Injury Epidemiology: Fourth Edition

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Chapter 7. LOCAL INJURY SURVEILLANCE AND RISK FACTOR SURVEYS

Some states and other entities have established systems of surveillance for particular types of injury outcome, such as spinal cord or brain injuries. For example, in response to Congressional mandate, the Centers for Disease Control funded traumatic brain injury surveillance in 12 U.S. states (Langlois, 2005). Focus on such injuries may be useful because of the effects on mortality (e.g., Salassie, et al., 2005) and the lives of the injured and those who must care for them, as well as the costs. Surveillance of injury from activities such as skiing is obviously not applicable to areas where the activity is not done but provides useful insights into prevention in areas where it is relevant (Xiang, et al., 2004**).**

When a complete census of severe injury is problematic, as in low-income jurisdictions because of costs or where hospitals are not cooperative, sampling methods originally used for estimating animal, bird and insect populations are being employed. Called "capture-recapture", analysis of the number of cases found repeatedly in different samples give an indication of the incidence (or prevalence depending on the sampling methods) of the outcome conditions (Chiu, et al., 1993). A review of such studies found that a majority were judged of low quality (van Hest, et al, 2011).

HOSPITAL-BASED SURVEILLANCE. Certain hospitals have increased the recording of data on injuries in trauma registries, partly for use in monitoring quality of care and partly as a database for research (Scheib, et al., 1989). The Trauma Data Bank at the American College of Surgeons is made up of data from trauma registries: https://www.facs.org/quality%20programs/trauma/ntdb. Use of these hospital data for surveillance and analytic research is limited by the differential case mix among hospitals and the lack of specification of the source population (Payne and Waller, 1989). If the population served uses more than one hospital, and the preference for a given hospital or the criteria of the emergency response system for using a given hospital changes over time, the trends in injuries in the registry can be misleading. Epidemiologists call this selection bias. Hospitals in the same community or region sometimes refuse to

share data because they do not want the competition to have information about their "market". In at least one state, Pennsylvania, an attempt to adopt uniform data recording among hospitals designated as trauma centers resulted in substantial compliance -- 81.5 percent (Gillott, et al., 1989). This system provides a larger sample size for studies to increase quality assurance.

Several states contracted with the National Highway Traffic Safety Administration to match hospital and police records of motor vehicle injury in a system called CODES. Data from this system have been used to mislead the United States Congress regarding the effectiveness of seat belts because of invalid reporting of belt use to police. One report claimed 89 percent belt effectiveness in reducing motor-vehicle occupant injuries which is absurd (See Appendix 5-1, Chapter 5). NHTSA has refused requests under the Freedom of Information Act by outside researchers to gain access to the CODES data, despite the fact that it was collected using taxpayer money. Apparently, state authorities must clear each such request. State programs became "autonomous" in 2013, which apparently means that NHTSA no longer is involved.

Matched hospital, police and other data are potentially useful for targeting countermeasures and analytic studies but if the data are not available to the research community, the uses are limited and the results are not subject to independent study. According to one outside user, CODES data were obtained by specifying data tables needed to each state controller of the data for a useful study of underreporting of alcohol involvement in crashes (Miller, et al., 2012).

There is a fundamental issue that people collecting surveillance data must address: How is the data being used? Taxpayers, the medically insured and other patients are paying for what is often a formidable effort in data collection. Are they getting anything for their money? What changes in emergency response or treatment have been made based on the data? How many miles of road have been modified with guardrail or lights installed based on concentrations of cases at specific road sites at specific times? What changes in police deployment and arrest policies occurred based on data regarding concentrations of assaults in space, time, public places, or recidivism of spouse and child abuse? What changes in laws regarding alcohol, guns, or use of personal protection have been considered or enacted based on the data? Indeed, have the data been given to anyone in a position to do something to reduce injury incidence and severity? If so, was it given to them in a form so that they had some notion of what to do?

RISK FACTOR SURVEILLANCE. The Centers for Disease Control and Prevention coordinates telephone surveys in numerous states which attempt to measure behavioral risk factors, including several related to injury such as smoking, alcohol use, and seat belt use (Anda, et al., 1990). Despite research indicating that self-reports of these behaviors are invalid, articles based on them are prevalent in the literature with no caveats regarding validity (e.g., Wechsler, et al., 1995; Escobedo, et al., 1995). A comparison of self-reported belt use from

that survey and observed seat belt use from the annual observational survey of the National Highway Traffic Safety Administration illustrates the importance of not relying on self-reports of behavior. As displayed in Figure 7-1, self-reported belt use was substantially more than that observed in the vicinity of large cities from each state from which data were available -- an average difference of 21.5 percentage points in 1988. Belt use is less in rural areas than in and around cities so the actual difference could be larger (Robertson, 1992).

