Using Evidence for Public Health Decision Making:

Motor Vehicle-Related Injury Prevention

Community Guide Slide Modules

These slides are designed to be used with overview slides also available at: www.thecommunityguide.org

- The Community Guide: A Brief Overview
  - How the Community Guide is developed under guidance of the Task Force on Community Preventive Services (Task Force)
- The Community Guide: Systematic Reviews to Inform Task Force Recommendations
  - Description of the Community Guide methods and how the Task Force uses information to form recommendations
- Using Evidence for Public Health Decision Making: Motor Vehicle-Related Injury Prevention

Introduction

This slide presentation summarizes findings of the Task Force on Community Preventive Services for a set of systematic reviews on the effectiveness of motor vehicle-related injury prevention.

Motor Vehicle-Related Injuries

- Motor vehicle-related injuries kill more children and young adults than any other single cause in the United States and are the leading cause of death from injury for people of all ages.
- Each year, motor vehicle crashes take the lives of more than 40,000 people in the United States and result in 2.7 million emergency department visits.
- Use of child safety seats and safety belts and deterrence of alcohol-impaired driving are among the most important preventive measures to further reduce motor vehicle-related injuries and deaths.

What Interventions Were Reviewed?

A. Use of child safety seats

B. Use of safety belts

C. Reducing alcohol-impaired driving

Background Information

Who Makes the Recommendations?

- The Task Force on Community Preventive Services is an independent, nonfederal, volunteer body of experts in public health and prevention research, practice and policy, appointed by the CDC Director to:
  - Prioritize topics for systematic review
  - Oversee systematic reviews done for the Community Guide
  - Develop evidence-based recommendations using the systematic review results
  - Identify areas that need further research

What Questions Does the Task Force Ask about Interventions?

- Does it work?
  - How well?
  - For whom?
  - Under what circumstances is it appropriate?
- What does it cost?
- Are there barriers to its use?
- Are there any harms?
- Are there any unanticipated outcomes?

What Do the Findings Mean?

- Recommended– strong or sufficient evidence that the intervention is effective.
- Recommended Against– strong or sufficient evidence that the intervention is harmful or not effective.
- Insufficient Evidence – the available studies do not provide sufficient evidence to determine if the intervention is, or is not, effective.

What Do the Findings Mean?

Strong and sufficient evidence judgments reflect:

- The number of available studies
- The research design of those studies
- The quality with which those studies were executed
- The overall magnitude of the effects (size of the outcome)

What Does “Insufficient Evidence” Mean?

- Insufficient evidence means that additional research is needed to determine whether or not the intervention is effective.

- This does NOT mean that the intervention does not work.

Insufficient Evidence Findings

- In some cases there are not enough studies to draw firm conclusions. Reasons include:
  - A lack of studies, or a lack of studies with rigorous methods

- In other cases, there are a sufficient number of studies, but the findings are inconsistent. Reasons include:
  - Confounding variables or inconsistency in how the intervention was implemented in studies

Confounding Variables

A confounding variable may result in a misleading relationship between factors being studied. For example, a study might find that people with hearing aids are more likely to have heart attacks than people without hearing aids. However, this does not mean that hearing aids cause heart attacks. The confounding variable is the age of the people – those who have hearing aids are more likely to be older, and those who are older are more likely to have heart attacks.

Insufficient Evidence Findings and Research

- One major use of Insufficient Evidence findings is to influence future research. These findings can:
  - Identify promising, but understudied, topics with important public health implications
  - Help to allocate scarce research funds to those topics, which might otherwise be allocated to topics where strong or sufficient evidence already exists

Part A: Use of Child Safety Seats

Use of Child Safety Seats

- Interventions reviewed aim to increase the use of child safety seats among children aged 0-4 years.
- Approaches include:
  - Legislation
  - Education
  - Seat distribution programs

Use of Child Safety Seats Summary Table

Intervention	Finding
Laws mandating use	Recommended
Community-wide information & enhanced enforcement campaigns	Recommended
Distribution & education programs	Recommended
Incentive & education programs	Recommended
Education programs when used alone	Insufficient Evidence

Laws Mandating Use

- Child safety seat laws require children riding in motor vehicles to be restrained in federally-approved infant or child safety seats.
- Requirements vary by states based on a child's age, weight, height, or a combination of these factors.
- Enforcement guidelines and penalties also vary, but all such laws allow drivers to be stopped for failing to place children in safety seats as required by law.

