

EMERGENCY MEDICAL SERVICES

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A. Description:

An Emergency Medical Services (EMS) system is a comprehensive and coordinated integration of resources and functions, which include 14 *attributes* (or 10 *components*) which are currently defined by the National Highway Traffic Safety Administration (NHTSA) and the Health Resources Service Administration (HRSA).¹ Examples of attributes and components include manpower, medical direction, communications, professional training, community education, injury prevention, information systems and evaluation, and rehabilitation. To be most effective, EMS must be fully integrated into the overall health system. This is the stated goal in the 1996 NHTSA/HRSA reference document *The EMS Agenda for the Future*.²

The standards for the daily operations of the EMS program are outlined in Part 3 of the *Indian Health Manual*, Chapter 17. The Health System Planning (HSP) Process will be used to establish the size and design criteria for health care construction of the proposed EMS program. The additional EMS need for equipment, education, ambulance bays, helicopter landing area and substations, nuclear biological and chemical decontamination and treatment are not addressed in this document but will be addressed in the HSP. Major components of an EMS system are emergency response and inter-facility transport. Emergency (911) response is organized to respond to medical and injury-related emergencies in a timely manner, regardless of the cause of the emergency or the patient's race, nationality, or ability to pay.³ The intent of the system response is to optimize the outcome of the individual(s) involved by minimizing the physical, emotional and financial impact of the emergency. After stabilization at an initial facility, transport to another facility capable of a more specialized level of care is sometimes necessary.

In general, an EMS response can be Basic Life Support (BLS), Advanced Life Support (ALS), or both depending on the skill level of the available personnel and the needs of the patient. While urban EMS systems provide both BLS and ALS responses in a tiered fashion, rural EMS systems provide primarily BLS response with limited ALS availability. The efficiency of urban systems is driven by "system status management;" no similar model exists for management of rural EMS. System status management utilizes computer-aided EMS workload data to project staffing needs and optimum ambulance unit location for a given shift. A similar model for rural EMS would have to incorporate rural addressing and call location by Geographic Information Systems/Global Positioning Systems (GIS/GPS).

An EMS program is often health-care facility based or affiliated, and the majority of the patients cared for by the EMS are transported into and out of this facility. An EMS program covers a

clearly defined geographic area of primary responsibility, and also includes the intent to respond outside this area when an adjacent service calls for mutual aid. The ambulance service is for pre-hospital response to 911 calls or in response to requests for inter-facility transports of patients; it is not for patients with non-urgent or non-emergent transportation needs. Pre-hospital response is provided primarily by Ground Ambulance (G) and in some cases Rotary Wing (RW) aircraft. Inter-facility transport is provided by a variable combination of G, Fixed Wing (FW) aircraft, or RW aircraft. In the Indian Health care system, tribal EMS programs are funded in part by Public Law 93-638 contracts or compacts. Contracts typically define the Scope of Work; as pre-hospital response, inter-facility transport, or both. Historically, Contract Health Services funds have been used to purchase a percentage of pre-hospital responses and inter-facility transports that are not provided by the IHS or tribal EMS programs.

In addition to direct patient care duties, EMS personnel are also involved in daily equipment maintenance and restocking when not involved in direct patient care. Due to population density, rural EMS are less busy than urban services, and EMS personnel may have periods of time with no patient care contact. EMS personnel, like other public safety entities, are expected to always be available, and **are paid for readiness**. The fact that they are not immediately involved in a patient transport should not be viewed negatively. Other activities in which they are appropriately engaged include continuing education, community education (e.g., CPR), injury prevention, assisting in patient care in the Emergency Department setting, and performance improvement.

This EMS module assumes that coverage will be available for the entire service area on a full time, uninterrupted basis 24 hours a day, 7 days a week, 365 days a year (24/7/365). While all EMS components and attributes should be included as part of the facility EMS Program, this module focuses specifically on the personnel and ambulances needed for pre-hospital response and inter-facility transport.

