Economic Impact of Alcohol-Related Injury to the Bristol Bay Area Health Corporation.

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Introduction:

Bristol Bay Area Health Corporation (BBAHC) is a tribally operated service unit of the Alaska Area Native Health Service under the Indian Self Determination Act. The Bristol Bay Area covers much of southwest Alaska including the Alaska peninsula and the southwest coast reaching to the Bering Sea.

This 46,000 square mile area contains 32 villages with a total of 7300 inhabitants. Native Americans, primarily Eskimo, Athabascan and Aleut make up 68% of this population. The economic mainstay of the area is commercial salmon fishing, supplemented by subsistence hunting and fishing. Tourism is becoming an increasingly important economic resource. There are few roads in the area and inter-village travel is primarily by light aircraft, boat, ATV and snowmachine.

Medical care is provided primarily by Kanakanak Hospital in Dillingham, 2 sub-regional clinics and 26 village health clinics. Camai Clinic, a privately operated facility, also helps provide coverage to the eastern portion of the region.

As a newly hired injury prevention specialist for Bristol Bay Area Health Corporation in the fall of 1992, I was charged with setting up and operating a severe-injury surveillance system. As my work progressed, it became apparent that alcohol-related trauma was a major problem and a severe drain on corporate resources.

The link between alcohol use and trauma has been well documented (Robertson, 1992), and, as various methods of surveying the problem were considered and attempted, the tremendous costs associated with alcohol-related injuries became apparent. I began to document the economic impact of alcohol to the city of Dillingham and produce and distribute quarterly memos to involved agencies. The cost estimates reported in these memos were superficial and hastily gathered but never the less resulted in increased public awareness. Response to the publicizing of these costs gave rise to the desire to attempt a careful and comprehensive description of alcohol related trauma costs to the Bristol Bay Area.

Methods:

An injury surveillance system was implemented for fiscal year 1993. Severe injuries were defined as those resulting in death, aero-medical transport (medevac), hospitalization, transport (by ambulance or air in region), fracture or mammal bite. Documented alcohol-related injuries were compiled and cost figures were applied. An alcohol-related injury was identified as an injury occurring when the victim or the person causing the injury was impaired by alcohol as documented by the ambulance run report, emergency room log, medical record or the investigating officer. Alcohol overdoses (alcohol OD) were also included.

The decision was made to include alcohol overdoses for three reasons; (1) They are brought to the hospital emergency room and seen by a physician only after they have attained a blood alcohol level of .25 or greater; (2) They are admitted only if in the judgment of a physician it is medically necessary (Offen et al. 1993); (3) ICD9 E Code 860 covers accidental poisoning by alcohol. Other ICD9 codes are used to reflect the role of alcohol in trauma (Middaugh et al. 1991).

An attempt was made to include all severe injury and death in the surveillance; however, medical personnel estimate the loss of documentation of injuries to be as high as 35%. Injuries requiring hospitalization from the eastern portion of the region are often medevaced to Anchorage without being routed through Kanakanak Hospital in Dillingham. Documentation of death is believed to be complete.

Fatal-injury data was compiled and the years of potential life lost (YPLL) was calculated. Loss of income was computed using the standard 65 years and discounting to present value (Rice and MacKenzie, 1989). Village-specific per capita income (Alaska Department of Labor, 1991) was applied, and the average inflation figure from

the United States Consumer Price Index for the 10 years preceding 1994 (3.9%) was used for discounting purposes. No attempt was made to add a housekeeping figure to the costs.

The nonfatal injuries were also analyzed and direct costs were applied using the Kanakanak Hospital fee schedule and the standard Indian Health Service fee schedule. Due to an endemic rabies problem in the wild fox population of the Bristol Bay region, the threat of rabies of each mammal bite is investigated by a field sanitarian. The average time of investigation (1 day) has been added to the cost of a mammal bite. Only acute costs to BBAHC were documented. Initial transport was not calculated due to the difficulty of determining what person or agency paid for the transport. No contract health-care costs were available for the BBAHC or Anchorage service unit.

Results:

There was a total of 468 injuries documented by the surveillance system during FY93. Two hundred fifteen (46%) of these were determined to be alcohol related. Using the calculations mentioned above, the total cost came to just over 2.5 million dollars (Table I).

Table I: Alcohol Injury Costs

Death	$ 2,355,850
Medevac (incl. acute emergency care)	$ 12,000
Hospitalized	$ 41,000
Alcohol OD	$ 126,290
Transported	$ 7,170
Fracture	$ 817
Mammal bite	$ 317
Total	**$ 2,543,444**

Discussion:

The 2.5 million dollar cost of alcohol-related injury appears high. However, as I looked at the data, especially on fatalities, a startling trend appeared. There were 21 injury deaths, 11 of which were alcohol related. Ten of the 11 alcohol related were Native. The Alaska Native population comprises 68% of the total. Therefore, with a total of 468 injuries, we would expect 318 to be Native. The actual number of Alaska Natives was 372 or 79% of the total. Based on the same percentages, we would expect to find 146 Native and 69 non-Natives in the injury-related-to-alcohol category. In reality there were 198 (92%) Natives and 17 non-Natives (Table II). If we remove the alcohol OD from the above totals, Alaska Natives still comprise 88% of alcohol-related injuries. Ninety-four percent of alcohol overdoses were Alaska Natives. Crude injury death rates were calculated to be 288 per 100,000. That is over 4.5 times higher than the national average of 62 per 100,000 (Baker et al.1992).

