock Chapter, elements leading to successful tribal capacity building in injury prevention included 1) support and involvement of local leaders; 2) community endorsement of program activities; 3) a community vision; 4) sustained funding; and 5) long-term collaborations with

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Navajo, Hopi, Federal and state agencies, an academic institution (University of Arizona), and non-profit organizations.<sup>6</sup> These elements will continue to play a major role in Hardrock's future endeavors to achieve overall community safety and wellness.

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#### Acknowledgements

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## Graduate Fellowships for Research Careers Available

Through funding provided by the IHS/NIH NARCH program, the Northwest NARCH has graduate fellowships available for American Indian/Alaska Native students who are enrolled in a health sciences graduate program or other biomedically-related field (medicine, dentistry, graduate nursing, medical informatics, etc.) that is oriented toward developing a research career. Successful applicants will receive

a stipend and support for other expenses related to pursuit of a career directed toward biomedical research. For further information and application forms, please contact Luella Azule at the Northwest Portland Area Indian Health Board by e-mail at [lazule@npaihb.org](mailto:lazule@npaihb.org); telephone (503) 228-4185. Scholarships are available for the academic year beginning fall, 2007.

## Omission of the OB/GYN CCC Digest and the Child Health Notes

Space constraints have forced us to omit these two items this month. Readers are encouraged to view these important

resources on line. We will resume their publication, as space permits, with the next issue.

# The Economic Burden of Injuries Involving American Indians and Alaska Natives: A Critical Need for Prevention

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## Introduction

Information about the economic burden of injuries among American Indians and Alaska Natives (AI/AN) is vital for tribal leaders, IHS Area Directors, directors of Federal agencies, and members of Congress to make informed decisions. Via self-determination contracts and self-governance compacts, “approximately 54% of the IHS budget authority appropriation is administered by Tribes.”<sup>1</sup> Also, every Indian Health Service (IHS) Area conducts annual forums to recommend priorities for the overall IHS budget (the “budget formulation process”).<sup>2</sup> Congress authorizes appropriations not only for the Indian Health Service overall, but for specific initiatives, such as for diabetes reduction, suicide prevention, and the Violence Against Women Act (VAWA). In addition to morbidity and mortality statistics, the economic impact of various conditions is an important consideration in these budgetary decisions.

## The Enormous Economic Burden of Injuries among AI/AN

For the year 2000, the lifetime costs from injuries to AI/AN was over \$2.1 billion (Table 1).<sup>3</sup> This means that each year, over \$2 billion is withdrawn from health care and economic development resources that would have been available if the

**Table 1. Lifetime costs of AI/AN injuries: All injuries and selected causes, 2000 (\$ millions)**

|                | Medical costs | Productivity Loss | Administrative Costs | Total Costs |
|----------------|---------------|-------------------|----------------------|-------------|
| All Injuries   | \$489         | \$1,477           | \$211                | \$2,176     |
| Motor Vehicles | 285           | 610               | 83                   | 978         |
| Suicide        | 19            | 156               | 20                   | 194         |
| Falls          | 30            | 89                | 16                   | 135         |
| Homicides      | 16            | 94                | 19                   | 129         |
| Fires          | 19            | 30                | 7                    | 56          |

injuries had not occurred. The data in Table 1 illustrate the lifetime impact of fatal and non-fatal injuries in several injury categories for injuries occurring in 2000. The societal cost burden of injuries to AI/AN includes annual medical care and rehabilitation costs; lost wages and productivity for victims and care-givers; and administrative costs, such as insurance, legal, workplace training, and other costs accruing to worker injuries. Even this dramatic statistic does not include all the relevant direct and indirect costs that might be captured in a complete accounting of economic burden (Table 2).

**Table 2. Direct and Indirect Costs of Injury**

|  |
|--|
| <b>Direct costs:</b>   |
| <ul style="list-style-type: none"> <li>• Pre-hospital emergency care: EMTs, ambulance, and flight services</li> <li>• Medical care: physician services; emergency room visits; medications</li> <li>• Mental health care</li> <li>• Dental care</li> <li>• Inpatient hospital care: initial and follow-up</li> <li>• Ambulatory Care</li> <li>• Disability and rehabilitation care: physical and occupational therapy; speech and hearing therapy; vocational rehabilitation</li> <li>• Home modifications, wheelchairs, and appliances</li> <li>• Long-term care: nursing home/home health care</li> <li>• Administrative Costs</li> <li>• Property damage</li> <li>• Law enforcement, legal, court costs</li> <li>• Welfare, human services, foster care</li> <li>• Morgue, mortuary, funeral, and medical examiner costs</li> </ul> |
| <b>Indirect costs:</b>   |
| <ul style="list-style-type: none"> <li>• Value of lifetime earnings lost (fatalities)</li> <li>• Value of goods and services not produced because of injury-related illness and disability</li> <li>• Consumption foregone from reduced long- and short-run income</li> <li>• Value of time, production and consumption foregone by family during the care of injury victims</li> <li>• Value of reduced earnings stemming from early termination of education or training for injury victim or for family member care of injury victim</li> <li>• Impact of indirect costs on economic development: consumption, production, and human capital</li> <li>• Pain and suffering</li> </ul>   |

Motor vehicle-related injuries accounted for 45% of the total

lifetime costs and 58% of the lifetime medical costs (Table 1). While suicides/suicide attempts, falls, and homicides were leading injury causes in all of the cost-categories in 2000, fire-related injuries exceeded suicide and homicide in lifetime medical costs (\$19.4 million versus \$18.7 million and \$16.3 million, respectively).

The AI/AN lifetime costs of medical treatment for injuries (\$489 million) represents 22% of the total lifetime costs. This corresponds very closely to national estimates of the economic burden of injuries, where the estimated total lifetime costs were \$406 billion, with \$80 billion (20%) for medical treatment.<sup>4,5</sup> Of course, the percentages can vary greatly for specific types of injuries. Health care expenses account for 70% of the costs of intimate partner violence against US adult women, for example.<sup>6</sup>

IHS direct care and contract care for the treatment of injury equals \$349 million per year (2001). This estimate was obtained as follows:

- 7,358 hospital discharges (1997) x \$13,867 (cost per case, adjusted for inflation) = \$102,033,386
- 353,398 ambulatory visits (1997) x \$699 (Contract Health Services cost per case, adjusted) = \$247,025,202.
- Total = \$349,058,588.

#### For AI/AN, 40% of the Years of Potential Life Lost (YPLL) Before Age 65 Is Due to Injuries<sup>7</sup>

YPLL is the foundation for calculating the reduction in productivity and loss of income resulting from premature deaths. The high rates of injury mortality described elsewhere in this issue (Wallace, et al) translate into large numbers of YPLL, a measure of the impact of specific conditions on shortening the life span of individuals. Unintentional injuries account for 28% of YPLL before 65; intentional injuries account for 12%. The two next leading causes, heart disease and cancer, each contribute 8% (Table 3). The extraordinarily high proportion of YPLL accounted for by injuries results because of the disproportionate loss of life from injuries in younger age groups.

