

Injury Data Basics for MCH Programs

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CSN Mission

The mission of Children's Safety Network (CSN) is to reduce injuries and violence among children and adolescents by strengthening the infrastructure for injury and violence prevention within state health departments, with special emphasis on Maternal and Child Health (MCH).

MCH Performance Measures

National

- Rate of motor vehicle crash deaths
(0-14 year olds)
- Rate of suicide deaths
(15-19 year olds)

State

- Reduce injury
- Implement prevention programs

Injury and Violence Topics

- Motor vehicle
- Adolescent suicide
- Child abuse and neglect
- Intimate partner violence
- School-related
- Recreational
- Residential
- Agricultural and rural

Consensus Recommendations for Injury Surveillance in Health Departments

State & Territorial Injury Prevention Directors Association (STIPDA)

- Report found at www.stipda.org
- 14 specific injuries and injury risk factors
- Monitored by 11 specific data sets
- Standardize injury surveillance at the state level
- No single data set is sufficient to assess injury prevention priorities

Injuries and Injury Risk Factors by Data Source

Injury/Injury Risk Factor	Vital Records	Hospital Discharge Data	FARS	BRFSS, YRBSS	Emergency Department	Medical Examiner	Child Death Review	Other
Motor Vehicle (MV) Injuries	X	X	(X)		(X)	(X)	(X)	(EMS)
Alcohol in MV deaths			X			(X)		
Self-reported seat belt/safety seat use				Both				(OPU)
Homicide	X				(X)	(X)	(X)	(UCR)
Suicide	X				(X)	(X)	(X)	
Suicide attempts		X		Both	(X)			
Firearm Injuries	X	X			(X)	(X)	(X)	(UCR)

(X) – data sets are supplementary FARS – Fatality Analysis Reporting System
 BRFSS – Behavioral Risk Factor Surveillance System YRBSS – Youth Risk Behavior Surveillance System
 EMS – Emergency Medical Services UCR – Uniform Crime Reports
 OPU – National Occupant Protection Use Survey

Injuries and Injury Risk Factors by Data Source, cont'd.

Injury/Injury Risk Factor	Vital Records	Hospital Discharge Data	FARS	BRFSS, YRBSS	Emergency Department	Medical Examiner	Child Death Review	Other
Traumatic Brain Injuries	X	X			(X)		(X)	
Fire and Burn Injuries	X	X			(X)		(X)	
Smoke Alarm Use				BRFSS				
Submersion Injuries	X	X			(X)			(EMS)
Traumatic and spinal cord injuries	(X)	X			(X)			
Fall injuries	X	X			(X)		(X)	
Poisoning	X	X			(X)		(X)	

(X) – data sets are supplementary FARS – Fatality Analysis Reporting System
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 EMS – Emergency Medical Services

Vital Statistics and Death Certificates

- 100% of injury-related deaths, centralized
- Inexpensive to obtain
- 5-10 year analysis for trends and planning
- Uses *International Classification of Diseases* (ICD) codes and comparable to other states
- Annual reports published in every state, but specificity of injury deaths variable, so may require direct request
- www.cdc.gov , click on data and statistics

Medical Examiner and Coroner

- Deaths - unintentional injury, violence or suicide
- Usually narrative form – rich and detailed
- Toxicology and other tests
- Not always centralized
- Less often computerized
- Variability in quality of reports
- Variability in release of reports
- Usually not aggregated or published

Child Death Review (CDR) Teams

www.ChildDeathReview.org

- By the end of 2007, all states will have CDR Teams, but definition varies: Child abuse & neglect to all injuries
- Examine and pool multiple data sources
- Identify and investigate risk factors
- Detect causal information useful for prevention
- May represent law, the courts, child protective services, social services, medicine, Medical Examiner, criminal justice, mental and public health
- May operate at county or state level



Fatality Analysis Reporting System (FARS)

- Compiled by National Highway Traffic Safety Administration (NHTSA)
- Census of motor vehicle (MV) fatalities since 1975
- Data collected by states
- Over 100 standardized variables collected
- Fatal MV-related within 30 days of crash
- + all persons, MV, and circumstances
- Lacks medical information
- Not *International Classification of Diseases (ICD)* coded or comparable to death certificate data

Uniform Crime Report (UCR) National Incident-Based Reporting System (NIBRS)

- Federal Bureau of Investigation (FBI) compilation of crime statistics
- Voluntary report by state and local police
- Physical injury need not have occurred
- Includes perpetrator information
- Limited information on weapon
- UCR data submitted in aggregate – limits utility



Crash Outcome Data Evaluation System (CODES)

- 29 states in data network to assess effect of risk factors on MV injury outcome
- Data linkages – Emergency Medical Services (EMS), MV Crash, Emergency Department (ED), Hospital Discharge, Medical Examiner, Coroner, Vital Records
- Mostly link MV Crash to Hospital Discharge