Ideally, nationally accepted and utilized staffing standards should be used to determine EMS personnel needs. Such standards would specify what emergency medical services are needed in quantifiable terms, and would identify measures to assist planners in determining operational system components. An extensive search for such rural EMS staffing standards has been recently conducted by IHS and contracted EMS professionals; they attempted to locate such standards using a variety of methods, and were unable to find any. There is a full discussion of the approach taken in the Methodology section (p.13-15) of their report, *Quantifying the Unmet Need in IHS/Tribal EMS (1999-2001)*. In essence, there are no widely known, accepted or utilized rural EMS staffing standards by the national EMS community. In the past, EMS staffing needs were based on an estimation of EMS workload. In absence of precise EMS data, the authors of the previous EMS RRM (1983, 1986) utilized the surrogate of “EMS Admissions” for the EMS workload, based on the presumed relationship between admission diagnosis acuity and the likelihood of arrival by ambulance. Given the absence of staffing standards, the present RRM will utilize a combination of multiple factors to define staffing needs; these factors include required hours of coverage (24/7/365), population served, square kilometers covered, and workload data (if available).

This module calculates EMS staffing needed for ground ambulance personnel, ambulances, and the necessary associated clinical, managerial, and support staff for tribal or IHS EMS programs.

It takes into account the likelihood that a percentage of the EMS may be provided by a non-tribal or non-federal contract or open market vendors utilizing Contract Health Services dollars. Lastly, it includes the annual fiscal outlay for leased ambulance vehicles to perform pre-hospital response or inter-facility transport for direct service EMS programs.

B. Variables: The variables are the bullets contained in the three categories

IHS or Tribal (I/T) Services

- Percentage of EMS runs provided by an IHS or tribal program (**Percent I/T EMS**)
- Total Population served by EMS (**Total Population**)
- Total Area to be served (**Square Kilometers Served**)
- Pre-hospital Responses and Inter-facility Transports performed by the EMS in a year (**I/T Annual Runs**)

Purchased EMS

- Percent of EMS runs purchased with CHS funds and alternative resources from private sector EMS (**Percent Purchased EMS**)
- Run Rate per 1,000 population served (**EMS Runs / 1000 Pop**)
- Average CHS cost per transport (**Average CHS \$ / Service**)
- Pre-hospital Responses and Inter-facility Transports paid for by CHS and alternate resources in a year (**Purchased Annual Runs**)

Ambulances

- Vehicle to FTE Ratio (0.11)
- Vehicle Annual Lease Cost

C. Staffing Criteria:

1. Emergency Medical Technicians (EMTs)

EMTs are classified as BLS and ALS (See Personnel Criteria, below). In most states, two EMTs are required by law to respond to a “911” call for pre-hospital care. In some rural states, one EMT is allowed to respond in an ambulance, but two are required to transport a patient. In order to meet the uniform state requirement two EMTs must be present to transport a patient(s) and to provide continuous coverage (24/7/365), nine (9) FTEs are the minimum number needed. This figure is derived from the following calculations:

- ◆ The base number of hours required for one person to provide this continuous coverage is 8,760 hours per year (=24 hours/day X 365 days/year).
- ◆ Assuming that 1.0 FTE works 40 hour work week, he or she works 2,080 hours/year (40 hours/week X 52 week/year), without accounting for utilization of leave or holidays.
- ◆ Given a mixture of employees with variable seniority, the following average number of hours is subtracted from the base: 2,080 – 104 (sick) – 104 (annual) – 48 (holiday) – 40 (education) =1,784 of actual hours worked per year.

- ◆ For one person to cover 8,760 hours per year continuously, 4.4 FTEs are required. (8,760/1,784 =4.4)
- ◆ For the required two person coverage, 8.8 FTEs are needed.

This module provides a minimum of 9 full time EMTs, and does not include or require overtime for the primary crew. When a second (backup) crew is activated, standby pay may be required.

2. EMT Supervisor (Service Director)

Every program must have a supervisor, regardless of size. The supervisor is responsible for the management and operation of that service. For programs with 22 staff or less, 1 supervisory position is required. For programs with 23 to 43 staff, 2 supervisors are required. For programs with 44 or more staff, 3 supervisors are required.

3. EMS Clerk (Secretary, Billing Officer)

Every service must have a clerk, regardless of size. The clerk minimally collates run sheets, gathers and tracks run and system data, and organizes billing services. If the service is very large, additional clerks will be needed for billing services.

4. EMS Medical Director

Medical Direction for EMS programs is required by state law and is addressed in the IHS Manual of Clinical Services, Chapter 17, "Emergency Medical Services." In addition to staffing required for the EMTs and support staff, 0.2 FTE for Off-line Medical Direction has been incorporated into the Resource Requirement Methodology Module under the Ambulatory Care worksheet.