Recommendations and Findings

The Task Force *recommends* child safety seat laws based on strong evidence of their effectiveness in increasing child safety seat use.

Community-Wide Information and Enhanced Enforcement Campaigns

- Community-wide information and enhanced enforcement campaigns include:
  - Mass media
  - Information and publicity
  - Public displays about safety seats
  - Special strategies such as:
    - Checkpoints
    - Dedicated law enforcement officials
    - Alternative penalties (e.g., informational warnings instead of citations)

Recommendations and Findings

The Task Force *recommends* community-wide information and enhanced enforcement campaigns based on sufficient evidence of their effectiveness in increasing child safety seat use.

Distribution and Education Programs

- Child safety seat distribution and education programs provide child safety seats to parents through a loan, low-cost rental or giveaway of an approved safety seat.
- Programs include an educational component and target parents and other caregivers who are experiencing financial hardship or do not understand the importance of getting and using a safety seat.

Recommendations and Findings

The Task Force *recommends* interventions that use child safety seat distribution and education programs based on strong evidence of their effectiveness in increasing child safety seat use.

Incentive and Education Programs

- Incentive and education programs reward parents for correctly using child safety seats or directly reward children for correctly using safety seats.
- These programs also include education that varies with regard to content, duration and intensity, and methods used.

Recommendations and Findings

The Task Force *recommends* interventions that use incentive and education programs based on strong evidence of their effectiveness in increasing safety seat use.

Education Programs When Used Alone

Child safety seat education programs provide information about the use of child safety seats and relevant skills to parents, children, or professional groups.

Recommendations and Findings

The Task Force concluded there was *insufficient evidence* to determine the effectiveness of education programs alone in improving knowledge about or use of child safety seats on the basis of the small number of available studies and variability in the interventions evaluated.

References

1. CDC. Motor-vehicle occupant injury: strategies for increasing use of child safety seats, increasing use of safety belts, and reducing alcohol-impaired driving. A report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(RR-7):1-13.
2. Task Force on Community Preventive Services. Recommendations to reduce injuries to motor vehicle occupants: increasing child safety seat use, increasing safety belt use, and reducing alcohol-impaired driving. *Am J Prev Med* 2001;21(4S):16–22
3. www.cdc.gov/injury/wisqars/index.html
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Part B: Use of Safety Belts

Use of Safety Belts

These interventions aim to increase the use of safety belts among drivers and passengers of motor vehicles through the implementation or enforcement of legislation.

Use of Safety Belts Summary Table

Intervention	Finding
Laws mandating use	Recommended
Primary (vs. secondary) enforcement laws	Recommended
Enhanced enforcement programs	Recommended

Laws Mandating Use

- Safety belt laws mandate the use of safety belts by motor vehicle occupants.
- All current U.S. laws cover front seat occupants.
- Other requirements, such as rear seat coverage, fines, affected age groups, type of enforcement, and exempted vehicles and drivers vary by state.

Recommendations and Findings

The Task Force *recommends* safety belt laws as a strategy based on strong evidence of their effectiveness in increasing safety belt use and reducing fatal and nonfatal injuries among adolescents and adults.

Enhanced Enforcement Programs

- Enhanced enforcement programs are added to normal enforcement practices and include publicity.
- They fall into two categories:
  - Programs that increase citations along with increasing the number of officers on patrol (supplemental).
  - Programs that promote more citations during an officer's normal patrol (targeted).

Recommendations and Findings

The Task Force *recommends* enhanced enforcement programs based on strong evidence of their effectiveness in increasing safety belt use and reducing fatal and non-fatal injuries in a wide range of settings and among various populations.

Primary (vs. Secondary) Enforcement Laws

- Primary safety belt laws allow police to stop motorists solely for being unbelted.
- Secondary safety belt laws permit police to ticket unbelted motorists only if they are stopped for other reasons, such as speeding.

Recommendations and Findings

The Task Force *recommends* primary safety belt laws based on strong evidence of their superior effectiveness over secondary enforcement laws in reducing motor vehicle-related injuries and deaths.

