

Preventive Interventions for On-Premise Drinking A Promising But Underresearched Area of Prevention

Kathryn Graham¹
Centre for Addiction and Mental Health
London, Ontario, Canada

Background paper commissioned for the second edition of Alcohol Policy and the Public Good.

Contemporary Drug Problems, 27(Fall) 2000, 593-668.

¹ 100 Collip Circle, Suite 200
London, Ontario
N6G 4X8 Canada
Tel: 519-858-5000
FAX: 519-858-5199
e-mail: kgraham@julian.uwo.ca

Acknowledgments

I am grateful to Harold Holder, Ingeborg Rossow and Robin Room for comments and suggestions, to Bob Mann for his help in identifying relevant references and to Sue Steinback for her contributions to typing and formatting.

Abstract

Evidence is reviewed regarding the effectiveness of eight different approaches to the prevention of problems such as drinking driving, aggression and other problems associated with drinking in licensed premises. Some evidence of positive effects was found for Responsible Beverage Service training (including mandatory training), laws holding servers liable for negative consequences due to intoxicated patrons, increased enforcement, ride services and to a lesser extent designated driver programs, and community interventions broadly focused on on-premise drinking. House policies, risk assessments, and proactive policing showed promise but remain unproven in terms of direct effects on the prevention of problems. Codes of Practice and patron education appear to be unlikely to be effective unless combined with enforcement or other interventions. Overall, there has been an abundance of local and more extensive interventions to reduce problems in bars but few have been rigorously evaluated. There is a need in future evaluations for strategically targeting and combining interventions according to a systematic analysis of the nature of the problem and hypothesized contributing factors.

Preventive Interventions for On-Premise Drinking A Promising But Underresearched Area of Prevention

The man known to Londoners as the year's first homicide victim was remembered yesterday by friends and family as a person who loved poetry, music and art [20-year-old man who was killed when he intervened in a dispute outside a bar] (London Free Press, January 24, 1999).

Durham police arrested a 22-year-old man yesterday in connection with a bar fight that may have led to the death of an Ajax man ... The fight began inside the bar between two groups of friends, but then moved outside to the parking lot ... One of the men hit Lebar in the head. Lebar then collapsed and hit his head on the pavement. (Toronto Star, December 15, 1996)

Former bouncer Patrick John Brownlow sat in the prisoners' box and swallowed hard as a judge sentenced him to 30 months in penitentiary Friday for the crime of aggravated assault. Across the courtroom and surrounded by members of his large family, the victim, Gary Tordoff, sat in the wheelchair he is unable to rise from ... The jury was told the incident began when Brownslow, then a 23-year-old nursing student at Fanshawe College, and another bouncer tried to stop Tordoff from leaving the bar with a beer in his hand. In the struggle, Tordoff's head was banged against a wall about four times and he was tossed out of the door where his head apparently hit the sidewalk. (London Free Press, June 17, 1995)

The preceding newspapers quotations describe incidents related to alcohol consumption in licensed premises in Canada. Although fortunately, fatal or severe injuries are the exception, problems related to drinking in bars¹ are common often leading to preventable alcohol-related injuries. While the severity of the outcomes of the preceding incidents was unusual, the events leading to the injuries reflect fairly typical barroom behavior in certain types of bars. In the first incident, the young man who died was a third party in an incident involving friends. Third party involvement appears to be especially frequent in aggression occurring in public drinking situations (Wells & Graham, 1999). The second incident, involved a conflict between two groups of young men that ended with a fatal injury. Again, observations in bars and interviews with bar patrons have founds that conflicts between groups of young men are especially common in public drinking settings (Graham & Wells, In press; Pernanen, 1991). The third incident involved poorly trained security staff over-reacting to foolish provocative behavior by a young drunken patron – also a common scenario in bars frequented by young people (Wells, Graham & West, 1998).

