

Reducing Alcohol-Impaired Driving: Intervention Training Programs for Servers of Alcoholic Beverages (2001 Archived Review)

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Review Summary

Intervention Definition

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, and discouraging intoxicated customers from driving.

Summary of Task Force Finding

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

Results from the Systematic Review

Five studies qualified for the systematic review.

- Intoxicated drinkers: decreased proportion ranging from 17% to 100% with a median equal to 33% (3 studies)
- Single-vehicle nighttime injury crashes: decrease of 23% (1 study)
- Training programs led to significant improvements in observed server behaviors following an intensive (4.5-6 hour) training (2 studies).
- Most of the evidence reviewed comes from small-scale studies where the study participants may have been unusually motivated and the researchers influenced the design and implementation of the server training.
- The findings of positive effects are limited to those 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.

These results are based on a systematic review of all available studies led by scientists from CDC's Division of Unintentional Injury Prevention with input from a team of specialists in systematic review methods and experts in research, practice and policy related to reducing alcohol-impaired driving.

Publications

Shults RA, Elder RW, Sleet DA, et al. [Reviews of evidence regarding interventions to reduce alcohol-impaired driving](http://www.thecommunityguide.org/mvoi/mvoi-AJPM-evrev-alchl-imprd-drvg.pdf) [www.thecommunityguide.org/mvoi/mvoi-AJPM-evrev-alchl-imprd-drvg.pdf]. *Am J Prev Med* 2001;21(4S):66–88.

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](http://www.thecommunityguide.org/mvoi/mvoi-AJPM-recs.pdf) [www.thecommunityguide.org/mvoi/mvoi-AJPM-recs.pdf]. *Am J Prev Med* 2001;21(4S):16–22.

Task Force on Community Preventive Services. [Motor-vehicle occupant injury: strategies for increasing use of child safety seats, increasing use of safety belts, and reducing alcohol-impaired driving](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5007a1.htm) [www.cdc.gov/mmwr/preview/mmwrhtml/rr5007a1.htm]. *MMWR Recommendations and Reports* 2001;50(RR07):1-13.

Task Force on Community Preventive Services. [Motor vehicle occupant injury](http://www.thecommunityguide.org/mvoi/Motor-Vehicles.pdf) [www.thecommunityguide.org/mvoi/Motor-Vehicles.pdf]. In: Zaza S, Briss PA, Harris KW, eds. *The Guide to Community Preventive Services: What Works to Promote Health?* Atlanta (GA): Oxford University Press;2005:329-84 (Out of Print).

Task Force Finding

Intervention Definition

Server intervention training programs provide education and training to servers of alcoholic beverages with the goal of altering their serving practices to prevent patron intoxication and alcohol-impaired driving. These practices can include offering food with drinks, delaying service to rapid drinkers, refusing service to intoxicated patrons, and discouraging intoxicated patrons from driving.

Task Force Finding (November 2001)*

Server intervention training programs are recommended on the basis of evidence that high-quality face-to-face training, when accompanied by strong management support, is effective in reducing the level of intoxication among patrons. The evidence on which this recommendation is based comes primarily from small-scale studies in which the participants may have been unusually motivated and the researchers had a high degree of control over the implementation of the server training. Although these findings are promising, they may not apply to larger, community-wide server training programs for which evidence is insufficient. No qualifying economic information was identified for either type of program.

*From the following publication:

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](#) [www.thecommunityguide.org/mvoi/mvoi-AJPM-recs.pdf]. *Am J Prev Med* 2001;21(4S):16–22.

Supporting Materials

Analytic Framework

See Figure 1 on page 67 of Shults RA, Elder RW, Sleet DA, et al. [Reviews of evidence regarding interventions to reduce alcohol-impaired driving](http://www.thecommunityguide.org/mvoi/mvoi-AJPM-evrev-alchl-imprd-drvng.pdf) [www.thecommunityguide.org/mvoi/mvoi-AJPM-evrev-alchl-imprd-drvng.pdf]. *Am J Prev Med* 2001;21(4S):66–88.