Uniform Hospital Discharge Data Set (UHDDS)

- Collected for reimbursement, planning and cost containment
- 100% of injured patients in acute care hospitals
- Compiled in DC and 45 states
- Allows comparison of different causes of injury with diseases and medical problems
- Many more cases than fatalities

UHDDS cont'd

- Mandate for coding cause of injury – 23 states
- Even without cause coding
 - Total number of injury admissions using nature codes
 - Identification of Zip codes with high injury rates
- Powerful when combined with death certificate data

Emergency Department (ED) Data

- ED logs for patient registration purposes
- Majority of medically treated non fatal injuries
- Centralized location, standardized format – 20 states
- Useful for assessing priorities in sparsely populated areas

Emergency Medical Services (EMS) Data

- Paper run sheets or trip reports of Emergency Medical Technician's, electronic field devices
- Limited to injured patients transported by ambulance (10% of injuries)
- Circumstances at injury scene, not recorded in the Emergency Department (ED)
- Lack external cause coding - comparability
- Mostly not standardized, computerized, or centralized at the state level

Trauma Registries

- Purpose – ensure quality of care and assess effectiveness of treatment
- Centralized systems in 37 states (2002)
- Usually computerized and external cause coded
- Broad array of data, but drownings, poisonings and burns are often excluded
- Limited to trauma centers and more severe injuries

Behavioral Risk Factor Surveillance System (BRFSS)

- Monitors risk behaviors for 18 & older to support monitoring of Healthy People 2010
- Telephone survey with standard questions to facilitate state-by-state comparison
- Includes use of smoke alarms, seat belt and safety seats, bicycle helmets, and firearm storage, suicide
- Can be analyzed by age, race, ethnicity, income level and education

Youth Risk Behavior Surveillance System (YRBSS)

- Monitors risk behaviors in students grades 9-12
 - seat belt use
 - driving after drinking/riding with a driver who has been drinking
 - bicycle and motorcycle helmet use
 - carrying a weapon to school/physical fights
 - attempting suicide/ having suicidal thoughts/ depression
- Biennially standardized school survey by state and local departments of education and health

National Occupant Protection Use Survey (NOPUS)

- Monitors compliance of safety standards by direct observation for funding purposes
- Includes shoulder belt use, motorcycle helmet use, child safety seat use
- Access
 - Research Notes on National Highway Traffic Safety Administration (NHTSA) Website
www.nhtsa.gov
 - Can be used at state level

Injury Specific Data Systems

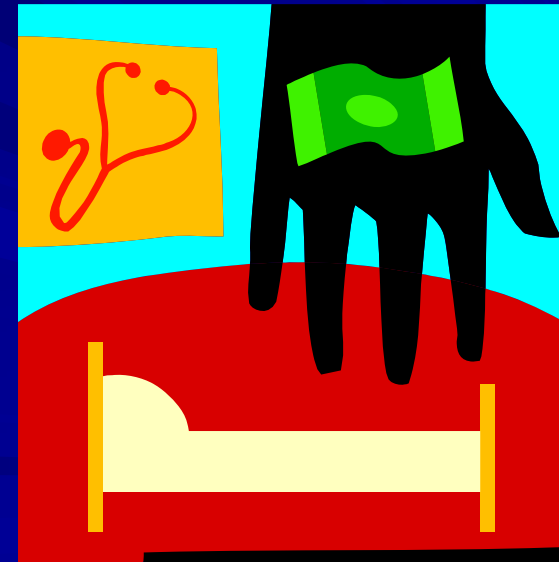
- Burn Registry
- Fire Reports – State Fire Marshall
- Poison Calls – State Poison Control Center
www.aapcc.org
- Traumatic Brain Injury
- Spinal Cord Injury

Injury Specific Data Systems, cont'd.

- Firearms
- Violence – National Violent Death Reporting System (17 states)
- State Crime Surveys
- Teen work – State Health Department (SHD) Occupational Health Surveillance Program
- Domestic Violence

Examples of States Helped

- Examples of how CSN EDARC has assisted states
 - Updated child mortality and hospital injury incidence and costs
 - Developed hospital incidence data for a state with no formal hospital discharge data system



Examples of States Helped with Suicide

- Two examples of how CSN EDARC has fostered state suicide prevention activities
 - Worked collaboratively with the Suicide Prevention Resource Center to provide state-based fact sheets www.sprc.org
 - Provided technical assistance (TA) on a wide range of questions as well as supplying estimates for emergency room visits in North Carolina

Motor Vehicle Injury Prevention Activities of CSN EDARC



- Alcohol Involved Youth Motor Vehicle Injuries
 - Costs by state available
 - Savings from prevention activities available

Technical Assistance (TA) Activities with Individuals

- Iowa Suicide Prevention Steering Committee - self-inflicted hospitalizations / Emergency Department (ED) self-inflicted incidence
- Provided Fatality Analysis Reporting System (FARS) analysis on unlicensed underage drivers



TA Activities with Individuals, cont'd.