**Table 3. Percent of YPLL before age 65 by cause of death AI/AN 2000 - 2004**

|                       |             |
|-----------------------|-------------|
| Unintentional Injury  | 28%         |
| Heart Disease         | 8%          |
| Cancer                | 8%          |
| Suicide               | 7%          |
| Perinatal Period      | 6%          |
| Liver Disease         | 5%          |
| Homicide              | 5%          |
| Congenital Anomalies  | 4%          |
| Diabetes Mellitus     | 2%          |
| Influenza & Pneumonia | 2%          |
| All Others            | 25%         |
| <b>All injuries</b>   | <b>40%</b>  |
| <b>All Causes</b>     | <b>100%</b> |

#### Treatment of Injury is the Single Largest Expenditure for IHS CHS Funds

The Contract Health Services (CHS) program provides funds to purchase health care services for eligible AI/AN when those services are not available through IHS direct or tribal services. The 2002 CHS expenditure for care of injuries and poisonings was roughly \$54.3 million (Table 4). The average cost for each hospitalized (inpatient) injury victim in 2002 was \$14,378; the average outpatient cost per patient was \$752. CHS accounts for about 23% of IHS personal health care benefit expenditures. IHS reports that 17% of all CHS expenses for inpatient care, and 16%

**Table 4. IHS CHS average annual expenses for treatment of injuries and poisonings, 2002**

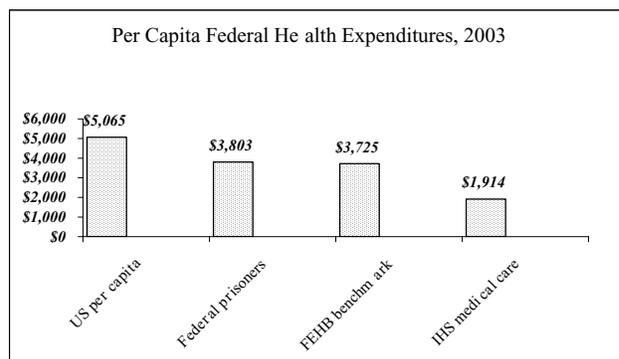
| Category     | Annual Expense      | Average Annual Expense per case |
|--------------|---------------------|---------------------------------|
| Inpatient    | \$41,063,269        | \$14,378                        |
| Outpatient   | \$13,200,209        | \$752                           |
| <b>TOTAL</b> | <b>\$54,263,478</b> |                                 |

for outpatient care were for the care of injuries and poisonings.<sup>8</sup>

#### Economic Impact of Injuries Greatly Magnified Because Funding for the Health Care of AI/AN Individuals is Severely Limited

In its 2003 report, "*A Quiet Crisis: Federal Funding and Unmet Needs in Indian Country*," the US Commission on Civil Rights reported that the "IHS spends less on its service users than the government spends on any other group receiving public health care." On a per person basis, IHS medical expenditures were 50 percent less than expenditures by the Federal Employee Health Benefit (FEHB) insurance plan; and 60% less than the average for the US population as a whole. Even per capita expenditures for Federal prisoners were twice as high as for individual IHS users (\$3,803 vs. \$1,914, respectively) (Figure 1). The report also noted that "real spending per Native American, after adjusting for inflation and population growth, has fallen over time, despite

**Figure 1. Per capita federal health expenditures 2003**



funding increases.”<sup>9</sup>

**Economic Costs of Injuries Consume Scarce Resources that Could Be Used to Advance Other Important Community Goals and Strains the Ability of AI/AN Individuals to Receive the Treatments and Medical Care They Need**

The inadequacy of available resources for treatment of AI/AN is perhaps most obvious in CHS. Because CHS funding is woefully inadequate, tribes are forced to use a priority system to determine who will receive what care, when.<sup>10</sup> A 2004 report by the US Commission on Civil Rights revealed that:

“The severe under-funding of CHS (contract health service) programs causes IHS to ration health services.” Because of insufficient funds, most areas can only pay for care when there is an “immediate threat to life, limb, or senses (emergent/acutely urgent care services) . . . In recent years, the denial of CHS payments has increased more than 75 percent from 1998 . . . The rationing of health care leads to the denial or delay of treatment, and compels patients to accept cheaper and less effective treatment interventions or to go without care.”<sup>11</sup>

**Implementing Effective Injury Preventive Strategies Can Result in Enormous Savings**

An economic analysis of 84 injury prevention measures revealed that more than half yielded net societal cost savings.<sup>12</sup> Table 5 illustrates the magnitude of injury reduction from selected interventions.<sup>13</sup> An expected 45% reduction in the risk of death in a motor vehicle crash when lap/shoulder belts are worn is a dramatic effect. From an economic perspective, it is particularly impressive in that the cost savings from avoiding a single motor vehicle fatality is between \$1 million (“Human capital/production loss” model) and more than \$3.5 million (“Comprehensive/Willingness-to-pay” model).<sup>14</sup> The average lifetime medical costs for a victim with a traumatic brain injury is \$6.8 million.<sup>5</sup> First-year expenses for the care of a spinal cord injury victim range from \$200,000 - \$700,000.<sup>15</sup>

**Table 5. Effectiveness of selected injury prevention interventions**

| Intervention                  | Effectiveness                                 |
|-------------------------------|---|
| Lap/shoulder seat belts       | 45% reduction in fatalities                   |
| Motorcycle helmets            | 72% effective in reducing head injury         |
| Child safety seat laws        | 35% reduction in fatal injuries               |
| Smoke alarms                  | 40-50% reduction in fire mortality rate       |
| Sobriety checkpoints          | 18-22% reduction in crashes involving alcohol |
| Fall prevention interventions | 19-43% reduction in average number of falls   |

Cost-outcome analyses of five programs to reduce injuries among AI/AN yielded the results shown in Table 6.<sup>16</sup> The benefit-cost ratio ranged from 1.7 for a livestock control project in Arizona to 2,592 for a drowning prevention program in Alaska. The annualized cost of running the safety-belt initiative at the Navajo Nation, for example, was \$44,600; the annual cost savings were \$11.4 million per year; and the resulting benefit-cost ratio was 256.

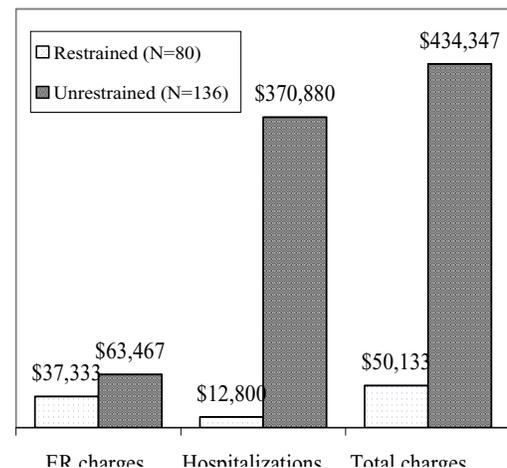
The cost-effectiveness of seat belt use was demonstrated at the W.W. Hastings Hospital, an IHS facility in Tahlequa,

Oklahoma. The average medical charge in 1994 for the treatment of a motor vehicle crash victim who was unrestrained was five times greater than the average charge for each victim who had been wearing a seat belt or sitting in a child safety seat (\$2,305 versus \$470). The total charges for treatment of all unrestrained patients was almost nine times higher than the total for restrained patients (\$434,347 vs. \$50,133) (Figure 2).<sup>17</sup>

