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3 Wheeler (ATV) Injuries in Alaska 1983-1984

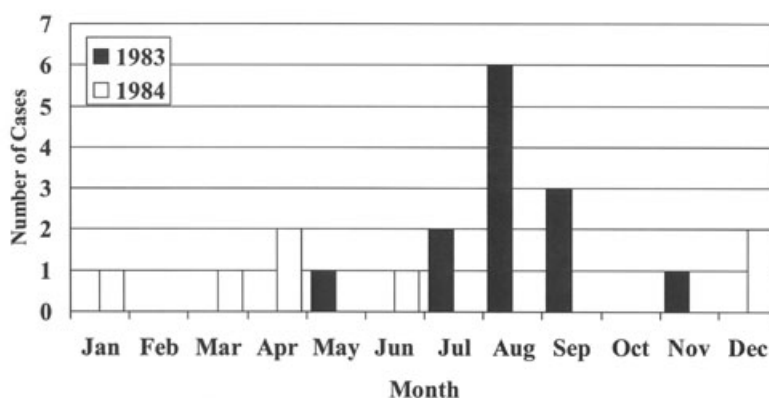
In Alaska at least 20 deaths and 538 injuries-6 of them permanently disabling neurological injuries-were associated with 3-wheel all-terrain vehicles ("3-wheelers" or ATVs) from January 1983 through December 1984. These are the preliminary data from an ongoing statewide study conducted by the Alaska Division of Public Health with the assistance of the Centers for Disease Control.

Of the 20 fatalities, 11 (55%) were males. Ages at death ranged from 12 to 53 years; 15 (75%) were in the 15-34 year age group. Eleven (55%) deaths occurred during a 3-month period in 1983 (Figure 1). No similar cluster was observed in 1984. All but 3 fatal incidents occurred in the southcentral and southwestern portions of the State. Of the 20 fatalities, 10 died as a result of a direct impact to the head but only two wore helmets (Table 2). Four others died after being knocked unconscious; two drowned in shallow water, one landed face down in sand, and one died because the machine's handlebars compressed the trachea. Twelve of the 20 fatalities might have been prevented by wearing a helmet. Nineteen of the victims were operators of the vehicle; in one instance both the driver and his passenger were killed.

Blood alcohol levels were measured in 11 individuals who survived less than 4 hours following injury. In 8 individuals, the BAC exceeded 100mg%, the level of intoxication. Two others had blood alcohol detected, but at levels below 100mg%. In 9 instances, blood alcohol either was not measured or persons died 4 or more hours following injury so blood alcohol concentrations (BACs) obtained at autopsy may not reflect accurately the BAC at the time of the incident.

All individuals admitted to the hospital for ATV-associated injuries were identified. Medical records from all Indian Health Service Hospitals and from 2 of the 3 major private referral hospitals in the State were reviewed. During the two-year period, 324 patients were hospitalized for ATV-related injuries, with the average duration of stay being 8.5 days. Of the 324 hospitalizations, 113 (35%) occurred as a result of fracture/dislocations of the lower extremity.

Three Wheeler Fatalities - Alaska N=20



Six patients, ranging in age from 21 to 51 years, were hospitalized as a result of severe head or spinal cord injuries, are now permanently disabled, and will require long-term skilled care. In one private hospital, 43 of 65 (66%) inpatients required a surgical procedure under general anesthesia. Although data on outpatients are far less complete, 214 ATV-associated injuries have been documented during the study period (Table 4).

Based on the current estimates for hospital care in Alaska (average of \$578 per inpatient day), ATV-associated injuries accounted for about \$1.6 million in health care dollars spent for inpatient care alone during 1983-84. Using estimated costs of basic care for residents of a large long-term care facility in Anchorage (\$4800 per month), the 6 permanently disabled victims may require additional expenditures of \$11.5 million for basic long-term skilled care if each lives to age 65. This figure does not include costs for physician's fees, medications, occupational therapy, physical therapy, recreational therapy, or speech therapy.

The Alaska Department of Public Safety and Department of Transportation (DPS/DOT) received reports of 234 incidents involving 304 injured riders or property damage associated with ATV use during the same period. Reports from DPS/DOT were used to characterize riders, vehicles, and environmental conditions involved in fatal and non-fatal ATV incidents that were investigated by police. Persons in the 10-14 year old age group (24%) were most frequently involved in incidents reported to DPS/DOT. More than twice as many males as females were reported.

Although these vehicles are marketed for off-road use, 63% of incidents occurred on designated roadways. Vehicles were most frequently moving straight at a constant speed (57%), rather than changing speed or direction prior to the event. The most frequent contributing factors cited by police were alcohol (20.3%), speeding (16.2%), driver inexperience (12.6%), and driver inattention (11.3%). Only 9.1% of riders wore helmets at the time of the incident. Although all ATV models are designed for use by a single rider, 29.1% of incidents reported by police involved multiple riders.

Injuries are the leading cause of premature mortality as years of potential life lost (YPLL) in the United States. Mortality associated with unintentional injuries is the leading cause of YPLL in Alaska and is influenced by the age structure of the State (median age = 26.3 years). During 1983-84, fatal injuries due to transportation and recreational vehicle crashes accounted for 353 (9.1%) of 3881 deaths in Alaska: 285 (7.3%) automobile and truck collision fatalities, 38 (1.0%) aircraft crash fatalities, 19 (0.5%) ATV - associated fatalities and 11 (0.3%) fatalities resulting from snowmachine use. In addition to the premature mortality associated with ATV use, related non-fatal injuries result in substantial costs for both individuals and society.

Potential risk factors for injuries associated with ATVs include alcohol use, failure to use helmets, rider inexperience and

inattention, and excessive speed. These factors as well as vehicle use patterns and vehicle characteristics must be evaluated as part of a rational approach to plan intervention strategies. Injury investigations such as this one can lead to development and implementation of comprehensive injury surveillance systems to learn about causes and risk factors in order to prevent injuries.

Three-Wheeler Incidents - Alaska 1983-1984		
Fatalities by Cause of Death		
Cause of Death	Number	%
Impact to head	10	(50.0)
Impact to trunk	3	(15.0)
Drowning	3	(15.0)
Asphyxiation	2	(10.0)
Hypothermia	1	(5.0)
Unknown	1	(5.0)
Total	20	(100.0)

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