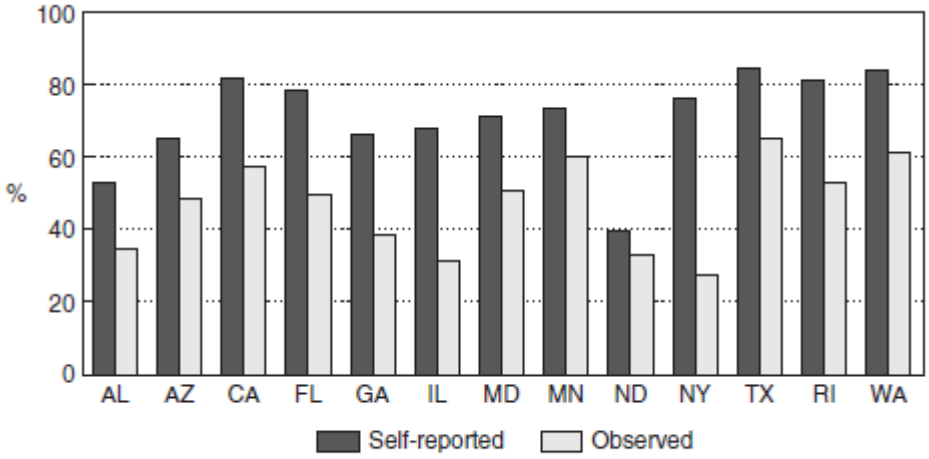

Figure 7-1. Self-Reported and Observed Belt Use

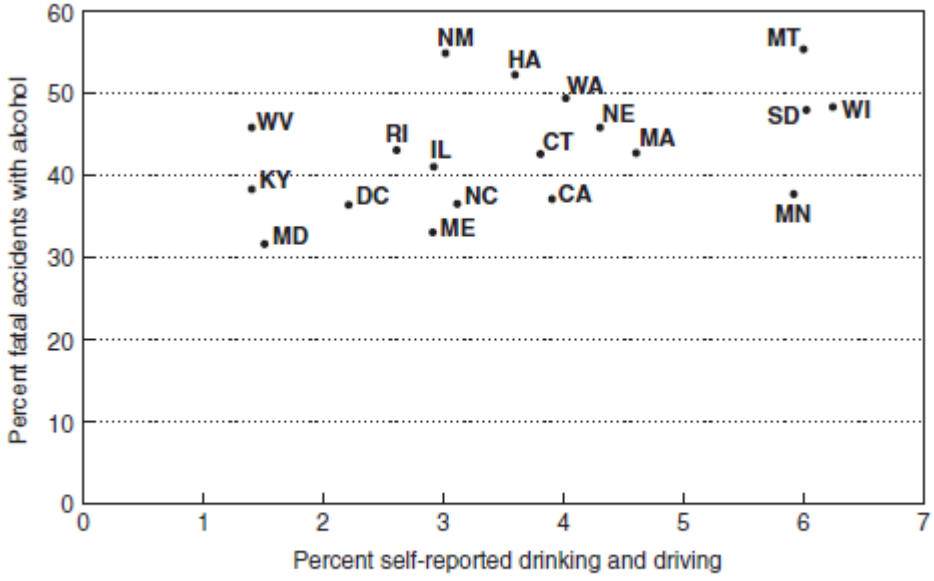

Figure 7-2. Self-Reported Drinking and Blood Alcohol in Fatally Injured Drivers.

Self-reported driving while intoxicated and other claims of heavy alcohol use in the behavioral risk factor survey also was not predictive of alcohol in fatally injured drivers. As shown in Figure 7-2, there was a six-fold variation among states regarding claimed driving after drinking but less than a two-fold variation

in actual percent alcohol measured by toxicologists in fatally injured drivers. Alcohol in fatally injured drivers was used for this comparison because it is objectively measured in more than 80 percent of fatally injured drivers in the states indicated. It does not include those who survived while killing other road users because alcohol is not measured objectively in such drivers often enough to avoid selection bias, but there is no reason to believe that the ratio of dead to surviving drunk drivers varies among states. A high correlation between self-reported alcohol use in the behavioral risk factor survey and alcohol sales in 21 states has been reported, but the correlation of alcohol sales and self-reported drinking and driving was poor (Smith, et al., 1990).

The Youth Risk Factor Surveillance Survey is a variation of the Behavioral Risk factor Survey but directed at teenagers. Table 7-3 shows the lack of correlation between self-reported contemplated suicides in the past year in the Youth Risk Factor Surveillance survey. Self-reported suicide contemplation declined 46 percent while actual suicide completions declined only about 10 percent.

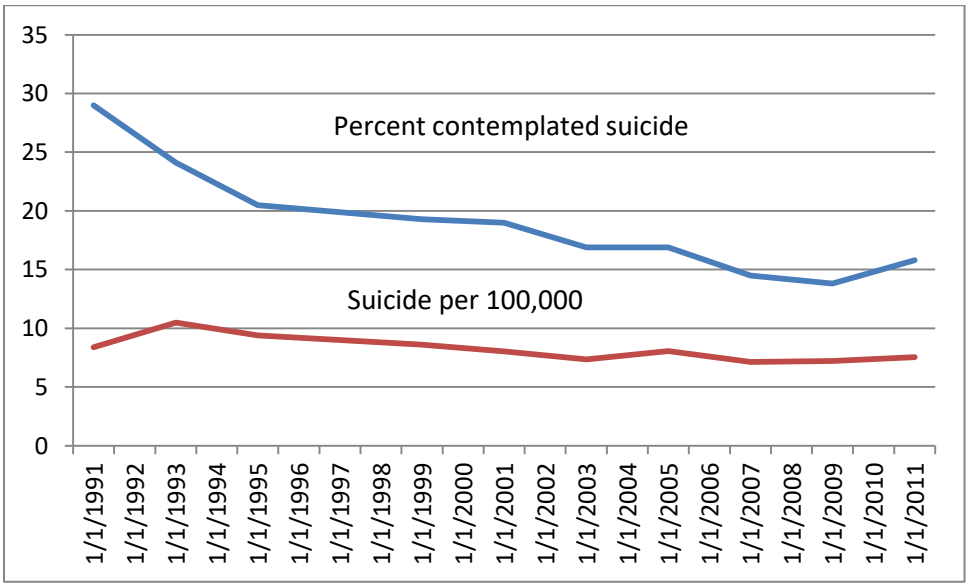

Figure 7-3 Suicide Deaths Per 100000 15-19 Year Olds and Percent Who Said They Contemplated Suicide During the Past Year in the Youth Risk Factor Surveillance Survey