**Table 6. Cost-outcome analyses of five injury prevention efforts in AI/AN jurisdictions**

| Intervention                   | Site                               | Benefit-cost ratio |
|--------------------------------|------------------------------------|--------------------|
| Float-coat drowning prevention | Yukon Kuskokwim Health Corporation | 2592               |
| Primary safety-belt law        | Navajo Nation                      | 256                |
| Suicide prevention             | Western Athabaskan tribe           | 43                 |
| Streetlight project            | White Mountain Apache              | 10                 |
| Roadway livestock control      | White Mountain Apache              | 1.7                |

**Figure 2. Annualized cost of motor vehicle injuries by restraint status, W. W. Hastings Hospital, 1994**



**Identifying the Economic Costs of Injuries Can Help Communities Prioritize Their Injury Prevention Efforts and Justify Funding Proposals.**

A study of direct medical expenditures for injury-related hospitalizations by an Alaska Native (AN) health system revealed a number of surprises.<sup>18</sup> The total expenditure by the local health system for the 511 injuries resulting in hospitalizations from 1994 - 1998 was \$4,145,440. Injuries caused by acts of violence, suicide attempts, and falls had the highest overall expenditures. On a per-victim basis, unintentional injuries involving the use of firearms and snowmobile/all-terrain vehicle injuries were the most expensive (Table 7).

One tribe in Arizona applied for \$375,000 for a road improvement project using the cost-benefit calculation in Table 8, based on a ten-year service period. Crash reduction factors were estimated based on roadway engineering publications.<sup>19,21</sup> The per-event costs and capital recovery factor were specified by the funding agency. The comprehensive lifetime costs per fatality, for example, were \$2.6 million (1994) (\$1.6 million higher than “human capital” estimate above) because monetary values were assigned to pain and lost quality of life.<sup>22</sup>

**Table 7. Injury hospitalizations involving members of an Alaska Native Health Corporation, 1994-1998**

| Cause                      | Number (%) | Per Victim | Expenditures by TCC |
|----------------------------|------------|------------|---------------------|
| Suicide attempt            | 143 (28)   | \$4,580    | \$655,000           |
| Fall                       | 91 (18)    | \$7,164    | \$652,000           |
| Violent act                | 80 (16)    | \$10,200   | \$816,000           |
| Motor vehicle              | 52 (10)    | \$11,538   | \$600,000           |
| Miscellaneous other causes | 32 (6)     | \$8,057    | \$282,000           |
| Snowmobile/ATV             | 30 (6)     | \$16,933   | \$508,000           |
| Unintentional poisoning    | 30 (6)     | \$4,733    | \$142,000           |
| Sports/recreation          | 25 (5)     | \$5,400    | \$135,000           |
| Environmental hazard       | 16 (3)     | \$9,313    | \$149,000           |
| Firearm                    | 12 (2)     | \$17,250   | \$207,000           |
| TOTAL                      | 511 (100)  | \$8,112    | \$4,145,000         |

**Table 8. Road project cost-benefit calculation**

|  |
|--|
| <p><b>A. Project costs</b> = "Present worth" = Construction cost x capital recovery factor = \$370,834 x 0.149 = \$55,254</p>  |
| <p><b>B. Annual benefits</b> = Monetary total of all crash savings = \$3,237,600</p> <p>Crash savings = Crash events avoided x per event costs</p> <p>Crash events avoided = Annual number of crash events before the proposed project – projected number of annual crash events after the project (including projected changes in traffic volume)</p> <p>Projected number of annual crash events after project = Annual number of events x crash reduction factor</p> <p>Per event costs:</p> <ul style="list-style-type: none"> <li>\$2.6 million/fatal event</li> <li>\$180,000/incapacitating injury</li> <li>\$36,000/evident injury</li> <li>\$19,000/injury possible</li> <li>\$2,000/property damage only</li> </ul> |
| <p><b>C. Cost benefit ratio</b> = Annual benefit/Present worth = \$3,237,600/\$55,254 = <b>58.6</b></p>  |

At the community level, even simplified estimates of injury costs can be valuable. Table 9 provides the average length of stay and average medical charges for hospitalizations,<sup>23</sup> ER visits,<sup>24</sup> and ambulance transports<sup>5</sup> in the United States for 2005. Here are two examples of how the data can be used to estimate costs of injuries:

- Last year, there were five ATV riders hospitalized with injuries; 30 riders treated in the emergency room; and one person who died (he was not wearing a helmet). A very conservative estimate of the short-term medical cost of these ATV injuries would be:
  - 5 hospitalized riders x \$22,300/hospitalization = \$111,500

- 40 riders treated in the ER x \$620/ER visit = \$24,800
- One death x \$1 million/motor vehicle crash death = \$1 million
- Total costs = \$1,136,300
- For an individual victim transported by ambulance, treated in the ER, and then hospitalized for three days, the estimated medical charges would be \$274 + \$620 + (\$4,847 x 3 days) = \$15,435

**Table 9. Average medical charges and length of stay, all diagnoses, United States, 2005\***

| Item                          | U.S. Average |
|-------------------------------|--------------|
| Total hospital charges        | \$22,299     |
| Length of hospital stay, days | 4.6 days     |
| Hospital charges per day      | \$4,847      |
| Ambulance transport, one way  | \$274        |
| Emergency room (ER) visit     | \$620        |

These calculations greatly underestimate the true total cost of these ATV injuries because they do not include many of the items in Table 2 (such as long-term medical costs, administrative costs, and productivity losses of survivors); for the fatality, use the lower estimate of lifetime costs (\$1 million) based on the human capital/production loss model referred to above under "Implementing effective strategies," and do not reflect more recent (2007) national medical care costs or injury-specific cost averages.

#### Funding for the Prevention of Injuries is Woefully Inadequate

For the past seven years (2000 - 2006), the budget for the IHS Injury Prevention program has averaged \$1.8 million per year. Beginning in FY 2007, Congress appropriated an additional \$1 million per year, primarily for direct support of tribal IP programs (OEHE, personal communication). Compared to the cost of injuries, the IHS Injury Prevention Program's annual budget of \$2.8 million is equivalent to 0.1% of the lifetime costs of injuries for one year (2000) or 0.6% of injury-related medical costs.

#### Great Need for More and Improved Economic Data Regarding Injuries and AI/AN

Estimates regarding the cost of injuries vary by who bears the economic burden: individuals, tribes, the Federal government, or society as a whole. There is a great need for uniform, accurate coding — and more complete reporting — of injuries, especially at the local level. Often, for example, discharge summaries, E-codes, and other vital diagnostic information are not received from contract health care providers. Even in the absence of improved data, however, the "bottom line" is obvious: only increased efforts at prevention can reduce the severe economic burden of injuries in AI/AN communities.