4. Certified Emergency Medical Dispatcher (EMD): No EMDs are planned as part of the staffing module, unless the annual run volume is greater than 3,500. If the run volume is less than 3,500, then EMDs must be requested as a staffing criteria deviation.

Urban EMS systems that serve large population centers have Public Service Answering Points (PSAP) which direct calls to EMDs who are trained to give the caller pre-arrival instructions. Rural EMS that serve large populations and have proportionately large annual run volumes should have certified EMDs. At the present time, most tribal EMS do not; in fact, based on the 2001 IHS EMS Unmet Needs survey,⁴ only three services do. In a sparsely populated rural or frontier area, the expense and technical requirements will be considerable, while the call volume will be low. While establishment of such a program would provide improved public service, it would not be cost effective. At the present time, law enforcement (tribal, BIA, or county sheriff) dispatchers are able to dispatch EMS directly. While Tribal and BIA law enforcement dispatchers are not certified EMDs, standard training at the BIA Indian Police Academy in Artesia, NM includes three components; law enforcement, emergency medical services and fire dispatch. Sixteen to eighteen hours of the two and a half week curriculum is dedicated to EMS dispatch. Training law enforcement dispatchers to act in the dual role of EMD is perceived as conflicting with their primary responsibility in communicating with police officers and ensuring their safety. Lastly, some facilities train and utilize the hospital switchboard operators to be

EMDs; this dual role is not recommended. In-house hospital emergencies and 911 calls can occur simultaneously, and both require immediate priority response. A real conflict and communication bottleneck would occur if, for example, the same person was responsible for handling 911 dispatch calls related to a Mass Casualty Incident, and for activating the hospital's external disaster at the same time. As a result of considering all these factors, EMDs are not planned as a part of this module. All services are encouraged to integrate with the state and county EMS dispatch system which may provide rural EMD services.

Staffing Deviation for EMD

If an Area feels EMDs are warranted when planning a facility, a deviation must be requested through the proper channels. If the Area has requested a deviation and has received approval from OCPS, Headquarters, an EMS program will utilize certified EMDs for giving pre-arrival instructions and ambulance dispatch.

The following criteria must be met and addressed in the justification for the deviation:

1. A request for deviation will be considered if the annual run volume is greater than 3,500.
2. The 911 system (not just a 911 number) infrastructure must exist as a prerequisite.
3. A cost analysis of the proposed use of EMDs must be completed and should include the following elements:
 - a) Personnel (five minimum), and their training and education (initial and continuing)
 - b) Space for operating the dispatch center
 - c) Dispatch telecommunications equipment (switchboard, radio compatible with state EMSCOM and the EMS frequencies, the adjacent EMD centers and other public safety entities)
 - d) Pre-arrival instruction software or hard copies/flip charts of the instructions (the state and/or county should be consulted regarding what they use)
 - e) Computer for the software mentioned above and for record keeping as a dispatch log
 - f) Increased time of the medical director, above the .2 FTE recommended.
 - g) Standard dispatch textbook resources including hazardous material and bioterrorism references (5-10)
4. Participation in the state's existing EMS dispatch system must be incorporated into the proposal.
5. Utilization of the NHTSA reference; *Emergency Medical Dispatch Program Implementation and Administration, Managers Guide*,⁵ as the resource document.

D. Personnel Categories

Basic Life Support (BLS) Emergency Medical Technicians (EMT) are licensed as EMT-First Responders (EMT-FR) and EMT-Basics (EMT-B).

EMT-FR and EMT-B are standard Scopes of Practice presently defined in the NHTSA document, *The National EMS Education and Practice Blueprint*,⁶ and correlate with the same designations by the National Registry of Emergency Medical Technicians (NREMT). Most, but not all states use this nomenclature; some states use unique nomenclature, which still

corresponds to these Scopes of Practice. The personnel nomenclature used should be the one(s) which the local EMS system is using, and should correspond to the state in which personnel are licensed.

Advanced Life Support (ALS) Emergency Medical Technicians (EMT) are licensed as EMT-Intermediates (EMT-I) and EMT-Paramedics (EMT-P).