References

1. CDC. Motor-vehicle occupant injury: strategies for increasing use of child safety seats, increasing use of safety belts, and reducing alcohol-impaired driving. A report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(RR-7):1-13.
2. Dinh-Zarr TB, Sleet DA, Shults RA, et al. Reviews of evidence regarding interventions to increase the use of safety belts. *Am J Prev Med* 2001;21(4S): 48-65.
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Part C: Reducing Alcohol-Impaired Driving

Reducing Alcohol-Impaired Driving

- The interventions reviewed aim to reduce alcohol-impaired driving and the associated deaths and injuries.
- Approaches include:
  - Legislation and policy strategies
  - Sobriety checkpoints
  - School-based programs

Reducing Alcohol-Impaired Driving Summary Table (1 of 3)

Intervention	Finding
0.08% blood alcohol concentration (BAC) laws	Recommended
Lower BAC laws for young or inexperienced drivers	Recommended
Maintaining current minimum legal age (MLDA) laws	Recommended
Sobriety checkpoints	Recommended

Reducing Alcohol-Impaired Driving Summary Table (2 of 3)

Intervention	Finding
Intervention training programs for servers of alcoholic beverages	Recommended
Mass media campaigns	Recommended
Multicomponent interventions with community mobilization	Recommended
Ignition interlocks	Recommended

Reducing Alcohol-Impaired Driving Summary Table (3 of 3)

Intervention	Finding
School-based programs	
Instructional programs	Recommended
Peer organizing interventions	Insufficient Evidence
Social norming campaigns	Insufficient Evidence
Designated driver promotion programs	
Incentive programs	Insufficient Evidence
Population-based campaigns	Insufficient Evidence

0.08% Blood Alcohol Concentration (BAC) Laws

These laws state it is illegal for a driver's blood alcohol concentration to exceed 0.08%.

Recommendations and Findings

The Task Force *recommends* 0.08% blood alcohol concentration (BAC) laws based on strong evidence of their effectiveness in reducing alcohol-related motor vehicle crash fatalities.

Lower BAC Laws for Young or Inexperienced Drivers

- In the United States, lower blood alcohol concentration (BAC) laws apply to all drivers under the age of 21.
- Between states, the illegal BAC level ranges from any detectable BAC to 0.02%.
- In other countries, lower BAC laws apply to either newly licensed drivers or newly licensed drivers under a specified age.

Recommendations and Findings

The Task Force *recommends* laws that establish a lower legal BAC for young or inexperienced drivers than for older or more experienced drivers based on sufficient evidence of their effectiveness in reducing alcohol-related motor vehicle crashes.

Maintaining Current Minimum Legal Drinking Age (MLDA) Laws

- MLDA laws specify an age below which the purchase or public consumption of alcoholic beverages is illegal.
- In the United States, the age in all states is currently 21 years.

Recommendations and Findings

The Task Force *recommends* maintaining current minimum legal drinking age (MLDA) laws based on strong evidence of their effectiveness in reducing alcohol-related crashes and associated injuries among 18- to 20-year-old drivers.

Sobriety Checkpoints

At sobriety checkpoints, law enforcement officers use a system to stop drivers to assess their level of alcohol impairment.

Sobriety checkpoints

Two types of sobriety checkpoints:

- Random breath testing (RBT)
  - Checkpoints where officers randomly select and test drivers for blood alcohol levels
- Selective breath testing (SBT)
  - Checkpoints where officers must have reason to suspect a driver has been drinking before testing. SBT is the only type of sobriety checkpoint used in the United States.

Recommendations and Findings

The Task Force *recommends* sobriety checkpoints based on strong evidence of their effectiveness in reducing alcohol-impaired driving, alcohol-related crashes, and associated fatal and nonfatal injuries.

Intervention Training Programs for Servers of Alcoholic Beverages

- These programs provide education and training to servers of alcoholic beverages with the goal of altering their serving practices to prevent customer intoxication and alcohol-impaired driving.
- Practices may include:
  - Offering customers food with drinks
  - Delaying service to rapid drinkers
  - Refusing service to intoxicated or underage consumers
  - Discouraging intoxicated customers from driving

Recommendations and Findings

The Task Force *recommends* server training programs, *under certain conditions*, based on sufficient evidence of their effectiveness in reducing alcohol-related motor vehicle crash fatalities.

“under certain conditions...”

- The findings of positive effects are limited to programs that provided face-to-face training and involve strong management support.
- These results may not apply to typical server intervention training programs that do not include these elements.