The National Health and Nutrition Examination Survey (NHANES) included questions about opioid painkillers in several surveys. There was an increase in claimed use from the 1999-2002 surveys to the 2003-2006 surveys of 1.9 percentage points but no significant change in subsequent surveys while unintentional deaths from drug poisonings increased apace (Figure 7-4). Clearly the epidemic of opioid drug poisoning deaths (Chapter 1) was not predictable from the survey results. Such self-reports are worse than worthless; they are

misleading. The report on the survey reads like the authors think it is factual (Frank, et al., 2015)

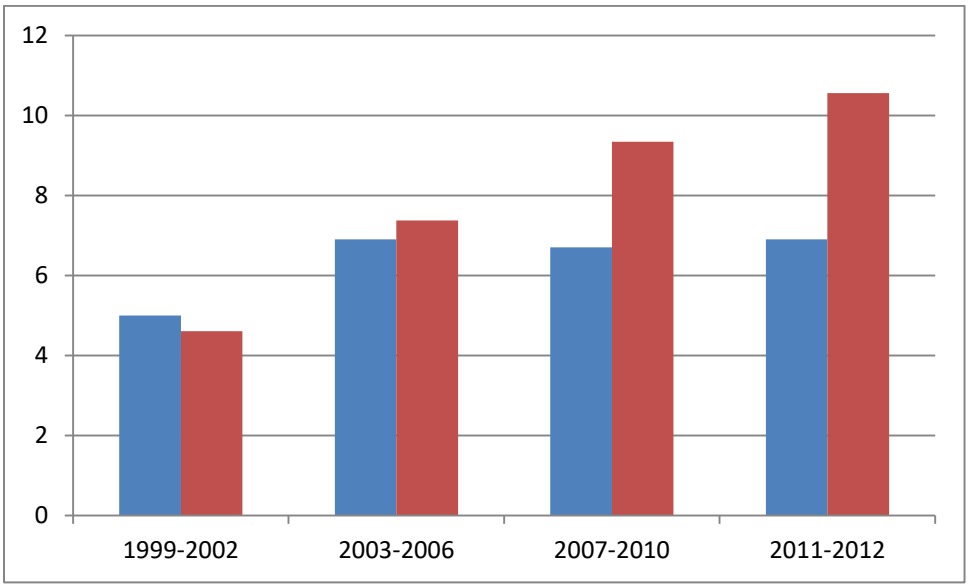

Figure 7-4. Percent Claimed Opioid Drug Use in the NHANES Survey (left bars) and Age Adjusted Fatal Unintentional Drug Poisoning Per 100000 (right bars).

Valid data on substances involved in fatalities can be obtained by medical examiners. For example, data on alcohol and marijuana in fatally injured drivers was used to assess use in relation to the minimum drinking age (Keyes, et al. 2015)

PREVENTION ORIENTED SURVEILLANCE. Previous successful efforts in injury control based on surveillance have included the following steps:

1. Surveillance of injury incidence and severity to identify clusters of similar injuries and the hazards that increase incidence and severity.
2. Identification of one or more technical strategies to eliminate or reduce the hazard.
3. Implementation of the technical strategy among the populations at high risk.
4. Continued surveillance to monitor the trend in the injuries.

An outstanding example of the application of this approach occurred in the study and subsequent reduction of fatal falls to children in New York City. Epidemiologists from the health department devised a surveillance system of the circumstances of the falls and found that 66 percent of injuries in fatal falls to children up to five years of age occurred when the children crawled out of windows in high-rise buildings. The research also identified the areas of the city where these deaths most frequently occurred (Bergner, et al., 1971).

A barrier that could be placed over windows, preventing children from crawling out, was the technical approach identified as most feasible under the circumstances. A campaign was launched in high-risk neighborhoods to persuade the parents or landlords to install the barriers (Spiegel and Lindaman, 1977). Eventually, the health department required landlords to install such barriers when requested by tenants. In association with these efforts, death from children's falls from high-rise windows declined from about 30-50 per year in the 1960s to 4 in 1980. Total reported nonfatal falls declined proportionately during the same period (Bergner, 1982; Barlow, et al., 1983). Subsequently, as attention to the issue declined, the falls and fatalities increased somewhat. In July, 1986, the city changed the regulation to require barriers in buildings where there were children less than 11 years old (Bijur and Spiegel, 1996). During 2001-2016, children's fatal falls from windows in New York City remained less than 10 percent per year of the numbers when the problem was first specified by the research (Toprani, et al., 2018).