Readers interested in the methods and assumptions used to calculate the cost estimates in this paper can refer to the original report prepared for the National Tribal Injury Prevention Steering Committee.<sup>3</sup>

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# Public Health Practice and the IHS Injury Prevention Program: Guiding Principles

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## Introduction

Injury is a leading cause of death and disability for American Indian and Alaska Native (AI/AN) communities. Overall, unintentional injury is the third leading cause of death among AI/ANs, and suicide and homicide are among the top ten causes of death. Injuries and violence are especially a burden for the young AI/AN population, accounting for 75% of all deaths among those ages 1-19.<sup>1</sup> Unintentional injury, suicide, and homicide are respectively the top three killers among AI/AN 1-44 years old, accounting for 54% of all deaths. Injuries cause more deaths among American Indians and Alaska Natives 1-44 years of age than all other causes combined.<sup>2</sup> In terms of years of potential life lost (YPLL), unintentional injuries account for more YPLL among AI/AN than heart disease, cancer, and diabetes combined.<sup>3</sup>

The IHS Injury Prevention Program (IPP) within the Division of Environmental Health, Office of Environmental Health and Engineering (OEHE), has evolved over the past three decades from a primarily education-based program to a comprehensive, evidence-based prevention program based on proven public health strategies. Several public health models, including the Haddon Matrix (pre-event/event/post-event; host/agenda/environment) and the CDC's National Center for Injury Prevention's "Public Health Approach" (Figure 1) have influenced the development of the IPP.<sup>4</sup> The current IHS Injury Prevention Program, however, is best characterized by four guiding principles: proven or best practice community-based prevention strategies, reliable injury surveillance data, building tribal capacity, and fostering collaborative partnerships (Figure 2).

## Community-Based Prevention Strategies

The central focus of the IHS Injury Prevention Program is the

Figure 1. Public health approach

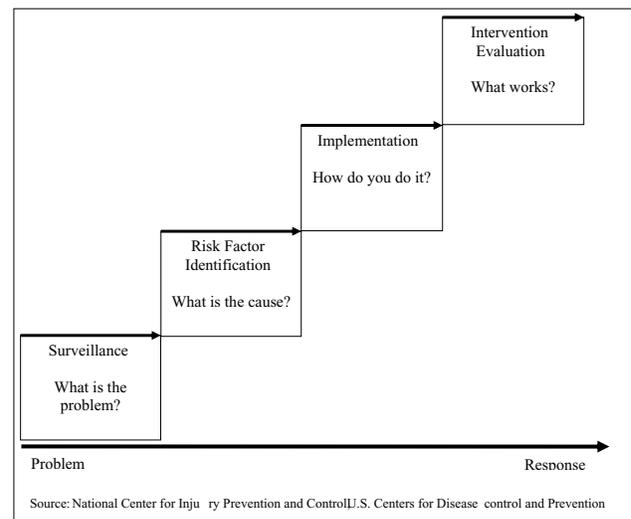
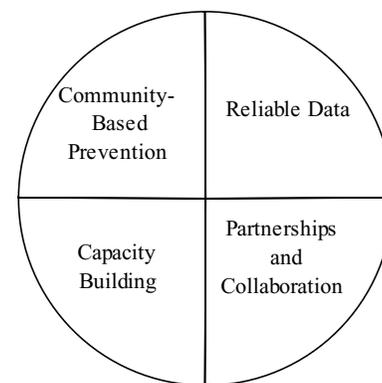


Figure 2. Guiding Principles of the IHS Injury Prevention Program



implementation of community-based prevention strategies that are evidence-based or "best practices." Dr. Fred Rivara of the Harborview Injury Prevention Research Center has said "the reason for this focus on effective strategies is straightforward: Because staff time and resources are always limited, efforts should be used for those injury prevention strategies that have been evaluated and shown to be effective."<sup>5</sup> Table 1 summarizes injury

**Table 1. Recommended Strategies to Reduce Injury**

| <i>Mechanism/Type of Injury</i>            | <i>Strategies</i>   | <i>Key Findings</i>   | <i>References</i>  |
|--|---|---|--------------------|
| <b>Motor Vehicle Occupants</b>             |   |   |                    |
| Increase Use of Child Safety Seats         | Mandatory use laws  | Strong evidence. Laws decreased fatal injuries by 35%, but need to be enforced.   | 17, 18, 19, 20     |
|  | Community-wide information + enhanced enforcement campaigns such as checkpoints, saturation patrols | Sufficient evidence. Child safety seat use increased on average 12%. Added benefit of may increase detection of DUI or other offenses.  | 17, 18, 19, 20     |
|  | Distribution of child safety seats + education programs   | Strong evidence. Increased use of child safety seats by 23%.  | 17, 18, 19, 20     |
| Increase Use of Safety Belts               | Mandatory use laws  | Strong evidence. Laws increased safety belt use by 33% compared to states with nolaw. Primary enforcement laws on average increase safety belt use by 14% compared to Secondary laws.   | 18, 19, 20, 21     |
|  | Enhanced enforcement programs   | Strong evidence. Enhanced enforcement, such as “Click it or Ticket” campaigns increased safety belt use on average by 16 percentage points. Added benefit of may increase detection of DU I or other offenses.  | 18, 19, 20, 21     |
| Protect Young Drivers                      | Graduated driver licensing systems  | Strong evidence. Median decrease in young driver crash rates in the first year was 31%  | 20, 22             |
|  | Nighttime driving restriction curfews   | Most fatal nighttime crashes among young drivers occur between 9 PM and midnight. Several studies from the US and Canada have found that ordinances that restrict unsupervised teen driving at night resulted in reducing teen driver fatalities by about 25%.  | 22                 |
| Reduce Alcohol-Impaired Driving            | 0.08% blood alcohol concentration (BAC) laws  | Strong evidence. States that lowered their BAC laws from 0.1% to 0.08% saw a median decrease in alcohol-related fatal motor vehicle crashes of 7 %.   | 18, 19, 20, 23     |
|  | Zero tolerance laws for minors  | Sufficient evidence. Lower BAC limits for young and inexperienced drivers has been shown to reduce crash rates.   | 18, 19, 20, 22, 23 |
|  | Sobriety checkpoints  | Strong evidence. Proven effective in reducing alcohol-related crashes and deaths by approximately 17-25%. Recommended to be a part of all police enforcement programs.  | 18, 19, 20, 22, 23 |
|  | School-based programs   | Recommended to reduce riding with a drinking driver, but insufficient evidence to determine if effective in reducing alcohol-impaired driving.  | 19, 20             |
|  | Mass media campaigns to reduce alcohol-impaired driving   | Strong evidence. Studies have found robust mass media campaigns to reduce alcohol-related crash rates by about 13%.   | 19, 20             |
|  | Designated driver programs  | In sufficient evidence to determine effectiveness   | 19, 20             |
| <b>Fire and Burns</b>                      |   |   |                    |
| Reduce residential fire deaths/injuries    | Install smoke alarms  | Effective strategy. Researchers have found that having a working smoke alarm in the home reduced the risk of death from a house fire by as much as 71%. Research conducted in Native American homes recommended installing photoelectric alarms in place of ionization alarms to prevent nuisance alarms.   | 24, 25, 26         |
|  | Smoke alarm distribution + education and media campaigns  | Effective strategy. Mallonee and others found that fire injury rates were reduced by up to 80% after targeting high risk neighborhoods with smoke alarm distribution combined with an education and media campaign.   | 24, 27             |
| Reduce thermal burns                       | Reduce hot water temperatures to 120 degrees F or less  | Legislation and ordinances to require hot water heaters be preset at 120 degrees F has proven to be the most effective in reducing scald burns to young children and older adults. Media campaigns and home visits are also effective in getting homeowners to measure and reduce hot water temperatures to 120 degrees F. Educational campaigns alone have not been effective. | 24, 29             |
| <b>Drowning</b>                            |   |   |                    |
| Reduce drowning in natural bodies of water | Programs to promote wearing of personal flotation devices (PFDs), flotation coats                   | PFD and float coat education and distribution programs are promising strategies to increase the use of these safety devices in Alaska Native villages.  | 24, 29, 30         |
| Reduce swimming pool drowning              | Install 4-sided fencing around pools  | Installing four-sided isolation fencing around swimming pools is a proven effective strategy in preventing drowning among children from birth to 5 years.   | 24, 30             |
| <b>Falls</b>                               |   |   |                    |
| Prevent falls among older adults           | Exercise programs to improve balance, leg strength, and endurance                                   | Exercise programs for older adults have been shown to reduce the risk of falls by 12% and mean number of falls by 19%. The most effective programs have targeted balance, leg strength, gait training, and strength building.   | 31                 |