Evidence Gaps

What are Evidence Gaps?

Each Community Preventive Services Task Force (Task Force) review identifies critical evidence gaps—areas where information is lacking. Evidence gaps can exist whether or not a recommendation is made. In cases when the Task Force finds insufficient evidence to determine whether an intervention strategy works, evidence gaps encourage researchers and program evaluators to conduct more effectiveness studies. When the Task Force recommends an intervention, evidence gaps highlight missing information that would help users determine if the intervention could meet their particular needs. For example, evidence may be needed to determine where the intervention will work, with which populations, how much it will cost to implement, whether it will provide adequate return on investment, or how users should structure or deliver the intervention to ensure effectiveness. Finally, evidence may be missing for outcomes different from those on which the Task Force recommendation is based.

Identified Evidence Gaps

Results from the Community Guide review indicate that sufficient or strong evidence exists that the effectiveness of the five interventions reviewed reduces alcohol impaired driving. However, important issues related to the effectiveness of these interventions require further research.

General Questions

- How do interventions to reduce alcohol-impaired driving interact with each other (e.g., 0.08% BAC laws and administrative license revocation)?
- What effects do these interventions have on long-term changes in social norms about drinking and driving?

Laws

- How do variations in enforcement levels influence the effectiveness of laws to reduce alcohol-impaired driving?
- What are the independent effects of publicity on the effectiveness of laws to reduce alcohol-impaired driving?
- Does public compliance with new laws change in a predictable manner over time?

Sobriety Checkpoints

- Does the use of passive alcohol sensors at sobriety checkpoints improve their deterrent effects?
- Are the deterrent effects of sobriety checkpoints diminished if warning signs are posted that allow drivers to avoid the checkpoints?
- How do various configurations of sobriety checkpoints (e.g., intermittent blitzes vs. continuous, weekend nights vs. random time periods, number of officers per checkpoint) affect deterrence?
- What level of enforcement and publicity about sobriety checkpoints is necessary to maintain effectiveness over time?

Server Intervention Training

- Are server intervention training programs delivered community-wide effective at decreasing alcohol-impaired driving and alcohol-related crashes?
- What essential content areas should be included in all server intervention training programs?
- What effect does the method by which training is delivered (e.g., videotapes, lectures, role-playing) have on the effectiveness of server training programs?
- How do mandatory vs. voluntary server training programs differ with respect to:
 - Management support for program goals?
 - Level of participation in training programs?
 - Overall effectiveness for decreasing patron BACs and drinking and driving?
- What specific management policies and practices are necessary to get the maximum benefits from server intervention training?
- What is the long-term effect of server intervention training programs? Are “booster sessions” required to maintain effectiveness?
- What effect does server intervention training have on alcohol sales, overall revenues, and tips?

Applicability

Questions remain about possible differences in the effectiveness of each intervention for specific settings and subgroups. For example:

- Are these interventions equally effective in rural and urban settings?
- Are these interventions equally effective when applied to populations with different baseline levels of alcohol-impaired driving?
- Does targeting publicity efforts to specific subpopulations (e.g., young drivers, ethnic minorities, men) improve the effectiveness of interventions to reduce alcohol-impaired driving?

Other Positive or Negative Effects

Few other positive and negative effects were reported in this body of literature. Further research about the following questions would be useful:

- What proportion of youths charged with violating zero tolerance laws had BAC levels elevated enough to warrant a more serious drinking-driving offense?
- Do interventions to reduce alcohol-impaired driving reduce other forms of alcohol-related injury?

Economic Evaluations

Little economic evaluation information was available. Research is warranted to answer the basic economic questions:

- What are the cost-benefit, cost utility, and cost-effectiveness of interventions to reduce alcohol impaired driving?