In addition to illustration of the steps necessary for efficient injury control, the New York experience with children's falls from heights suggests the local nature of certain hazards. In cities and towns with few or no high rise buildings (indeed in the boroughs of Queens and Staten Island as the researchers found in New York), a campaign or regulations to install barriers in windows would be inappropriate because the problem is rare relative to other types of injury. Therefore, local injury surveillance is necessary to identify major injury problems that vary widely among local areas, and their circumstances and specific locations within the areas. The local health department is an appropriate agency for such an activity, but other agencies, such as hospitals or EMS crews, could also do the work (e.g., Short, 2002). For example, intentional injuries and alcohol-related injuries were reduced in a British community in association with aggregated (not individual) data given to police and the health department by a hospital emergency department (Quigg, et al., 2011).

Numerous technical strategies are available for injury control, but efficient use requires data on the extent to which they are needed where the problem is most acute (Chapter 2). For example, certain road modifications, signaling systems and lighting reduce relevant injuries by more than 50 percent (Federal Highway Administration, 1982). Yet modifying every mile of road with every possible modification would be very expensive.

By conducting detailed surveillance of the circumstances, frequency and locations of serious injuries, the health department or other organization can recommend action to agencies or organizations in a position to implement, require or distribute technology or other approaches. For example, if particular road intersections were found to have high rates of severe injury crashes, the data and suggestions for changes, such as extension of the yellow phase of traffic control lights at the specified intersections, would be forwarded to the road or police department that has jurisdiction. If skid strips on stairs, hand rails, or

other approaches were identified as likely ameliorative strategies for specific types of falls found among the elderly, the recommendations for specific modifications could be made to vulnerable community residents by visiting nurses or other persons who provide services to the elderly.

Geographic location can be a powerful factor in concentrating resources. In Stockholm, Sweden, 47 percent of assaults on public streets occurred on 3 percent of all streets in a single year and street homicides in a forty-year period were highly concentrated on the same streets as those identified in the assault study. The assaults were near places of "entertainment" such as bars and theaters (Wikstrom, 1995). In one U.S. city, 45 percent of child pedestrian injuries were located in 16 percent of the census tracts (Lapidus, et al., 1991). Pedestrian injuries in Baltimore were recently found higher in areas with more alcohol outlets (Nesoff, et al., 2018.)

Investigation of the circumstances of drowning of young children in one state revealed that all of the drowning in bathtubs occurred with young siblings but no adults present. All drowning in pools and larger bodies of water were from falls into the water, not swimming or wading. These results indicate the need for adult supervision of young children's baths and highlight the lack of barriers to prevent children from falling into larger bodies of water (Jensen, et al., 1992). In areas with year-round warm climates, such as Maricopa County, AZ, drowning rivals motor vehicles as a cause of death among toddlers. In 2010 two-thirds of childhood drowning in Arizona occurred in Maricopa County (Phoenix and environs -- http://www.azdhs.gov/plan/report/im/2010/9/pdf/9-5.pdf). A 2014 study of Maricopa County drowning found that 79 percent of childhood drowning occurred in in-ground swimming pools, a pattern that has persisted for years (http://www.azdhs.gov/documents/preparedness/public-health-statistics/publications/drngrpt2015.pdf). Pool fences are required only for newly constructed housing since 1991. A study is needed to see whether child drownings occur disproportionately in pools without fences.

An apparent exception to the differences in incidence and severity by location is opioid poison. A study of Baltimore emergency responses found that the locations and demographic characteristics of patients are similar to those examined postmortem by the medical examiner (Knowlton, et al., 2013). There are large differences among states in the prevalence of opioid poisoning deaths (Warner, et al., 2014) and likely among communities within states as well.

Geographic distributions of injuries have been used to designate the placement and staffing of emergency medical services and trauma treatment centers. For example, one emergency medical service that covered a metropolitan area of 600 square miles found that 25 percent of the calls occurred in two 13-square mile areas. The severe injuries were distributed similarly (Pepe, et al., 1990). A study of injury severity and hospital costs found a similar cluster in census tracts (Warden, et al, 2010). Geographic clusters of child pedestrian injuries combined with information about the children and the neighborhoods suggest

modifications to reduce the problem (Braddock, et al., 1994). Inner city gun violence has been found to be concentrated in "micro places" – certain street segments, housing projects, etc. – that are not evident when looking at larger geographic units such as census tracts or neighborhoods (Braga, et al., 2009).

As indicated in the discussion of extant surveillance systems, few include data in sufficient detail to identify specific types of injury by specific locations, and none directly identify environmental modifications that could have reduced incidence and severity. To provide such information, a supplementary data collection system was developed for the Indian Health Service (Robertson, 1985).

The data to be gathered are indicated on the forms in Appendices 7-1 through 7-8, one form each for injury from poison, motor vehicles, burn or smoke, drowning or near drowning, a fall, assault, suicide attempt, and others. I added the poison form to the original set for IHS because of the opioid poison epidemic. The forms include not only the circumstances of the injury, but also a list of possible actions that might have prevented the injury or reduced severity. The surveillance is not oriented simply to the collection of data; it is prevention-oriented.

Confining the initial effort to the more severe cases was deemed appropriate to avoid excessive effort expended on relatively trivial injuries that may occur in large numbers, but are relatively unimportant in terms of long-term consequences for the persons injured and use of community resources. The definition of "serious" is somewhat arbitrary and can be changed as progress is made in prevention of the more severe cases. Fatalities and hospitalized injuries should receive first priority in most instances.