EMT-I and EMT-P are standard Scopes of Practice presently defined in the NHTSA document, *The National EMS Education and Practice Blueprint*, and correlate with the same designations by the National Registry of Emergency Medical Technicians (NREMT). Most, but not all states use this nomenclature; some states use unique nomenclature, which still corresponds to these Scopes of Practice. The personnel category used should be the one(s) that the local EMS system is using, and should correspond to the state in which personnel are licensed.

A given service will have a variable combination of BLS and ALS personnel. Many rural EMS are predominately BLS, while some are varying combinations of BLS and ALS. Some EMS specialists argue that the standard for rural EMS should be ALS due to the geography and scarcity of medical services. Planners should note that this model assumes that the level of service is at least 50 percent ALS—i.e., at least half of the EMTs are EMT-I or EMT-P, and the remaining half are BLS providers. In order for a service to advertise itself to the community as an ALS service, an ALS EMT must be working every shift. EMS program managers should be consulted regarding the current distribution of scopes of practice as facility planning documents are prepared.

EMS Director or Supervisor: Each EMS service will require a supervisor for management of operations.

EMS Clerk: Each EMS service will require a clerk for secretarial duties, data collection regarding the EMS run volume, and billing management. For larger services, more than one clerk will be needed for billing services.

In this module, a baseline EMS program will minimally include the following personnel and ambulances

- 9 EMTs
- 1 EMT Director, or Supervisor
- 1 EMS Clerk
- 1 EMS Medical Director (.2 FTE for Off line direction has been incorporated into the RRM under the Ambulatory Care Worksheet)
- 2 Ambulances

E. Discussion

The module is composed of three fundamental components with associated dependent variables; these components are:

1. I/T EMS
2. Purchased EMS
3. Ambulances

Each dependent variable has a weighted relative value that is used to derive associated personnel needs. The cost associated with each one of the three components is calculated individually, and then all component costs are combined to arrive at the Total Annual EMS Needs (in dollars).

In order to accurately define the facility EMS workload and cost, all pre-hospital and inter-facility transports done by the IHS or Tribal EMS (I/T Annual Runs) and by any contractor or vendor (Purchased Annual Runs), regardless of means of transport—ground, FW or RW aircraft—must be identified. (In EMS language, a “run” is the same thing as a transport.) With regard to purchased runs, care should be taken to identify all transports paid for by CHS and alternate resource dollars, in order to capture the total EMS workload. Similarly, the total EMS workload (100 percent) should represent the sum of the Percent I/T EMS and Percent Purchased EMS by CHS. The percentages in these definitions are intended to be the *percentage of runs*, and not the percentage of cost. The most accurate accounting of all of these variables will represent the true EMS workload and cost.

Example: During FY 2002, there were a total of 2,000 runs; the tribal EMS program did a total of 1,500 runs, CHS paid for 350 and alternative resources paid for 150 runs. (It is important to include EMS runs paid for by alternative resource in order to capture the entire EMS workload). Therefore, the EMS by Direct is 75 percent, and the EMS by purchase is 25 percent.

The total number of runs does not distinguish pre-hospital vs. inter-facility or means of transport; cost projection is most accurate by analyzing specific category and means data for the past year, as the reimbursement rates are variable for ground, FW and RW. Local average cost should be calculated and inserted into the worksheet, or a default average cost will be used.

The following dependent variables for I/T EMS and Purchased EMS must be considered and defined accurately for each Service Unit Program.

Category 1. I/T EMS

Variable: POPULATION THRESHOLD-- The minimum User Population needed to justify an EMS program is 3,000.

If the User Population is more than 3,000, establishing an EMS is worth considering, if one does not already exist. The decision regarding establishment of a new EMS should be based on a cost comparison of starting a new service (calculated from this module) to the most recent annual expenditure for purchased EMS. It may be more cost effective to continue to purchase 100 percent of EMS. Any new EMS program being planned in conjunction with new facility construction must be justified as a deviation in the Program Justification Document (PJD).

If the User Population is less than 3,000, EMS should be purchased in lieu of direct provision of services—i.e., the Percent Purchased EMS would be 100 percent. This assumes that a local

proprietary (non-volunteer) EMS program exists in close proximity to the service population, and that this service has adequate resources to meet all the EMS needs in a timely manner. If no nearby service exists, then a request for a deviation may be considered in spite of not meeting the Population Threshold. If a local EMS service does exist, then it is necessary to determine if that proprietary service is capable of meeting the tribal or IHS service population's needs. This determination requires arranging a meeting of all organizations involved so that an accurate assessment of all the pertinent factors can be made. These organizations minimally include representatives from: the tribal program and public safety department, the IHS, the local dispatch office, and the State EMS Bureau (or its regional office). If a decision is made that establishment of an EMS is necessary, documentation should be provided in the request for a deviation.