**Table 1. cont.**

|                           |   |   |                |
|---------------------------|---|---|----------------|
|                           | Clinical assessment and fall risk reduction   | Individual patient assessment of fall risk factors combined with strategies to reduce those risks have been shown to reduce the risk of falls by 18%.   | 31             |
|                           | Medication management   | Studies have shown that reviewing and modifying medications that are known to increase the risk of falls, such as benzodiazepines, antidepressants, etc., have been shown to reduce fall rates. These programs have been more effective when combined with other strategies, such as risk factor screening, exercise programs, and home assessment. | 31, 32         |
| <b>Violence</b>           |   |   |                |
| Reduce child maltreatment | Early childhood home visitation programs  | Strong evidence. Early home visitation for new mothers is a proven effective strategy to reduce child abuse and neglect in young children. Researchers have found a 39% to 80% reduction in reported child abuse and neglect among children who received the home visit intervention vs. controls.  | 33, 34, 35, 37 |
| Reduce suicide            | Physician education in depression recognition and treatment   | Effective strategy. A majority of older adults who die by suicide are seen by a primary care physician in the last few months of life. Physician education in depression recognition and treatment is an effective strategy to prevent suicides.  | 36, 38         |
|                           | Restrict access to lethal means   | Researchers have found that having firearms in the home increases the risk of suicide by up to 4 times for all ages, and 10 times for youth. Restricting access to firearms for youth especially is a promising strategy to prevent suicides.   | 24, 36, 38     |
|                           | Increasing protective factors such as discussion of problems with relatives and friends, building self-esteem, and increasing problem solving skills. | The Zuni Life Skills Development program has shown promising results in reducing suicide rates among American Indian/Alaska Native youth by focusing on increasing protective factors and reducing known risk factors for high school aged youth.   | 38, 39, 40     |

prevention interventions that have rigorously-demonstrated effectiveness or are at least considered promising. Knowledge of these interventions, however, is not enough for their successful implementation in AI/AN communities. Interventions must be tailored for each community. Successful implementation of effective strategies tailored to each AI/AN community involves important considerations, including the following:

1. Every community has unique cultural, political, and historical factors that must be recognized and respected.<sup>6, 7, 8</sup>
2. Tribes are sovereign nations. Tribal entities must be involved in all stages of program planning and implementation.
3. Priorities for intervention need to be based on reliable injury data, feasibility, and the expressed concerns of the community.

Another important guideline for implementing community-based interventions is utilizing multiple strategies where possible. Because there are multiple factors that contribute to an injury event and injury severity, we advocate that an intervention employ the "3Es" model. This model involves three intervention approaches:

- *Education* to raise awareness of injury risks, encourage behavior changes, and to inform policy makers so they have the knowledge for more informed decisions
- *Enforcement* of legal requirements and prohibitions to reduce risk; policy development
- *Engineering* (or Environmental Modification) to create a safer environment or safer consumer products.<sup>4</sup>

The basic premise of the 3-Es model is that an intervention

utilizing a combination of these approaches produces results superior to an intervention employing only one approach. For example, a community-based program focused to reduce motor vehicle crash (MVC) injuries might ideally include:

- Education approaches to encourage occupant restraint use and inform policy makers of community specific MVC risk factors and intervention strategies
- Enforcement approaches involving the enactment and enforcement of key traffic safety laws that require occupant restraint use and prohibit drinking and driving
- Engineering of community roads to ensure they are sufficiently designed and maintained to minimize crash risk.

The CDC-funded motor vehicle prevention program at the San Carlos Apache Tribe is a superb example of a community-led program employing effective strategies (sobriety checkpoints, strengthening traffic safety laws), education (primarily through mass media), and enforcement.<sup>9, 10</sup>

**Reliable Data**

Reliable data are vital to drive decisions for the development of a targeted, community-based injury prevention program. Data help identify the distribution and determinants of injuries in a community; provide insight into the knowledge, attitudes, and perceptions of community members about specific topics and approaches; enable evaluation of intervention strategies; and support efforts to fund, sustain, and enhance successful interventions. The IPP employs several strategies to help tribes

describe the magnitude of the injury problem and identify injury trends in their community.

National sources for AI/AN injury data include IHS Headquarters, the Centers for Disease Control and Prevention, and other injury data sources where AI/AN populations are identified. IHS Headquarters' publications, such as the *Indian Health Focus – Injuries 2000-2001*, *Trends in Indian Health*, and *Regional Differences in Indian Health* are useful in providing a basic description of injuries nationally and for each IHS Area. The CDC's Web-based Injury Statistics Query and Reporting System (WISQARS) is an interactive database system we use to provide customized reports of AI/AN injury-related data and make comparisons to other US races.<sup>2</sup>

National data resources are useful in describing the magnitude of injury among AI/ANs and to track trends, but are limited to large sub-groups of the AI/AN population such as IHS Areas or states. As a result, the IHS IPP works with tribes and tribal organizations to gather local data that are representative of specific AI/AN communities. Following a 1985 consultation from injury prevention epidemiologist Leon S. Robertson, PhD, of Yale University, the IHS Injury Prevention Program embarked on the enormous and ongoing task of establishing injury surveillance systems in AI/AN communities.<sup>10</sup> IHS Environmental Health Officers and Injury Prevention Coordinators are generally responsible for local injury surveillance systems that involve the review of health care data (i.e., ED logs, medical records, contract health billing records, ambulance services). These data are also often supplemented by reports from police departments, state vital statistics, injury site investigations, and other sources. The data are summarized by IHS and used by IHS and the tribes to better understand the leading causes of injury in communities; compare the burden of injury to other health priorities; and plan targeted interventions. At the request of, and in partnership with, tribes, we have conducted numerous special injury epidemiologic studies to understand injury problems in greater detail. Many of these studies have been conducted by participants in the IHS Fellowship program.<sup>11</sup> These studies have provided detailed analysis and intervention recommendations to address many types of injury, including motor vehicle crashes (including pedestrian), falls, drowning, fires/burns, suicide, and assault.