Since the Indian Health Service provides outpatient as well as inpatient and preventive services in many Native American communities, access to cases by injury prevention specialists is no doubt easier than it would be in communities with more fragmented services. Nevertheless, the potential cost savings to be obtained by targeted injury control efforts informed by data should be appealing to hospitals. Reimbursement systems based on average costs for diagnosis-related groups have resulted in insufficient payments to hospitals for certain severe injuries because of the skewed distributions of costs (e.g., Jacobs, 1985, Selzer, et al., 2001).

Initial experience with the use of the IHS system indicated that lack of expertise in identifying potentially effective environmental modifications was a problem. A fellowship program to train injury control specialists and a series of seminars for other users of the system was instituted (Smith, 1988), and the graduates and others implemented many successful injury control projects. Technical assistance to state and local communities not served by the Indian Health Service is available from the injury control centers funded by the Centers for Disease Control (CDC), or from CDC. (A current list of injury control centers is available at: http://www.cdc.gov/injury/erpo/icrc/).

The Indian Health Service developed computer software that provides for easy entry of the data from the surveillance system. The program can be edited for use in any community. As sufficient numbers accumulate, a summary of the circumstances tabulated by the suggested actions that might have had a preventive effect provides a priority list for action.

Development of detailed computerized codes for injury locations to identify geographic clusters may be cumbersome, but good database management systems, such as EPIINFO used by IHS, allow listing of case identifiers by other variables. (EPIINFO can be downloaded free at: http://www.cdc.gov/epiinfo/). Once high priority actions have been identified, cases that would have been reduced by a given action can be listed and the locations marked on detailed maps of local areas by referring to the location information on the original forms.

The Indian Health Service undertook numerous projects in collaboration with local authorities based on local surveillance data (Smith and Robertson, 2000). Injury control specialists on the White River Apache Reservation in Arizona found a cluster of severe pedestrian injuries that occurred at night on a 1.2-mile section of road in a two-year period. The tribal government and IHS collaborated in the installation of lights that illuminated the road section at night (Akin and Rothfus, 1989). Comparison of the installation site and adjacent sites during the five years before and five years after the installation, controlling for average daily traffic and the removal of a liquor store in the area, indicated that about 6 fewer pedestrian injuries than expected occurred after the installation (Dellapena & Peabody, 1997).

In Browning, Montana, 59 severe motor-vehicle injuries, including 13 fatalities, occurred in a two-mile stretch of road during a seven-year period. Overhead lighting and curbs that channeled parking lot traffic to controlled entry points were installed. In the two-year period year after lighting and curbs were installed, only two severe injuries occurred in that stretch of road (Lee and Beck, 1991).

After being shown data on a cluster of 22 fatal pedestrian injuries at night on a two mile section of the road between Gallup, New Mexico and the Navajo Nation, state authorities agreed to put night lighting of the road section in their five-year plan for road modifications. No fatalities occurred in the lighted section in the two years after installation (Bill, 1995).

The Hoopa Health Association Emergency Medical Services gathered data on motor vehicle fatalities that occurred on the 100 miles of road through and adjacent to the Hoopa, Yurock, and Karok reservations in Northern California. The primary cause of death was vehicles plunging over steep embankments. Comparison of the sites where the state installed guardrails ten years before and ten years after the installation to non-installation sites, corrected for average daily traffic, indicated some 21 fewer deaths than expected in the period after installation (Short and Robertson, 1998).

Fatal unintentional injuries among Native Americans served by IHS declined much faster than those among the total U.S. population since 1980 (Figure 7-5). This occurred despite the fact that the poisoning death rate doubled similar to the total U.S. rate noted in Chapter 1. All of the declines in other injuries are not attributable to use of surveillance data by the Community Injury Control Committees formed in collaboration of IHS and local authorities but, as noted above, many demonstrated successes. Tribal governments passed legislation requiring safety belt use as well (Zaloshnja, et al., 2003).

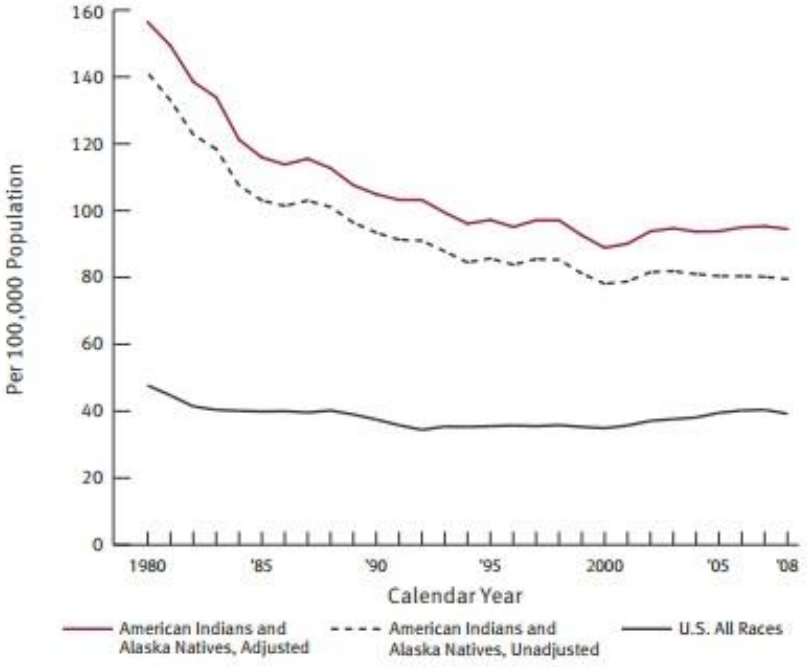

Figure 7-5. Unintentional Fatal Injury Rates Adjusted and Unadjusted for Age Distribution
Source: Indian Health Focus: Injuries 2015 Edition, Rockville, MD, Indian Health Service.