When an EMS service which serves less than 3,000 people has been operating prior to the establishment of this RRM, that service is not required to request a deviation.

Population Threshold Deviation

Factors to Consider: response time, distance, and population distribution

EMS response time is always critical. In responding to life-threatening emergencies, common sense and professional protocol dictate that the quickest response possible is preferable, regardless of the type of emergency. While there are no universal response standards for all categories of illness, the American Heart Association has recently (2000) published standards for response to victims of sudden cardiac arrest. The recommended response time for the provision of defibrillation followed by advanced cardiac life support is eight minutes or less. In making this recommendation, the Heart Association assumed that the resources of a two-tiered urban system are universally available, and did not take into account the long distances associated with rural EMS pre-hospital response and transport.

The decision to depend on an existing local proprietary EMS when the population threshold is not met must take into account response time and service resources. Response time is related to distance from the point of dispatch of the ambulance. If the normal response time is greater than 30 minutes based on the distance to reach the majority of the population, and there is a regular need for EMS, consideration should be given to the establishment of a new EMS. If the normal response time is greater than 30 minutes for the majority of the population because there are limited resources available for expedient response, then strong consideration must likewise be given to the establishment of a new EMS.

In further assessing the adequacy of coverage by a local non-tribal, non-IHS EMS service, it should be determined what percentage of the population served reside within the 30 minute (or less) response area, and what percent reside beyond it. If the majority percentage resides outside of the 30 minute response area, establishing a new EMS may be warranted.

Variable: Percent I/T EMS: This is the percentage of the total (pre-hospital and inter-facility) transports (runs) provided by the IHS or Tribal EMS. The I/T Annual Runs and Purchased Annual Runs must be known in order to calculate this value.

Variable: TOTAL POPULATION -The IHS User Population should be used for the "Population Served".

The EMS population consists of a combination of the resident population, the non-Indian census population within the service area, and a variable and sometimes seasonal transient population. The last category includes any one who is traversing the service area on state highways and local thoroughfares and is not a resident of the service area, and also can be related to a destination (e.g., a national park) or an activity (e.g., hunting). Although this latter category is not included in the resident population, it has significant implications for EMS programs which operate within or adjacent to busy state highway corridors, national parks or monuments, or heavily visited tourist attractions. Nonetheless, the EMS Run Volume and Rate should capture those individuals requiring EMS care and therefore are included in the actual EMS workload. Despite all of these population components, the IHS User Population most consistently represents the resident EMS population and is the data that can most reliably be verified.

SQUARE KILOMETERS SERVED– The number of square kilometers covered by the EMS. If the EMS does not cover the entire area served by the facility or extends beyond facility service boundaries, then use the most accurate figure available from the EMS, county government and the state EMS Bureau.

Variable: **I/T ANNUAL RUNS** – The number of pre-hospital responses and inter-facility transports completed by the IHS or Tribal EMS in the previous fiscal year (or the most current annual data available). This variable is referred to by an EMS as their “annual run volume.” All of these transports are by Ground Ambulance.

Category 2. Purchased EMS

Variable: PERCENT PURCHASED EMS: This is the percent of all EMS workload that is paid for with CHS funds and alternative resources.

Variable: PURCHASED ANNUAL RUNS – The number of pre-hospital responses and inter-facility transports completed by any contractors or vendors in a previous fiscal year (or the most current annual data available). This number should include transports paid for by CHS dollars and by alternative resources. If actual local data are available they should be used. If local data area not available, National or Area data are used as a surrogate.

Variable: AVG. CHS \$ / RUN – This is the average CHS cost per transport (Ground, FW or RW) from the previous year. If local data are available for the average cost /run they should be used. If local data is not available, average area or national costs may be used as a surrogate.

Variable: EMS RUNS/1000 – This is an average value for the total number of pre-hospital and inter-facility transports per 1,000 population per year to be used for the service area. (This variable replaces EMS Admissions in the previous RRM.) Based on 1999-2000 Unmet Needs data collected from 55 EMS programs, the mean rate is 131/1,000; the range is from 11/1,000 to 400/1,000. Such a broad range indicates that there is significant local variation in run volume; this variation is likely due to a combination of factors, including community utilization patterns, different disease rates, and population size.