Barriers to Implementation

Several of the interventions reviewed face barriers to effective implementation. Research into the following areas may help to overcome these barriers:

- What role can community coalitions play in removing barriers to implementing interventions designed to prevent alcohol-impaired driving?
- What are the most effective means of disseminating research findings about effectiveness to groups that want to implement interventions?
- What forms of incentives (e.g., insurance discounts) are most helpful for increasing management and owner support for server intervention training?
- How can the costs of interventions to prevent alcohol-impaired driving be shared or subsidized?
- What situational and environmental influences help or hinder the implementation of server intervention training?

Summary Evidence Tables

Studies Evaluating the Effect of Server Intervention Training on Patron/Pseudopatron Intoxication

Author, Year (Study period) Design suitability: design Quality of execution Evaluation setting	Intervention/Comparison details	Results/Other information	Summary value(s)	Follow-up period
Saltz, 1987 ¹ (Pretest: 6/85 to 7/85; Posttest: 9/85 to 11/85) Greatest: Before-after with concurrent comparison Fair Navy enlisted club in southern California	Intensive 18 hour server intervention training delivered to all serving and security staff. Program also included consultation with management resulting in elimination of pitchers and happy hours. Comparison to a similar enlisted club in southern California.	Proportion of customers with estimated BAC > .10 decreased from .33 to .21 (net change = -33%, p < .05) Average rate of consumption decreased from 3.5 to 2.3 drinks/hour (net change = -0.8, p > .05) Average number of drinks consumed decreased from 5.7 to 4.9 (net change = -0.1, p > .05) Intervention had no noticeable impact on the club's gross sales.	-33%	3 months
Russ, 1987 ² (11 consecutive weeks; dates not specified) Moderate: Before-after with concurrent comparison Fair Two taverns in a rural university town.	Six-hour server intervention training course attended by interested servers. Pseudopatrons attempted to drink 6 alcoholic beverages in two hours, following which their BAC levels were assessed. Intervention attempts by servers were also recorded. Untrained servers within each site served as controls in the "after" condition. Trained and untrained servers were grouped together for collection of baseline data.	No pseudopatrons served by trained servers had BACs >.10 g/dL, compared to 45% of those served by untrained servers (net change = -100%) Exit BACs of pseudopatrons served by trained servers averaged .059 g/dl relative to .103 g/dl for untrained servers (difference = .044 g/dL, 95% CI: .022, .066). Trained servers intervened approximately 3.6 times per session relative to 0.8 times for untrained servers (p < .05). Average level of gratuity increased by 14% following training (across both trained and untrained servers).	-100%	Not Available

Author, Year (Study period) Design suitability: design Quality of execution Evaluation setting	Intervention/Comparison details	Results/Other information	Summary value(s)	Follow-up period
Lang, 1998 ³ (Not specified) Greatest: Before-after with concurrent comparison Fair Drinking establishments in Freemantle, Australia with moderate to high levels of patron intoxication.	One to two-hour server training in ABC laws, effects of alcohol, and signs of intoxication; 63% of servers attended training. Program implemented by a broad coalition including the hotel association. Exit BAC survey of a convenience sample of patrons (taken between 8 PM and 3 AM). Similar drinking establishments in Perth served as comparison sites.	The proportion of patrons surveyed (n = 1564) who had BACs > .08 g/dl decreased from .52 before server training to .37 immediately afterwards (net change = -17%, p = .22), at 3-month follow-up, the proportion was .27 (net change = -28%, p = .03). Service to 'intoxicated' and young-looking pseudopatrons was assessed, but data were insufficient for interpretation. Most of the positive results came from one intervention site which had exceptional management support for the program.	-28%	3 months