The dampening in the decline after the turn of the century is a function of the opioid epidemic similar to the effect on trends in the overall U.S. population (Figure 7-6). The acceleration in poisoning deaths was even more pronounced among Native Americans.

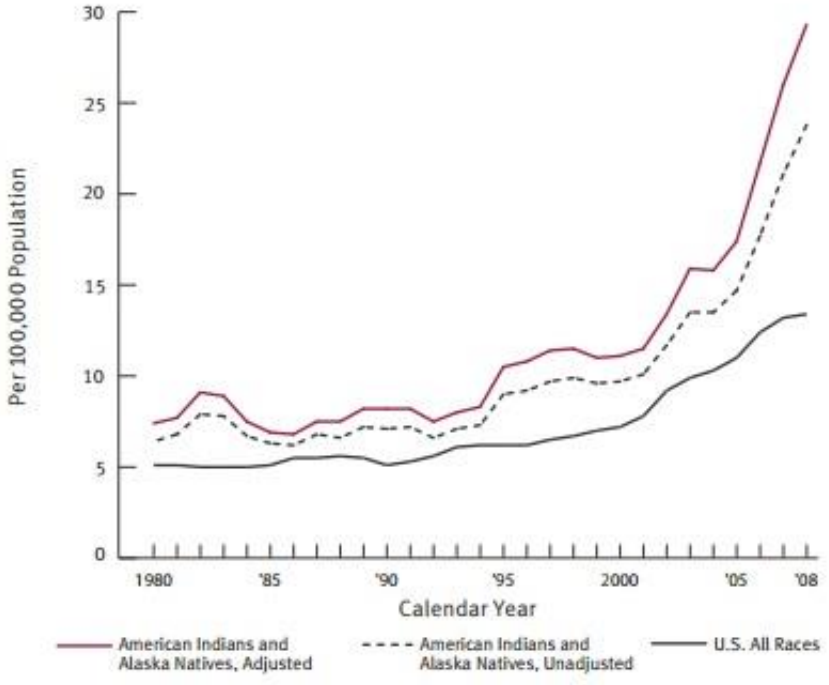

Figure 7-6. Unintentional Fatal Poisoning Rates Adjusted and Unadjusted for Age Distribution
Source: Indian Health Focus: Injuries 2015 Edition, Rockville, MD, Indian Health Service.

A visit to the site of each severe injury to consider environmental modifications that might have reduced the injuries is strongly recommended. For example, visits to the sites of child pedestrian injuries on the Pine Ridge Reservation in South Dakota indicated that the surfaces and equipment on nearby playgrounds were in such poor condition that the children apparently preferred to play in the streets or driveways of homes (Price, 1990).

The choice of recommended ameliorative actions should not necessarily be confined to the more obvious ones that can be fitted on a one-page form. The narratives and comments may suggest others. Those included on the forms are oriented to actions that can be initiated at the local level and do not include actions delegated to federal regulatory agencies. A review of the literature on the technical strategies for specific injuries provides expertise in the identification of additional options (e.g., Federal Highway Administration, 1982; Haddon, 1970; Robertson, 1983).

Ideally, every community would have an injury surveillance system analogous to that of IHS. If the numbers in a given community were too limited for generalization, small communities in similar areas could pool the data to assess patterns for their environment. A system for accumulating data from the local systems at the state (or provincial) and national levels would give each level of government, or private entity, information on injury patterns relevant to agencies

or organizations under its purview. Since national systems may be long in coming, local communities that are concerned about their injury problems can take the initiative.

Use of the IHS or similar forms could be required of medical examiners, coroners and hospitals. The mechanism of enforcement of quality of data from medical examiners and coroners is not evident, but hospitals could be required to obtain the data to qualify for reimbursement by Medicare, Medicaid or private insurance. A former EMS coordinator has written a useful guide for surveillance and injury control activities by first responders (Short, 2002).

If and when a national system is developed, the information gathered in local surveillance systems must be made uniform on certain variables. For use by national regulatory agencies and independent researchers, the specific identification of product brand names and other identifiers such as serial numbers should be included. Where structures or other facilities that are, or could be, subject to local codes and ordinances are involved, the builders or maintainers should be identified. The mere fact that the data are being collected could serve as motivation for some organizations to undertake injury control actions. The data would give them better information on actions to take.