Mass Media Campaigns

- Mass media campaigns intended to reduce alcohol-impaired driving are designed to persuade individuals either to avoid drinking and driving or to prevent others from doing so.
- Common campaign themes include:
  - Fear of arrest
  - Fear of injury to self, others, or property
  - Characterizing drinking drivers as irresponsible and dangerous to others

Recommendations and Findings

The Task Force *recommends* mass media campaigns to reduce alcohol-impaired driving based on strong evidence of their effectiveness under certain conditions. These conditions include that the mass media campaigns are carefully planned and well executed; attain adequate audience exposure; and are implemented in settings that have other ongoing alcohol-impaired driving prevention activities.

Multicomponent Interventions with Community Mobilization

- Multicomponent interventions to reduce alcohol-impaired driving can include any or all of a number of components, such as:
  - Sobriety checkpoints
  - Training in responsible beverage service
  - Education and awareness-raising efforts
  - Limiting access to alcohol

Multicomponent Interventions with Community Mobilization

- Interventions that qualified for this review:
  - Implemented multiple programs and policies in multiple settings to affect the community environment to reduce alcohol-impaired driving
  - Included participation of active community coalitions or task forces in their design or execution (community mobilization)

Recommendations and Findings

The Task Force *recommends* the use of multicomponent interventions with community mobilization on the basis of strong evidence of their effectiveness in reducing alcohol-impaired driving.

Ignition Interlocks

- Ignition interlocks are devices that can be installed in motor vehicles to prevent operation of the vehicle by a driver who has a blood alcohol concentration (BAC) above a specified level (usually 0.02% – 0.04%).
- Interlocks are most often installed in vehicles of people who have been convicted of alcohol-impaired driving to give them an opportunity to drive legally.

Recommendations and Findings

The Task Force *recommends* the use of ignition interlocks for people convicted of alcohol-impaired driving on the basis of strong evidence of their effectiveness in reducing re-arrest rates while the interlocks are installed. Public health benefits of the intervention are currently limited by the small proportion of offenders who install interlocks in their vehicles. More widespread and sustained use of interlocks among this population could have a substantial impact on alcohol-related crashes.

School-Based Programs

- School-based programs to reduce alcohol-impaired driving include:
  - Instructional programs
  - Peer organizations such as Students Against Destructive Decisions (SADD)
  - Social norming campaigns

School-Based Programs

- Instructional programs can address the problems of drunk driving (DD) and riding with drunk drivers (RDD) alone or have a broader focus on alcohol or other substance use.
- Peer organizations engage students in a variety of DD and RDD prevention activities.

School-Based Programs

Social norming campaigns generally are ongoing, multiyear public information programs on college campuses that aim to reduce alcohol use by providing students with objective normative information regarding student alcohol consumption in order to reduce misperceptions and ultimately change their behavior.

Recommendations and Findings

The Task Force *recommends* school-based instructional programs to reduce riding with alcohol-impaired drivers, but found *insufficient evidence* to determine whether these programs reduce alcohol-impaired driving or alcohol-related crashes.

Recommendations and Findings

The Task Force found *insufficient evidence* to determine the effectiveness of peer organizations or social norming campaigns in reducing alcohol-impaired driving because of a small number of studies.

Designated Driver Promotion Programs

- Two types of programs to encourage designated driver use were evaluated:
  - Population-based campaigns use mass media and other communication channels to promote designated driver use.
  - Incentive programs based in drinking establishments offer free incentives to encourage customers to act as designated drivers.

Recommendations and Findings

- The Task Force found *insufficient evidence* to determine the effectiveness of the following designated driver promotion programs in preventing alcohol-impaired driving:
  - Population-based campaigns (only one study qualified for review)
  - Incentive programs in drinking establishments (based on small effect sizes and limitations of the outcome measures)

References

1. CDC. Motor-vehicle occupant injury: strategies for increasing use of child safety seats, increasing use of safety belts, and reducing alcohol-impaired driving. A report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(RR-7):1-13.
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8. Task Force on Community Preventive Services. Recommendation for use of mass media campaigns to reduce alcohol-impaired driving. *Am J Prev Med* 2004;27(1):66.

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Where to Find More Information

Task Force findings and recommendations on motor vehicle-related injury prevention:

www.thecommunityguide.org/mvoi

Visit the Community Guide Web site and find out what works to promote health and safety in your community. Learn about:

- Evidence-based Task Force findings and recommendations
- Systematic review methods
- Interventions on 18 public health topic areas
- How to use the Community Guide
- And more!

www.thecommunityguide.org