Traffic Crash Morbidity & Mortality: Traffic Deaths & Serious Injuries

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Objectives

• This presentation aims to:
  – Identify the current analytical means of problem identification and program evaluation in traffic safety
  – Present current efforts and future plans to expand the scope of those analytical efforts to quantify morbidity in addition to mortality
Currently....

- In traffic safety, the majority of State and federal agencies analyze fatality information to perform
  - Problem identification
  - Program evaluation
  - Resource allocation
Fatality Analysis Reporting System (FARS)

• Maintained by National Highway Traffic Safety Administration (NHTSA)
• Contains details about all fatal crashes in the US
  – EMS response
  – Crash characteristics
  – Information on all persons involved
  – Behavioral factors
Morbidity?

• FARS is the only true national census of traffic crash data
  – All fatal crashes are included in FARS by mandate
  – States have a range of data capabilities and capture
    • All States capture crash reports on injury crashes
    • Most States capture property-damage-only crashes
    • Data accessibility policies vary by State
    • Injury and PDO crashes are not collected on the national level...so no true count
      – NASS CDS/GES
      – CRSS, CISS
      – State Data System
Upcoming changes

- Current transportation bill is the Moving Ahead for Progress in the 21st Century (MAP-21)
  - A guideline in this bill is to report all serious injuries to the Federal Highway Administration (FHWA) as a performance measure
  - Until this guideline, all required performance measures were focused on fatal crash information from FARS
How is serious injury defined?

- There are efforts underway to officially define serious injury for this guideline

- Several data sources may be used independently or integrated to define injury severity
Data Sources

• Police crash reports
• Emergency Medical Services reports
• Emergency department/hospital inpatient records
• Trauma registry records
• Combination of the above
Police Crash Reports

• KABCO scale
  – K = Killed
  – A = Incapacitating Injury
  – B = Non-incapacitating Injury
  – C = Possible Injury
  – O = Not Injured

• Police perception
  – Not medically evaluated

*Killed, Awful, Bloody, Complaining, OK*
EMS Records

• Several variables indicate injury, but may be State-specific

• Triage Priority
  – Scale of 1-4 (1 most severe trauma case)

• Incident/Patient Disposition
  – Not treated
  – Basic Life Support Transfer
  – Advanced Life Support Transfer

• Provider Impression
  – Traumatic injury
Emergency Dept/Hospital Inpatient Records

- International Classification of Diseases, Ninth Division, Clinical Modification (ICD-9-CM)
  - Each injury diagnosed receives a code
  - All possible injuries are evaluated
  - Clinically-based

- Limitations
  - Do not depict injury severity
  - Are collected primarily for billing purposes
Trauma Registry Records

- In addition to ICD-9-CM codes, Abbreviated Injury Scale (AIS) codes are collected
  - Each injury diagnosed receives a code
  - All possible injuries are evaluated
  - Clinically-based

- Strengths
  - Do depict injury severity (last digit is on scale of 1-6)
  - Developed by Association for the Advancement of Automotive Medicine (research-based association)
Integration of Traffic Records

• Crash + hospital → recommended in current Notice of Proposed Rulemaking (NPRM)
  – Applying clinical findings to crash victims provides accurate injury severity categorizations
    • Law enforcement is not trained or interested in making clinical findings at the scene of a crash
    • At times, the patient may be transported from the scene before a law enforcement officer arrives
  – ICD-9-CM codes may be translated into AIS codes
    • Applies the injury severity scale to the clinical diagnosis codes
Feasibility and next steps

• The Crash Outcome Data Evaluation System (CODES) program, previously funded by NHTSA, promoted the integration of crash + hospital records and the use of the ICD-9-CM decoding to AIS codes
• Some States have continued those linkage efforts, but not all are capable
  – Requires probabilistic linkage because no State has a common identifying variable on both the crash report and medical record
• Continue using KABCO=4 as serious injury
Questions

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