An emerging data collection strategy of our program involves the collection of quantitative data. The IHS IP program staff in collaboration with tribes has conducted focus groups, key informant interviews, and community surveys that are fundamental to tailoring programs/interventions to the community.

### Capacity Building

One of the core objectives of the IPP is to build capacity within tribal communities to effectively address the issue of injury. Capacity building involves initiatives to foster tribal ownership of injury prevention programs, from identifying priorities to implementing and evaluating injury prevention initiatives. Capacity building efforts focus on 1) training to increase injury prevention skills among IHS and tribal public health practitioners, policy makers, and community advocates; 2) funding to implement

community-based intervention programs; and 3) providing expert technical assistance to tribes in injury prevention program development, implementation, and evaluation.

*Training.* The IPP includes a comprehensive Injury Prevention training program that offers a broad set of courses for varied levels of experience and injury topics. Our curriculum includes three, one-week short courses that gradually build on one another across seven core injury prevention topics: public health approach to injury prevention, program design and implementation, coalitions and collaborations, program evaluation, injury data, marketing and advocacy, and program management. These short courses, designed and taught by IHS and tribal injury prevention staff, are intended to build practical injury prevention skills for the diverse group of persons working and living in tribal communities.

We offer a year-long injury prevention fellowship program for advanced training. The fellowship program currently has two tracks: an epidemiology track geared to conduct community-based injury studies and a program development track geared to implement community-based interventions and programs. Over 200 IHS and tribal persons have graduated from the fellowship since it began in 1987.<sup>12</sup> We also offer targeted training in topics such as child passenger safety, grant writing, program evaluation, and intentional injuries.<sup>95</sup> The Safe Native American Passengers (SNAP) course is an excellent example of the IPP recognizing the need for more focused training on Child Passenger Safety (CPS). SNAP delivers culturally-appropriate CPS education to affect the knowledge, attitudes, and practices of those responsible for transporting children in motor vehicles.

*Funding IP Initiatives.* Securing sufficient funding to implement community-based injury prevention programs and interventions is critical to successful capacity building. The most significant source of IHS funds for developing the capacity of AI/AN tribes and tribal organizations is the IHS Tribal Injury Prevention Cooperative Agreement Program (TIPCAP). Initiated in 1997, TIPCAP provides varying levels of funding to tribes to facilitate injury prevention program development, implement interventions, and conduct injury prevention conference activities. Over the past decade approximately \$13.4 million has been awarded to 51 tribes/tribal organizations to develop community-based injury prevention programs, including the employment of a full-time tribal injury prevention coordinator. Currently there are 32 TIPCAP-supported tribal injury prevention programs ranging in funding from \$50K-\$75K per year for the 2005-2010 award cycle.<sup>13</sup>

IHS IPP funds also support targeted intervention initiatives. Two examples are the Sleep Safe and Ride Safe Programs that address childhood fire burn injury and child passenger safety, respectively, in AI/AN communities. Since 1999, these programs have resulted in the distribution of over 20,000 smoke alarms and over 3,500 child safety seats. Several other targeted injury topics (e.g., suicide, falls, impaired driving) are addressed through mini-project programs funded by Area Injury Prevention Programs.<sup>14,15</sup>

*Technical assistance.* The most valuable resource the OEHE

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program has to offer tribes is the time and expertise of its staff. OEHE field staff serves as the primary injury prevention advisors to tribes. They are supported by the IPP at the District, Area, and national levels. They provide technical assistance to tribes in IP program planning, implementation, and evaluation. Staff also play a critical role in assisting tribes in obtaining external funding for intervention projects and programs. For example, in 2006, the Phoenix Area IPP assisted tribes in obtaining over \$600,000 from funding sources outside of IHS to develop community-based IP programs.

The IPP has also provided technical assistance to tribes through contracts with external consultants. The experience of injury prevention experts from the University of North Carolina in providing technical assistance to tribes with TIPCAP programs, for example, has been described in the July 2007 issue of *The Provider*.

### Partnership Building

One of the many ways the IPP achieves success is through strong partnerships and collaborations with other entities. Maintaining these relationships have proven to increase the efficiency and effectiveness of the programs initiatives. These partnerships have been established at the national, local, and internal levels.

The IPP has partnered with many national, external programs to include the Centers for Disease Control and Prevention (CDC), US Fire Administration (USFA), Bureau of Indian Affairs (BIA), and the National Highway Transportation Safety Administration (NHTSA). Partnerships with these programs have helped bridge the gap between research and policy making, and the local communities that are affected by them. Two good examples of this are the CDC's Tribal Motor Vehicle Injury Prevention program and the USFA's Sleep Safe Program. To address the disparity of motor vehicle-related injuries among AI/AN, CDC began funding four tribes in fall 2004 to design, implement, and evaluate evidenced-based strategies to reduce alcohol-impaired driving and increase occupant restraint use. The goals of this CDC-tribal initiative are to determine if the effective strategies from the *Community Guide* can be successfully tailored to tribal communities and to identify the key components of successful tribal intervention programs as a model for other tribes wishing to reduce the toll from motor vehicle crashes. These projects have already seen numerous successes including passage of two primary enforcement seatbelt laws, substantial increases in seatbelt use, and reductions of alcohol-impaired driving.<sup>9</sup>

The Sleep Safe Program is another example of how the IPP has helped facilitate a national initiative at the community level. The goal of the Sleep Safe Program is to reduce the rate of fire and burn injuries among AI/AN Head Start children by providing a curriculum for program development and parent/student education, and smoke alarms for installation. The USFA provides the smoke detectors and other related equipment while the IPP staff help facilitate the implementation at the local Head Start level.

The IPP has also formed relationships with internal programs including health promotion/disease prevention, behavioral health,

public health nursing and others. While sharing the IHS mission with these other internal programs, these relationships capitalize on the strengths of the various programs to achieve their goals and objectives while reducing the amount of overlap. While many of these programs have budgeted for injury prevention objectives, they may not have enough staffing or injury prevention training to meet them. The IPP's most abundant resource is a cadre of highly trained staff able to assist these programs with the planning, coordination, and implementation of proven effective intervention strategies.

Collaborations at the local level are vital for the successful implementation of interventions. These collaborations not only increase the efficiency of the implementation but they also provide for community buy-in and capacity building. One of the key components to a successful community injury prevention program is coalitions. Community health representatives (CHR), housing programs, tribal health departments, police departments, and elder programs are just a few of the local organizations that actively participate in coalition activities.