Across a number of countries, bars have been identified as drinking locations that are especially high risk for alcohol-related intoxication and problem behaviors, most notably driving while intoxicated and aggression. In their study of drinking patterns of individuals convicted of driving under the influence of alcohol, Snow and Landrum (1986) found that the best predictor of frequency of drunkenness was drinking location, with drunkenness positively associated with drinking in cars and in bars. Drinking in bars has been associated generally with a higher risk of driving after drinking (Gruenewald, Mitchell & Treno, 1996; Lapham et al., 1998; Mosher & Wallack, 1979; O'Donnell, 1985; Wiczorek & Coyle, 1998). Moreover, some studies have shown that drinking in bars is especially associated with driving after drinking to the level of impairment (versus driving after consuming any alcohol) (Damkot, 1982; Saltz, Parker, & Cartmill, 1999). In their roadside breathalyzer survey, Single and McKenzie (1992), found that those with blood alcohol levels of .05 or higher were disproportionately likely to have been

¹ For convenience, licensed premises will hereafter be referred to as "bars" with the term used to cover a variety of licenses including restaurants, pubs, taverns, clubs, etc.

drinking in a bar prior to being stopped as part of the roadside survey. Fahrenkrug & Rehm (1995) analyzed data from a sample of alcohol-related road accidents among 18-25 year-old drivers in Switzerland. They found that in 57% of cases, the accident involved a drive home from a public drinking place, and compared to a control sample, those involved in accidents were more likely to report frequent visits to public drinking places. Those who drink in bars are also more likely to report being involved in incidents of alcohol-related aggression (Rossow, 1996; Stockwell, Lang & Rydon, 1993). And, in a study of alcohol involvement in incidents attended by the police in Sydney, Australia, Ireland & Thommeny (1993) found that 60% of alcohol-related offenses occurred in or near licensed premises.

Meta analysis of experimental studies of the effects of alcohol on aggression (Bushman, 1997) suggests that alcohol intoxication plays a causal role in aggressive behavior. Alcohol intoxication, especially in social settings such as bars, may also lead to willingness to drive after drinking despite recognition that such behavior is risky, illegal and even considered morally wrong by the person engaging in the behavior (Denton & Krebs, 1990). However, despite the likely contributing role played by alcohol intoxication, per se, the research literature generally suggests that situational and personality factors play key moderating roles in the effects of alcohol on behavior (Graham et al., 1998). Therefore, licensed premises are particularly important targets for policy interventions because (a) bars are generally high risk drinking settings and (b) in most countries, bars are subject to regulations that can be used to reduce these risks.

Although the high rate of problems in bars may be partly attributable to the types of drinkers who tend to frequent bars, in particular, young adult males (Casswell, Zhang & Wyllie, 1993; Curran, Harford & Muth9n, 1996; Langley, Chalmers & Fanslow, 1996; Single & Wortley, 1993), certain aspects of the bar environment also appear to increase the likelihood that drinking will be associated with problems. These include serving practices (Homel & Clark, 1994; Lang, Stockwell, Rydon & Lockwood, 1995) and drink specials (Babor, Mendelson, Uhly & Souza, 1980; McKnight & Streff, 1994) that promote intoxication, an aggressive approach taken to closing time by bar staff and local police (Marsh & Kibby, 1992; Tomsen, 1997; Tuck, 1989, p. 51-52;), aggressive bar staff and the inability of bar staff to manage problem behavior (Homel, Tomsen & Thommeny, 1992; Wells et al., 1998), other characteristics of the barroom environment such as crowding and permissiveness of bar staff (Graham, La Rocque, Yetman, Ross & Guistra, 1980; Graham, West & Wells, 2000; Homel & Clark, 1994; MacIntyre & Homel, 1997; see also review by Graham & Homel, 1997), and the general type of bar (Gruenwald, Stockwell, Beel & Dyskin, 1999; Stockwell, Somerford & Lang, 1992).