Table II: Number of Alcohol-Related Injuries by Race

	Total Number	Alaska Native	Non native
Death	11	10	1
Medevac	4	4	0
Hospitalized	27	26	1
Alcohol OD	138	130	8
Transported	33	26	7
Fracture	1	1	0
Mammal Bite	1	1	0
Total	**215**	**198**	**17**

Conclusions and Recommendations:

The costs of acute hospital care were very difficult to obtain for a variety of reasons.

This study should be repeated with increased emphasis on documentation of all attributable costs.

The preponderance of Native Americans with alcohol-related injuries may mean that programs and methods of dealing with the native alcohol problem are not fully effective, even though the BBAHC Alcohol Program's budget exceeded $1,000,000 in FY93. The effectiveness of this and similar programs should be scientifically evaluated. Planning for culturally effective, coordinated methods needs to be undertaken. In addition, a study of those individuals admitted as alcohol OD's should be undertaken to determine if they are at greater risk for trauma and death than the population at large.

Methods to limit the accessibility of alcohol should be explored. As the cost of alcohol rises, the consumption seems to decline (Distilled Spirits Council of the United States). Also the State of Alaska has estimated that as much as $13.42 is spent for each $1.00 of revenue collected for alcoholic beverages (Alaska Office of Alcohol and Drug Abuse, 1989). Therefore, I believe a correct start might be to raise the tax on alcohol. This would limit consumption, help replace revenue spent on alcohol mitigation from other sources, or both.

Alcoholic beverage-server training has been shown to have a limiting effect on the serving of intoxicated patrons and is a viable strategy in reducing the risks associated with drinking to intoxication (Echavarria, 1991). However, this training should be made mandatory, possibly in conjunction with licensing bartenders. This would provide an important tool for the enforcement of the law making it illegal to serve intoxicated persons.

There are currently positive signs of desire for change. Senate Bill 42 allowing the taxation of alcohol at a rate above regular sales tax has been introduced in the Alaska Senate by the Bristol Bay area Senator. The Dillingham (largest city in region) city council has formed an alcohol task force to address city alcohol problems. Previous task forces have been formed by concerned groups. However, this is the first group mandated by a government body. I attribute a portion of the current concern and interest to my quarterly publication of costs associated with alcohol injury.

References

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APPENDIX I: **Bristol Bay Area Health Corporation Injury Surveillance Procedure**

GOAL

Carry out an epidemiological study of serious injuries of the BBAHC area residents in order to determine programs and priorities to mitigate mortality and morbidity due to injuries.

Objective 1: Establish an on-going injury surveillance program (priority 1)
Objective 2: Do a retrospective study as inclusive as practical
Objective 3: Use data from the study to design programs to minimize and mitigate injuries
Objective 4: Use the study data to evaluate the effectiveness of injury prevention programs

DATA SOURCES

1. Kanakanak Hospital Patient Records
2. Alaska State Troopers
3. Dillingham Police
4. Bristol Bay Borough Police
5. Dillingham Volunteer Rescue Squad
6. Bristol Bay Borough EMS Program
7. BBAHC CHAP Program
8. Bristol Bay VPSO Program
9. U.S. Coast Guard
10. U.S. Census - June 1991 Compilation
11. BBAHC Environmental Health Program
12. Chignik sub-regional clinic, BBAHC
13. Coroners in the appropriate area
14. Other ie. Park Service, ADF&G, U.S. Fish and Wildlife, etc.

QUALIFIERS

1. Origin, i.e. Alaska Native, Non Native, Outsiders (not from Alaska)
2. Age
3. Alcohol Involved
4. Injury Mechanism
5. Circumstances of incident
6. Sex
7. Date, time and day of week

PROCEDURES (to be updated as system is used and modified)

1. During the first week of each month the Community Injury Prevention Specialist will review the Emergency Room Log at Kanakanak Hospital for serious injuries
2. Other data sources will be contacted as necessary and practicable
3. Injuries will be annotated on the enclosed form
4. Injuries will be compiled and indicated on a pin map
5. U.S. Census data will be used to Determine incidents per (appropriate) unit of population
6. Serious injuries will be classed as:
   A. Death B. Medevac (out of region) C. Hospitalization D. Transported (ambulance and air)
   E. Fracture F. Unconscious G. Mammal Bites
7. The study will run concurrently with the BBAHC fiscal year; October 1st through September 30th. This will allow data to be gathered for a full winter.
8. The community Injury Prevention Specialist will **ASSURE CONFIDENTIALITY**:
   1. Maintain materials in a locked file when names are paired with the data sheet for the initial investigation
   2. Remove the names before filing, compiling data etc.
9. Years of potential life lost will be calculated by using the standard 65 years