### Conclusions

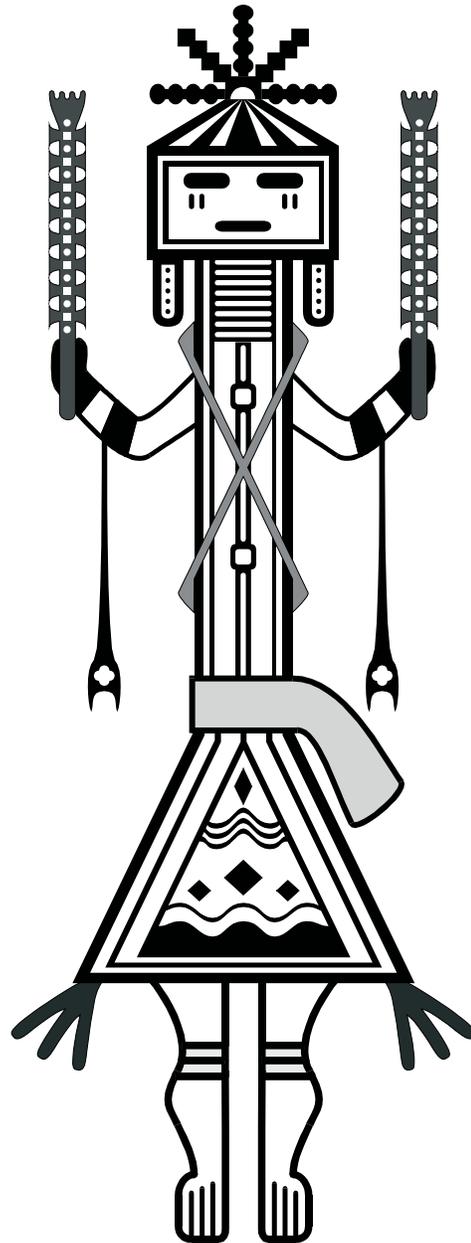
The four guiding principles of the IHS Injury Prevention Program underlie its mission: "To raise the health status of American Indians and Alaska Natives to the highest possible level by decreasing the incidence of severe injuries and death to the lowest possible level and increasing the ability of tribes to address their injury problems."<sup>16</sup> These principles commit the Injury Prevention Program not to a static model of public health, but to a process of community change. That process acknowledges the power of partnerships and collaboration to build and sustain programs over time. It emphasizes the importance of reliable data and evidence-based strategies in designing and implementing interventions. And it identifies community needs and community ownership as the foundation for all programmatic efforts.

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# Ute Indian Tribe Enforcement-Based Injury Prevention

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## Introduction

Community concern about motor vehicle crashes at the Uintah and Ouray (U&O) Reservation was prompted by an Indian Health Service (IHS) injury surveillance report. The report revealed that from 1996 - 2000, motor vehicle crashes were the leading cause of death for the tribe. The Ute motor vehicle mortality rate was 162 per 100,000, nearly *three times* the US All Races rate of 54 per 100,000. Of the reservation's 38 crashes resulting in fatality or hospitalization during 1996 - 2000, 69% involved alcohol and only 14% of the victims used seatbelts. From 2000 - 2002, the average seatbelt use was 22% for drivers and 20% for children.<sup>1</sup>

The Ute Tribe's Injury Prevention Coalition (IPC) sought funding to address the motor vehicle injury problem. The IPC began in 2000. It consisted of representatives from the Ute Tribe Health Education Department, Ute Tribe Head Start, Tri-County Health Department, IHS Office of Environmental Health and Engineering, and the Bureau of Indian Affairs Department of Law Enforcement Services (BIA DLES). Using the Centers for Disease Control's publication, *Guide to Community Preventive Services (Community Guide)*, the IPC proposed three evidence-based strategies: 1) increase the proper use of child safety seats through enforcement, child safety seat distribution, and education campaigns; 2) increase the use of safety belts by enhanced enforcement programs; and 3) reduce alcohol impaired driving by conducting sobriety checkpoints.<sup>2</sup> Permission for this effort, and its publication, was obtained from the Executive Director of the Ute Indian Tribe.

## Background

The Northern Ute Indian Tribe is located on the U&O Reservation in northern Utah. Covering over 4.5 million acres, it is the second largest Indian reservation in the US. The Ute Tribe has a membership of 3,157 and over half of its members live on the reservation.

The BIA DLES has the primary responsibility for providing law enforcement for roughly 20% of the 562 federally recognized Indian tribes, including the Ute Tribe. The

BIA DLES did not conduct any seat belt or DUI checkpoints on the reservation in the past two decades due to a shortage of staff and competing priorities.

## Methods

In May 2004, the IHS awarded the Ute Tribe the first Cooperative Agreement Injury Prevention Grant to be based in a police department. The overall goal of the two-year grant was to reduce injuries and fatalities due to motor vehicle crashes on the U&O Reservation. The grant's three objectives were to hire a full-time police officer to implement the program; increase restraint use by children and adults by 20%; and decrease alcohol-related crashes by 10%.

An Implementation Police Officer (IPO) was employed by the Ute Tribe and placed in the BIA DLES to work in partnership with this agency. The IPO position was one of two tribal police positions within the BIA DLES. The IPO reported to the BIA Police Chief, while accountability for activities and funds were provided by the Project Director and IHS Project Officer. The Ute Tribe Health Educator served as the grant Project Director.

The IPO completed the National Highway Safety Administration child passenger safety training and the IHS Introduction to Injury Prevention training course. The IPO also became an active member of the Ute Tribe Injury Prevention Coalition and embraced a collaborative, community-based approach to MVC prevention. He also worked closely with the grant's Project Director by attending coalition meetings, presenting information to the tribal council and to the public. The Project Director, a coalition member and tribal health administrator, played an important role in overseeing the administrative functions of the grant (i.e., quarterly reports, program planning, budget planning, and resolving administrative problems).

## Motor Vehicle Program Activities

*Education.* The community education campaign, entitled "Did You Know?" began in February 2005 and lasted throughout the grant period. The campaign, spearheaded by the Injury Prevention Coalition, was presented in three phases. The first phase introduced the problem by describing the number of crashes, injury statistics, DUI arrests, seatbelt use rates, etc., through monthly newspaper articles, posters, and radio announcements. The second phase informed the community that the Ute Tribe had enforceable laws to address

seatbelt non-use and DUI; and listed consequences such as fines and incarceration parameters. The third phase announced that the BIA DLES would begin conducting announced enforcement checkpoints to address the problems. This campaign allowed gradual exposure and acceptance of new enforcement activities within the community. In addition to the community education campaign, twenty presentations on restraint use and DUI prevention were conducted at community events and local schools to over 500 individuals. Articles and public service announcements were submitted to local newspapers and radio stations.

In January 2006 the Ute Injury Prevention Coalition sponsored an IHS Introduction to Injury Prevention Course specifically for the Ute Tribe community. The course was attended by 20 community members and served to provide an overview of injury prevention and encourage advocacy of those in attendance. As a result, membership increased and community interest in the coalition increased.

**Enforcement.** The BIA DLES partnered with local law enforcement agencies to conduct three DUI/restraint checkpoints and three DUI saturation patrols. Over 540 direct contacts were made at these checkpoints and 126 citations were issued over the grant period.

**Child Safety Seat Clinics.** With an emphasis on correct use, five child safety seat clinics were conducted, where 47 child safety seats were checked for correct use. Forty-four new seats were given to community members who did not have a child safety seat or had an outdated or damaged seat. An additional 335 child safety seats were distributed through the Ute Tribe car seat distribution program.

## Results

The Implementation Police Officer (IPO) and grant partners were successful in increasing adult restraint use from 22% to 42% and child restraint use from 20% to 42%. Overall, the number of injury crashes decreased as driver seatbelt use increased (Figure 1). There were 340 DUI arrests during the project period (2004 - 2005), compared to 310 in the prior two-year period (2002 - 2003). The total number of alcohol-related crashes declined from 32 to 21 (34%) between the two time periods.