Historical Overview of On-Premise Interventions

Prior to the 1980s, studies of barroom behavior focused primarily on the social dynamics among bar staff and patrons (e.g., Cavan, 1966; Clark, 1981; Mass Observation, 1943; Spradley & Mann, 1975; see also review by Single, 1985), although several social descriptions also included a pronounced focus on aggressive behavior by men (Burns, 1980; Dyck, 1980). Starting in the late 1970s and early 1980s, however, there was increasing interest in problems related to drinking in bars, such as drinking driving (Mosher & Wallack, 1979; O'Donnell, 1985), violence (Graham et al., 1980; Graves, Graves, Semu & Sam, 1981), and intoxication generally (Graves, Graves, Semu and Sam, 1982). There was also an increase in recognition by researchers of the importance of policies aimed at reducing bar-related problems (Mosher, 1984) and an increase in cooperative efforts involving researchers and policy makers (e.g., see Single & Storm, 1985).

Policies and regulations for controlling bars have existed for some time. In fact, the term "licensed premise" denotes an industry that is regulated. Examples of regulations in Canada have included: (a) taverns divided into two sections, "Ladies and Escorts" (where people were supposed to behave and not fight) and the rest of the tavern (presumably frequented only by

men where lesser behavioral standards applied); and (b) rules against patrons being allowed to move about with a drink – that is, if a patron changed tables, the server had to move his or her drink. Other countries have also applied various regulations. For example, closing of the U.K. pubs during certain times of day has a long tradition. And the experiment with prohibition in the U.S. left a legacy on public drinking that probably continues to affect the style and function of bars in some places to the present day. However, there has been relatively little evaluation research on policy interventions as they apply to licensed premises (see Stockwell, 1994b for an extensive review of liquor licensing laws in Australia and elsewhere).

Education of bar staff and other educational interventions with bars have been increasingly emphasized as strategies for reducing problems related to on-premise drinking, with the major focus on *servicing practices*. By the 1980s, results of the first studies of server intervention programs began to appear in the research literature. Server intervention programs (or Responsible Beverage Service (RBS) programs as they are now called) have since then been widely adopted in the U.S., the U. K., Canada, Australia, and other countries. Drinking driving has also been a primary focus of research and policy over the past 20 years. Given the high rate of impaired drivers coming from licensed premises, two general approaches to reducing drinking driving have been directed toward or primarily relevant to on-premise drinking, namely designated driver programs and community ride services.

A Summary of the Research Related to Specific On-Premise Interventions

Most evaluated on-premise interventions have included more than one component (e.g., server training with policy development). However, the present review is structured to describe and assess each discrete intervention separately. Although this approach involves some redundancy in that the same program may be discussed under several headings, it has two important strengths. First, the effectiveness of multi-intervention programs will depend to some extent on the effectiveness of the component interventions. Therefore, it is important to assess the evidence for individual interventions not just the impact of overall programs. And, secondly, focusing on individual interventions provides a framework or set of common denominators that apply across programs, thereby facilitating cross-program comparisons. Table 1 provides a list of evaluated on-premise intervention programs, specifying the components of the intervention and the main evaluation findings. These interventions are grouped into eight broad categories: (1) bar staff and management training programs, (2) house policies and risk assessments, (3) agreements among groups of bar owners, (4) enforcement, (5) laws and regulations, (6) designated driver and ride services, (7) community mobilization and (8) patron education.

1. Training Programs

1.1 Responsible Beverage Service (RBS) Training Programs

Training of servers focuses on attitudes, knowledge, skills and practices related to *servicing* patrons (see Carvoth, 1995 and Toomey et al., 1998 for listings of components of RBS programs). The general goals of these programs include addressing any or all of the following.

Attitudes

- the benefits of preventing intoxication
- that bar staff and management have a responsibility to prevent intoxication

Knowledge

- the effects of alcohol, the physiology of alcohol, problems associated with intoxication
- relationship between alcohol consumption and BAC
- signs of intoxication
- laws and regulations related to serving alcohol
- legal liability
- strategies for dealing with intoxicated patrons/strategies for refusing service

Skills

- ability to recognize intoxication
- ability to refuse service and avoid problems in dealing with an intoxicated person

Practice

- checking ID of young patrons
- preventing intoxication
- refusal of service to someone who is intoxicated or on the way to becoming intoxicated
- arranging safe transport for intoxicated patrons
- one program (Patron Care, Carvolth, 1988) also includes referring patrons for help with drinking problems.