Category 3. Ambulance Cost

VEHICLE TO FTE RATIO—The value of 0.11 defines that the minimum number of EMTs needed to staff a single ambulance unit is nine.

ANNUAL LEASE COST—The majority of services lease ambulances through the IHS/GSA Shared Cost Ambulance Program. The average annual lease cost is for a single vehicle, and varies according to certain special vehicular features, e.g., four wheel drive (4WD). The average lease cost is \$6,200; the range is \$6,000 (2WD)-\$6,400 (4WD). The figures above are based on the current rates of \$279 per month for a two wheel drive and \$307 per month for a four wheel drive, plus 10,000 miles annually at \$.27 a mile for both kinds. The \$.27 per mile charge includes GSA's current fuel surcharge of \$.055 per mile. These are 2000 rates and GSA must be contacted for the annual rate. The maintenance cost is part of the GSA lease cost; therefore, it is not shown in the module.

All services, even one with a low annual run volume, need a backup ambulance for those times when the primary response vehicle is out of service for maintenance or repair, or when the first unit is already responding to a call. Therefore, two is the minimum number of ambulances for a program. A backup ambulance needs to be functional and reliable, but does not necessarily need to be new.

For a discussion of the various ways to lease, purchase or replace an IHS/GSA ambulance for primary use or for use as a backup vehicle, see the separate description of the IHS/GSA Shared Cost Ambulance Program prepared by the coordinator of the program.⁷

F. Justification:

While Emergency Medical Services have always been a highly visible and expected part of public safety and health care, it has remained somewhat separate from the overall health care system due to its unique position and function in the community. The recent re-examination of the role of EMS by a Blue Ribbon Committee sponsored by NHTSA and HRSA (1996) has raised the expectation of the role and position of EMS. The Vision Statement begins “EMS of the future will be community-based health management that is fully integrated with the health care system.” In addition, the needs of infants and children in emergencies and emergency response are different from adults needs; on a national and state basis, these unique needs are being addressed by the EMS for Children (EMSC) Program of the Maternal and Child Health Bureau. EMSC is not intended to be a separate service or system; it is intended that EMSC infrastructure and resources be incorporated into the larger EMS system.

The National Rural Health Association and the Office of Rural Health Policy⁸ have incorporated EMS development and integration into rural health planning and resource allocation, particularly in reference to Critical Access Hospitals and in response to community needs assessments.

Emergency Medical Services are an integral part of the comprehensive care provided by IHS and all tribal health systems. As with other rural and frontier EMS, IHS and tribal EMS programs are in a constant state of development and evolution to meet the needs of the local service population and its communities. Given the steady increase in IHS Service Population over the last two decades,⁹ and the increased rates of morbidity and mortality associated with injury¹⁰ in AI/AN children and young adults, there is a corresponding need for continued development and

increased resources for the operation of tribal, Service Unit based EMS programs which are actively involved in patient care and injury prevention.

G. Module Application Results

See Attachment

H. Documentation and References

¹ The EMS Agenda for the Future. DOT/NHTSA and HRSA/MCHB. August 1996.

² Ibid.

³ Emergency Medical Treatment and Active Labor Act (EMTALA), 42 USC 1395dd, 1984.

⁴ Quantifying the Unmet Needs in IHS/Tribal EMS. Office of Program Planning and Evaluation, OPH, IHS; 1999-2001.

⁵ Emergency Medical Dispatch, EMD Program Implementation and Administration, Manager's Guide. HRSA/NHTSA, EMD Curriculum, 94-PO69641/02T88, August 1995.

⁶ P. Decker. Description, HIS/GSA Shared Cost Ambulance Program, 2001.

⁷ Ibid.

⁸ Remarks: Integrating EMS Into Rural Health Systems, DHHS, HRSA, Office of Rural Health Policy, 1999.

⁹ Trends in Indian Health, 1998-99, DHHS, IHS, Office of Public Health, Program Statistics Team.

¹⁰ Injuries Among American Indian and Alaska Native Children, 1985-1996, DHHS, CDCP, National Center for Injury Prevention and Control, 2000.

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