Studies Evaluating Other Effects of Server Intervention Training

Author, Year (Study period) Design suitability: design Quality of execution Evaluation setting	Intervention/Comparison details	Results/Other information	Summary value(s)	Follow-up period
Gliksman, 1993 ⁴ (Pretest 2 weeks prior to training; Posttest 2 weeks following) Greatest: Randomized group trial Fair Four drinking establishments in Thunder Bay, Ontario	4 ½ hour server intervention training delivered to an unspecified proportion of servers. Managers were informed about server liability issues and encouraged to implement appropriate policies prior to server training. Used an ordinal scale to rate server responses to several scenarios portrayed by a pseudopatron. Four establishments were randomly selected as comparison sites.	Significant improvements in server behaviors at intervention relative to control sites (p < .01). Improvements primarily reflect a reduction in inappropriate server behaviors (e.g., encouraging rapid or excessive drinking) Study indicated substantial improvements in server knowledge following training (p < .01)	NA	2 weeks
Holder, 1994 ⁵ (1/76 – 12/89) Moderate: Interrupted time series Fair Oregon	One-day server intervention training course mandated statewide. Training began 11/86, with approximately 20% of servers trained each year. Single vehicle nighttime fatal crashes in 47 other contiguous states was included as a covariate in the model.	Estimated a 23% decline in single vehicle nighttime injury crashes by the end of the 3rd year of mandatory server training, with 53% of servers trained (p < .05).	-23%	37 months

Search Strategy

The reviews of interventions to reduce motor vehicle-related injury reflect systematic searches of multiple databases as well as reviews of reference lists and consultations with experts in the field. The team searched six computerized

databases (MEDLINE, Embase, Psychlit, Sociological Abstracts, EI Compendex, and Transportation Research Information Services [TRIS]), which yielded 10,958 titles and abstracts for articles, book chapters, reports, and published papers from the Association for the Advancement of Automotive Medicine proceedings about safety belts, alcohol-impaired driving or child passenger safety. Studies were eligible for inclusion if:

- They were published from the originating date of the database through June 2000 (March 1998 for child safety seat interventions)
- They involved primary studies, not guidelines or reviews
- They were published in English
- They were relevant to the interventions selected for review
- The evaluation included a comparison to an unexposed or less-exposed population
- The evaluation measured outcomes defined by the analytic framework for the intervention

For alcohol-impaired driving reviews, supplementary searches were conducted to address specialized questions and to update searches for reviews published after 2001. The final search using the primary alcohol-impaired driving search strategy was conducted through December 2004. For the most recent review in this series, “Effectiveness of Multicomponent Programs with Community Mobilization for Reducing Alcohol-Impaired Driving,” this database was supplemented by a hand search of the “Alcohol and Other Drugs” and “Transportation” sections of the SafetyLit injury literature update service for the period from January through June 2005.

Primary Search Strategy

1. S MOTOR(W)VEHICLE? OR CAR OR CARS OR AUTOMOBILE? OR MOTORCYCLE? OR TRUCK? OR TRAFFIC(2N)ACCIDENT? OR DRIVING OR DRIVER?
2. S ALCOHOL OR ALCOHOLIC(W)BEVERAGE? OR ALCOHOL(3N)DRINKING OR ETHANOL OR ALCOHOLISM OR DWI OR DUI OR (DRIVING(3N)(INTOXICATED OR INFLUENCE OR DRUNK OR DRINKING OR IMPAIRED))
3. S INTERVENTION? OR OUTREACH? OR PREVENTION OR (COMMUNITY(3N)(RELATION? OR PROGRAM? OR ACTION)) OR DETERRENT? OR PROGRAM? OR LEGISLATION OR LAW? OR EDUCATION OR DETERENCE OR COUNSELING OR CLASS OR CLASSES OR HEALTH(W)PROMOTION
4. S FOOD(W)INDUSTRY OR AIRPLANE? OR AIRCRAFT? OR PILOT? OR SOLVENT? OR SLEEP(W)APNEA OR EMISSION? OR AIR(W)QUALITY OR POLLUTION
5. S (S1 AND S2 AND S3) NOT S4

Higher Education-based Interventions

S1 MOTOR(W)VEHICLE? OR CAR OR CARS OR AUTOMOBILE? OR MOTORCYCLE? OR TRUCK? OR TRAFFIC(2N)ACCIDENT? OR DRIVING OR DRIVER?