- Minnesota Department of Health - costs per suicide case
- Costs of Firework Injuries in Delaware
- Benefits of Child Seats in Texas

TA Activities Example, Texas:

A \$52 child seat in Texas saves \$1,635
(in Texas 2002 dollars)



CSN Resources for our audience

■ Fact sheets

- Specific injury topics (e.g., cost-benefit analyses)
- Programmatic topics (e.g., using ICD-10, HIPPA)

■ Data tables

- Injury incidence, costs and prevention savings

■ Presentations and trainings

■ Peer-reviewed journal articles

■ Website www.ChildrensSafetyNetwork.org

Cost Benefit Analysis Fact Sheets

- “Injury Prevention: What Works?”
- Review cost-outcome analyses of various injury prevention and control interventions in the following categories:
 - Violence
 - Motor Vehicle and Pedestrian Safety
 - Alcohol and Substance Abuse
 - Impaired Driving
 - Open Flame and Burns
 - Health Services and Other Miscellaneous

123 Interventions

	Youth	Adult	Youth and Adult	Total
Motor Vehicle	10	0	23	33
Impaired Driver	1	9	0	10
Open Flame/Burn	1	0	3	4
Violence	15	17	1	33
Substance Abuse	22	4	8	34
Other	3	2	4	9
Total	52	32	39	123

Why Use Costs

- Costs are one way to choose interventions
- Universal metric which allows dissimilar interventions to be compared
- Cost-Outcome Analysis is a useful tool in evaluation of intervention and prevention programs
- This fact sheet series presents cost-outcome analyses for 123 interventions

Definitions: Costs and Savings

- ***Cost per Unit:*** cost of the intervention for a single individual
- ***Total Benefits:*** the amount these interventions saved by preventing injuries. These benefits to society include medical costs, work loss, other monetary costs, and quality of life costs.
- ***Benefit Cost Ratio (BCR):*** savings from preventing injuries divided by the cost of the intervention
- ***Cost-effective:*** the BCR is greater than or equal to 1. The return on the intervention is equal to or greater than the amount invested

Definitions: Costs and Savings

- ***Cost per Quality Adjusted Life Year (cost/QALY)***: a health outcome measure that assigns a value of 1 to a year of perfect health & 0 to death. The cost/QALY measure excludes work loss and quality of life costs.
- ***Cost-saving***: the cost/QALY is < 0 which means that the cost of the intervention is less than the savings generated in medical costs and other resource costs.
 - (Cost of intervention – medical and other resource savings) / QALY

Open Flame/Burn

	Cost per Unit	Total Benefits	BCR	Cost/QALY
Child Resistant Cigarette Lighters	\$.04/ lighter	\$3.17	79	<\$0

Child Resistant Cigarette Lighters yielded an estimated savings of \$3 for a cost of only \$.04 per lighter.

Choosing Interventions

- We recommend interventions with a $BCR > 2$ and $cost/QALY < \$50,000$
- Some interventions with low BCRs may address unique component of injury problem.
- Some of legal interventions would have higher BCRs if looked at governmental perspective only.

Childhood Injury: Cost and Prevention Facts

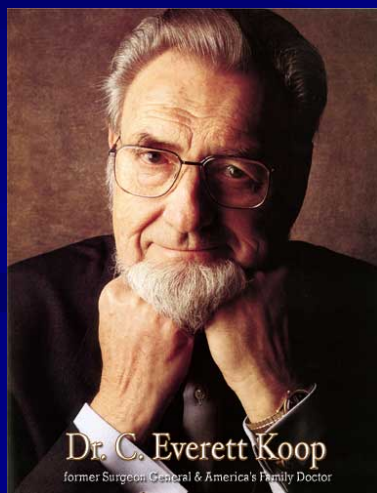
- *BICYCLE HELMETS*
- *CHILD SAFETY SEATS*
- *INJURY PREVENTION COUNSELING
BY PEDIATRICIANS*
- *POISON CONTROL CENTERS*
- *SOBRIETY CHECKPOINTS*
- *CURRENT SPEED LIMITS*
- *DEFINITIONS*

Child and Adolescent Violence

- *INCIDENCE AND COST* by age group
 - 0-3 / 4-7 / 8-11 / 12-17
- *RISK FACTORS AND PREVENTION*
- *OTHER ISSUES: ADULT DOMESTIC VIOLENCE, DRUNK DRIVING, VIOLENCE DURING PREGNANCY AND SO FORTH*
- *DEFINITIONS AND METHODS*

IF...

"If a disease were killing our children in the proportions that injuries are, people would be outraged and demand that this killer be stopped."



C. Everett Koop, M.D.
Former Surgeon General

**For free technical assistance
contact us at CSN EDARC
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