Appendix 7-1. Motor Vehicle Injury Form

Community _____ Census tract _____

Location of the incident (specify road, street, or intersection and distance to an identifiable reference point such as an intersection, business or milepost number)_____
_____
_____

Severity: ___ fatal ___ hospitalized ___ ambulatory (fracture, loss consciousness only -- exclude others)

Age ___ Gender: M__ F__

Single vehicle occupant

If fixed object: __ tree __ utility pole__ bridge abutment __ light pole __ sign pole __ other

__ Rollover

__ Animal on the road ___ Other (What?
_____)

Multiple vehicle occupant __ Frontal __ Side __ Rear

Motorcyclist __ Single Vehicle __ Multiple vehicle

Pedestrian __ Crossing intersection __ Crossing elsewhere
__ Walking along road __ Vehicle came off road
__ Laying in road __ Other (What? _____)

Bicyclist __ Crossing intersection __ Crossing elsewhere
__ On road parallel to traffic __ On road against traffic
__ Motor veh. came off road
__ Other (What? _____)

Lighting: __ Daylight __ Dark __ Dark but lighted __ Dawn or Dusk

Signals: __ None __ Flashing Warnings __ Red-Yellow-Green
__ Stop sign __ Yield sign __ Other (What?
_____)

Crash Protection: __ Seat belt __ Child restraint __ Crash helmet

Roadway Jurisdiction: __ City or Town __ County __ State __ Fed.

Modification that might have prevented the injury or reduced severity (check all that apply):

__ No pass stripe __ Roadside hazard removal
__ Rumble strips __ Signal or sign at intersection
__ Lengthen yellow phase at signalized intersection
__ Install or lengthen pedestrian walk signal
__ Median barrier __ Reflectors on curve
__ Snow removal __ Improve road skid resistance
__ Separate pedestrian walkway from road
__ Reflectors on vehicles or clothing
__ Lighted roadway __ Curb to limit road access

__ Other (What? _____)
__ additional observations

Appendix 7-2. Apparently Unintentional Poison

Community _____ Census tract _____

Address _____

Severity: ___ fatal ___ hospitalized ___ ambulatory (loss of consciousness and/or immobilization only, exclude others)

Age ___ Gender: M___ F___

Type of Poison (check as many as apply)

Prescription opioid generic and brand names -- morphine, codeine, methadone, Oxycodone (OxyContin, Percodan, Percocet), hydrocodone (Vicodin, Lortab, Norco), fentanyl (Duragesic, Fentora), hydromorphone (Dilaudid, Exalgo), and buprenorphine (Subutex, Suboxone)

___ Legally obtained prescription opioids

___ Illegally obtained prescription opioids

___ Cocaine ___ Heroin ___ Alcohol ___ Methamphetamine

___ Household chemicals ___Other __ What? _____

Place: ___ Home ___ Other household ___ Motor Vehicle __ Street ___ Other

___ Number of other people involved in drug use at the scene

Modification that might have reduced injury or severity: (check as many as apply)

___ Earlier administration of naloxone (opioid blocker)

___ Better diagnosis of pain and use of alternative pain medications

___ Pharmacist monitoring of multiple prescriptions

___ Physician monitoring of multiple prescriptions

___ Increase dose-response information regarding lethality on drug packaging

___ Increased enforcement of laws against illegal drug and alcohol sales

___ Locked storage of drugs and other poisons

Appendix 7-3. Burn or Smoke Injury

Community _____ Census tract _____

Address _____

Severity: ___ fatal ___ hospitalized ___ ambulatory (loss of consciousness and/or immobilization only, exclude others)

Age ___ Gender: M___ F___

Victim sleeping when fire began? ___ yes ___ no

Place of fire: __ home __ car __ other (Where? _____)

If home, number of door exits to the home? ____

Location of the victim ___ bedroom ___ living room ___ bathroom ___ kitchen ___ Other (Where? _____)

Ignition or heat origin: __ cigarette __ cooking unit __ wood burning stove space heater __ kerosene space heater __ other space heater __ chimney __ electrical wiring __ arson __ household water __ food or drink __ other (What? _____)

Material first ignited: __ chair or sofa __ bed __ loose papers __ clothing on person __ other clothing __ house framing __ cooking grease __ other (What? _____)

If in a building, smoke detector installed? ___ yes ___ no

If yes, did detector give alarm? ___ yes ___ no ___NA

Was a fire extinguisher available? ___ yes ___ no

If yes, was it used? ___ yes ___ no ___NA

Modification that might have reduced injury or severity:
(check as many as apply)

___ additional exit ___ fire ladder
___ smoke detector ___ batteries in detector
___ fire extinguisher ___ sleeping nearer exits
___ fire resistant clothing ___ fire resistant furniture
___ fire resistant mattress or sheets
___ automatic sprinkler system
___ properly installed cooking unit
___ properly installed wood stove
___ properly installed kerosene heater
___ cleaned chimney ___ reduced hot water temperature
___ less tip-prone food or drink container
___ other (What? _____)

Appendix 7-4. Drowning or Near Drowning

Community _____ Census tract _____

Directions to Location

_____

_____

_____

Appendix 7-4. Drowning or Near Drowning
Community _____ Census tract _____
Directions to Location
_____
Severity: __ fatal __ hospitalized __ ambulatory (loss of consciousness only -- exclude others)
Age ___ Gender: ___M ___F
Victim know how to swim? __ yes __ no
Water temperature at time of the incident? ___
Body of water involved: __ bathtub __ supervised beach __ unsupervised beach __ river nonbeach __ lake nonbeach __ ocean nonbeach __ irrigation ditch __ drainage ditch __ swimming pool __ flood __ other (What?_____ _____)
Watercraft involved: __ none __ motorboat __ sailboat __ surfsail __ rowboat __ canoe __ motorized raft __ nonmotorized raft __ other (What?_____)
Preventive gear available: __ lifeline __ life jacket
__ floating cushion __ nonsinkable boat __ fenced area __ flares __ boat to shore communication
__ other (What? _____)
Modifications that might have prevented the incident or reduced severity:
__ fenced swimming pool __ other fencing
__ lifeline __ life jacket __ floating cushion
__ non sinkable boat __ supervised swimming area
__ flood warning and evacuation __ flare
__ boat to shore communication
__ Other (What? _____)
___ Additional observations