**Figure 1. Driver seat belt use and crashes with injuries, Ute Tribe, 2000 - 2006**

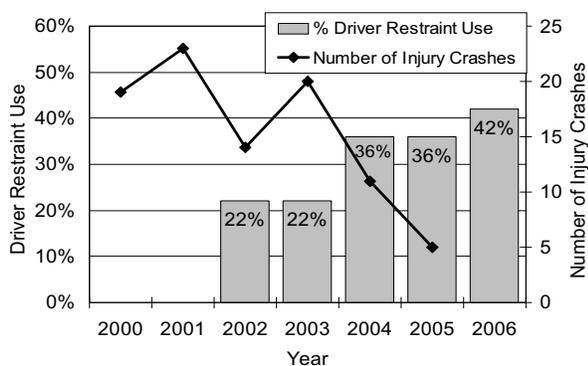


Table 1 summarizes the crash data for the two time periods (2002 - 2003 vs. 2004 - 2005) based on the categories used in police reports (fatalities, non-fatal injuries, property damage only). Although the relatively low number of crashes warrant caution in making firm conclusions, the declines are consistent with expectations. Specifically, the 9% overall reduction in motor vehicle crashes was due to large declines in crashes involving fatalities (from 6 to 2) and injuries (from 28 to 14). Property-damage-only crashes actually increased slightly between the two time periods (from 137 to 140).

**Table 1. Motor vehicle crash data, Ute Tribe**

|   | 2002 - 2003<br>(Prior to grant) | 2004 - 2005<br>(Grant period) | Percent change |
|---|---------------------------------|-------------------------------|----------------|
| Total number of MVCs                        | 171                             | 156                           | - 9%           |
| Number of crashes involving a fatality      | 6                               | 2                             | - 67%          |
| Number of crashes with injuries (non-fatal) | 28                              | 14                            | - 50%          |
| Number of "property damage only" crashes    | 137                             | 140                           | + 2%           |

Baseline and follow-up community surveys were conducted by the BIA DLES and the Tribal Health Educator in the winter months of 2004/2005 (before the community education campaign) and 2005/2006. There was an overall increase of 18% in correct responses to questions about motor vehicle laws after the education campaign was conducted.

## Discussion

One reason for the program's success was the high degree of involvement of the Project Director. Rather than providing only traditional administrative oversight, the Project Director was involved in every aspect of the grant, including developing the proposal, conducting community presentations, developing partnerships, assisting with enforcement checkpoints, submitting articles to the local newspapers, supporting the hired implementation police officer, and writing reports.

Hiring a police officer to conduct injury prevention activities was very important in accomplishing the goals and objectives of this grant, especially in the area of enforcement. There were several challenges that the program faced and overcame. Turnover in the police chief position, and his unfamiliarity with the grant objectives/purpose, resulted in the IPO being assigned to night shifts and regular police officer

duties. This made it difficult for the IPO to focus on grant-related activities. To address the situation, the Project Officer prescribed the weekly division of labor for the IPO: 30 hours of grant work and 10 hours of patrol work. Grant work hours were to occur during normal business hours to facilitate activities such as community presentations and planning checkpoints. Patrol work, required to retain officer certification, was limited. The IPO responded to motor vehicle crashes, conducted crash investigations, and issued restraint and DUI citations during patrol work hours.

To increase the likelihood of success for future police department-based injury prevention grants, we recommend that programs hire a police officer who has completed police academy training; or that the grant schedule be adjusted to accommodate an untrained individual (e.g., by postponing grant activities until the officer completes academy training). Academy training can take five months to complete, and requires three months of additional field training before solo officer duties can be conducted.

The successful completion of this grant underscores the effectiveness of an enforcement-based injury prevention program involving evidence-based strategies. To further reduce motor vehicle crash rates at the Northern Ute Tribe, our priorities are to:

- Increase the public's safe and proper use of seat belts and car seats. A 42% restraint use is still much lower than the National Highway Traffic Safety Administration 2005 national restraint use rate of 82%.<sup>3</sup>
- Increase fines for non-restraint use. Findings from the community survey indicate that current fines of \$20 for non-restraint use citations are not a strong deterrent.
- Continue efforts to reduce the number of people who drive while impaired by alcohol or drugs.
- Implement new strategies to reduce DUI, including stronger sanctions for repeat drinking and driving offenders and alternative sentencing.

## Conclusion

In the two years of the grant, the Ute Tribe implemented evidence-based strategies yielding measurable success. Strong partnerships among the Implementation Police Officer, the BIA Department of Law Enforcement Services, and the Ute Tribe Injury Prevention Coalition were keys to their success. Through hard work, excellent collaboration, and perseverance, they were successful in increasing adult and child restraint use and reducing both alcohol- and injury-related crashes.

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# October is Domestic Violence Awareness Month

October is national Domestic Violence Awareness Month (DVAM). This is an annual observance sponsored by the National Coalition Against Domestic Violence. Every October across the country, domestic violence survivors and advocates, health care providers, elected officials, law enforcement and public safety personnel, business leaders, faith-based groups,

and many others are organizing and participating in domestic violence memorial activities, public education campaigns, and community outreach events. If you would like more information about how your facility can participate in DVAM activities, visit [www.ncadv.org](http://www.ncadv.org).

## Health Cares About Domestic Violence Day: October 10, 2007

Health Cares About Domestic Violence Day (HCADV Day) is a nationally recognized awareness-raising day that takes place annually on the second Wednesday of October. Sponsored by the Family Violence Prevention Fund, HCADV Day aims to reach members of the health care community and educate them about the critical importance of assessing for domestic violence, as well as the long term health implications of domestic violence and lifetime exposure to violence.

Medical studies link long term effects of domestic violence and abuse with a myriad of health problems including smoking, diabetes, obesity, eating disorders, and substance abuse. However, while doctors and nurses routinely screen for high blood pressure and high cholesterol, too few screen for domestic violence. This year we hope to support you in your efforts to prioritize routine assessment and intervention for domestic violence as part of a preventative health care strategy.

There are many ways that you can provide leadership in your community on HCADV Day, and the Family Violence Prevention Fund is committed to helping you craft activities that best meet your interests, resources, and time availability. Examples of past participation include hanging posters in

waiting rooms that advertise local resource numbers, writing a newsletter article or an op-ed for a local paper, and inviting a speaker to conduct a brown bag lunch on domestic violence for staff.

You can learn more about HCADV Day and obtain an organizing packet by visiting <http://www.endabuse.org/hcadvd>. Health care providers are in a unique position to identify and assist victims of domestic violence. If you would like more information about how to improve the response of your facility to domestic violence visit [www.endabuse.org/health](http://www.endabuse.org/health)

Sample hospital and clinic domestic violence policies and procedures and guidelines for providers can be found on the IHS Maternal and Child Health Domestic Violence website at <http://www.ihs.gov/MedicalPrograms/MCH/V/index.cfm>

If you are a victim of domestic violence, call the National Domestic Violence Hotline at 1-800-799-SAFE (7233); 1-800-787-3224 (TTY).





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