S2 ALCOHOL OR ALCOHOLIC(W)BEVERAGE? OR ALCOHOL(3N)DRINKING OR ETHANOL OR ALCOHOLISM OR DWI OR DUI OR (DRIVING(3N)(INTOXICATED OR INFLUENCE OR DRUNK OR DRINKING OR IMPAIRED))

S3 UNIVERSIT? OR COLLEGE? OR CAMPUS? OR (EDUCATION?(2N)(HIGER OR INSTITUTION? OR FACILIT? OR PROGRAM? OR SURVEY?))

S4 S1 AND S2 AND S3

S5 CURRICULUM OR INSTRUCTION OR EDUCATION OR TRAINING OR WORKSHOPS OR PROGRAMS OR COURSE? OR TEACH? OR (SOCIAL(W)NORM?)

S6 STUDENT? OR YOUTH? OR TEEN? OR (YOUNG(W)ADULT?)

S7 S4 AND S5 AND S6

School-based Interventions

S1 MOTOR(W)VEHICLE? OR CAR OR CARS OR AUTOMOBILE? OR MOTORCYCLE? OR TRUCK? OR TRAFFIC(2N)ACCIDENT? OR DRIVING OR DRIVER?

S2 ALCOHOL OR ALCOHOLIC(W)BEVERAGE? OR ALCOHOL(3N)DRINKING OR ETHANOL OR ALCOHOLISM OR DWI OR DUI OR (DRIVING(3N))(INTOXICATED OR INFLUENCE OR DRUNK OR DRINKING OR IMPAIRED))

S3 SCHOOL?(5N)(BASED OR SETTING OR PROGRAM? OR PRIMARY OR ELEMENTARY OR SECONDARY OR ((JUNIOR OR SENIOR)(W)HIGH) OR MIDDLE) OR (EDUCATION?(2N)(INSTITUTION? OR FACILIT? OR PROGRAM? OR SURVEY?))

S4 S1 AND S2 AND S3

S5 CURRICULUM OR INSTRUCTION OR EDUCATION OR TRAINING OR WORKSHOPS OR PROGRAMS OR COURSE? OR TEACH?

S6 STUDENT? OR ADOLESCENT? OR YOUTH? OR TEEN? OR CHILD? OR TEACHER?

S7 S4 AND S5 AND S6

Cost Analyses

1. S MOTOR(W)VEHICLE? OR CAR OR CARS OR AUTOMOBILE? OR MOTORCYCLE? OR TRUCK? OR TRAFFIC(2N)ACCIDENT? OR DRIVING OR DRIVER?
2. S ALCOHOL OR ALCOHOLIC(W)BEVERAGE? OR ALCOHOL(3N)DRINKING OR ETHANOL OR ALCOHOLISM OR DWI OR DUI OR (DRIVING(3N))(INTOXICATED OR INFLUENCE OR DRUNK OR DRINKING OR IMPAIRED))
3. S INTERVENTION? OR OUTREACH? OR PREVENTION OR COMMUNITY(3N)(RELATION? OR PROGRAM? OR ACTION)) OR DETERRENT? OR PROGRAM? OR LEGISLATION OR LAW? OR EDUCATION OR DETERENCE OR COUNSELING OR CLASS OR CLASSES OR HEALTH(W)PROMOTION
4. S FOOD(W)INDUSTRY OR AIRPLANE? OR AIRCRAFT? OR PILOT? OR SOLVENT? OR SLEEP(W)APNEA OR EMISSION? OR AIR(W)QUALITY OR POLLUTION
5. S COST? OR ECONOMIC? OR ECONOMETRIC?

S (S1 AND S2 AND S3 AND S5) NOT S4

Disclaimer

The findings and conclusions on this page are those of the Community Preventive Services Task Force and do not necessarily represent those of CDC. Task Force evidence-based recommendations are not mandates for compliance or spending. Instead, they provide information and options for decision makers and stakeholders to consider when determining which programs, services, and policies best meet the needs, preferences, available resources, and constraints of their constituents.

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