Appendix 7-5. Injury from a Fall

Community _____ Census tract _____

Directions to the site

_____

_____

_____

Severity: ___ fatal ___ hospitalized ___ ambulatory (include only if loss of consciousness or fracture)

Age ___ Gender: M___ F___

Type of fall: ___ same level ___ different level

(approximate number of feet ___)

Same level location: ___ bathtub ___ other bathroom ___ bedroom ___ kitchen ___ living room ___ basement ___ attic ___ home yard ___ sidewalk ___ street ___ public building ___ private building ___ sports field ___ other (Where? _____)

not applicable___

Different level location: ___ exterior stairs to house entrance ___ stairs to upper floors ___ stairs to attic ___ stairs to basement ___ stairs in public building ___ stairs in nonresidential private building ___ home porch or landing ___ window ___ roof ___ tree ___ cliff or other drop off ___ ladder ___ horse ___ other (Explain: _____)

Modification that might have prevented injury or reduced severity:

___ skid strips in tub ___ skid strips on stairs ___ nonskid rug ___ nonskid shoes ___ handrail ___ snow or ice clearance ___ soft carpet ___ stair repairs ___ fence or other barrier ___ sports equipment (What type? _____)

___ other (What? _____)

___ Additional observations

Appendix 7-6. Assault Injury
Community _____ Census tract _____
Directions to the site
_____
_____
_____
Severity: ___ fatal ___ hospitalized ___ ambulatory (include only if loss of consciousness or fracture)
Age ___ Gender: M___ F___
Where did the assault occur? ___ home ___ other house ___ bar ___ other business ___ elsewhere
Assailant relation to the injured? ___ spouse ___ father ___ mother ___ child ___ sibling ___ other family ___ acquaintance ___ stranger ___ unknown
Weapon used in the assault? ___ body (fists, feet, etc.) ___ gun ___ knife ___ other sharp object ___ blunt object ___ fire or heat ___ poison ___ other (What?_____)
Apparent reason for the assault? ___ rage ___ robbery ___ mental illness ___ other (What?
(_____)
Modification that might prevented injury or reduced severity:

___ limit number of drinks purchasable in bars
___ metal detector at door of bar and refuse service to those armed with gun or knife
___ do not allow bottles that shatter as containers for alcoholic beverages
___ provide lighting in high risk area ___ arrest of the assailant involved in previous incident ___ remove assailant from the home
___ remove person assaulted from the home
___ Other (What? _____)

Additional observations:

Appendix 7-7. Self-inflicted Injury
Community _____ Census tract _____
Directions to site
_____
_____
_____
Severity: ___ fatal ___ hospitalized ___ ambulatory
(include only if loss of consciousness or fracture)
Age ___ Gender: M ___ F___
Where did the attempt occur? : ___ home ___ relatives home ___ other home ___ jail ___ other public building or business ___ out of doors ___ other (Explain _____)
Weapon used: ___ gun ___ knife ___ other sharp instrument ___ carbon monoxide ___ prescription drug ___ other drug ___ other poison ___ rope ___ jump ___ other (What? _____ _____)
Circumstances: ___ physical illness ___ mental illness ___ copying recent real event ___ copying television or movie event ___ copying other fictional event ___ financial loss ___ reaction to rejection by spouse or lover ___ reaction to difficulty with other family member ___ other (What? _____)
Modification that might have prevented injury or reduced severity:
___ encourage seeking of treatment for depression
___ increase awareness of depression symptoms in families and sources of help especially if friend or popular figure recently attempted suicide
___ encourage families with depressed members to limit access to guns, drugs, etc.
___ encourage families not to leave depressed members alone in circumstances or areas where previous suicide attempts occurred
___ reduce incarceration for non- serious offenses that result in jailhouse suicide attempts
___ increase surveillance of incarcerated persons
___ other (What? _____ _____)
__ Additional observations

Appendix 7-8. Other Severe Injury

(Use specified form for motor vehicles, poison, drowning, fire, falls, assaults, and suicide attempts; this form is for other injuries that were hospitalizations, fatalities and ambulatory cases that involved loss of consciousness, fractures or worse conditions)

Community _____ Census tract _____

Directions to the site

_____

_____

_____

Severity: ___ fatal ___ hospitalized ___ ambulatory fracture or lost consciousness

Age ___ Gender: M___ F___

Type of energy that caused the damage to the person:

___ Mechanical ___ Heat or lack ___ Chemical

___ Electrical

What conveyed the energy to the person (be specific; e.g., if farm tractor, machine, or other product, give make, model, moving part that caused injury):

_____

_____

_____

_____

List as many strategies you can think of that could be employed to reduce the incidence or severity of this type of injury in the future?

_____

_____

___ Additional observations.

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