RBS programs have included programs focussed only on staff, programs with separate or extended training for managers, as well as programs that include policy development, enforcement or community mobilization. The results for programs involving only server training are presented first followed by programs that included enhanced manager training, policy development or other components.

(a) Server training only. Russ and Geller (1987) used research assistants who posed as patrons and attempted to order and consume a drink every 20 minutes to evaluate the 6-hour "TIPS" (Training for Intervention Procedures by Servers of Alcohol) training program. They found that trained servers (n=17) initiated more interventions compared to untrained servers (n=9), and that the "pseudo patrons" had lower BAC levels when they left the bar if served by a trained server compared to those who received service from bar staff who had not been trained. However, it should be noted that this was a very small study. Moreover, servers self-selected to participate in the training and may have had better serving practices than nonparticipants prior to the training. This does not appear to have been controlled for in the evaluation.

Gliksman et al. (1993) hired actors to pose as patrons and act out common scenarios such as ordering too much or exhibiting drunken behavior in four bars where staff received training and four control bars. They found a significant pre-post training improvement in responses to scenarios in bars with trained servers and no change in bars where servers had not been trained. However, the improvement mostly involved less inappropriate behavior (e.g., unsolicited service, pressure to drink) rather than active interventions to prevent intoxication or actual refusal of service to someone who was intoxicated.

Preliminary results of an ongoing study (Dresser, 2000) comparing two states with mandatory training, two states with incentives for training and two states with no formal statewide system indicated that significantly more servers are trained and fewer patrons are visibly intoxicated in states with mandatory training vs. incentives or free market systems. This is consistent with a previous study using time series analysis of single-vehicle nighttime injury-producing crashes (Holder & Wagenaar, 1994) that demonstrated a reduction in crashes associated with mandatory server training.

(b) Multicomponent RBS programs. Most RBS Programs include an enhanced component for managers that covers server training but also addresses policies, responsible marketing practices and sometimes other issues such as how to train staff. The general goal of management training is to support responsible serving behavior by staff and to develop and enforce policies that may help to prevent intoxication (e.g., eliminating drink specials, promoting food). RBS training programs have also been combined with increased enforcement and/or community mobilization.

Training of servers and managers plus policy development. One study (Saltz, 1987) that involved an intensive (18-hour) server training program as well as policy development in a U.S. Navy Club found that the intervention produced a significant reduction in the proportion of

patrons in the experimental bar who drank over a set blood alcohol limit, (although overall alcohol sales remained constant).

McKnight (1991) conducted a large scale study in a number of U.S. states of an RBS intervention that involved 3-hour training for staff, 6-hour training for managers and policy development. He found significant improvement among trained managers in self-reported adherence to policies as well as significant improvement in responses to both simulated and actual intoxicated patrons. However, the improvement in response to patrons was small and was uncorrelated with scores on knowledge, attitudes, self-reported serving behavior or adherence to policies. Also, the study reported problems in recruiting bars for the intervention and was therefore unable to use the random assignment design originally planned.

Another U.S. study (Howard-Pitney et al., 1991) involved a one-day training program for staff and managers, including policy development training with managers. The training produced significant changes in attitudes and knowledge. However, comparison to 14 matched control bars found no overall trend for better policies in the bars that participated in the program and no differences in rates of intervention when a pseudopatron ordered a fourth drink within an hour.

The "Freo Respects You" project in Western Australia (Lang, Stockwell, Rydon & Beel, 1998; Stockwell, Rydon, Lang, & Beel, 1993) included application of a House Policy Checklist and training of licensees, managers & staff. The training resulted in small but significant changes in knowledge regarding serving laws, although most improvement in knowledge was not retained by the time of the follow-up. The study found a significantly greater reduction in patrons leaving with a BAC higher than .08 intervention bars in seven experimental bars compared to control bars. However, there was no change in self-reported refusal to serve by servers, no change in the proportion of patrons who reported observing service to intoxicated persons and few pseudo patrons who feigned intoxication were refused service. Stockwell et al. (1993) did note anecdotally, however, that there was a highly successful outcome in one bar in which the management and staff were very enthusiastic about the project, suggesting that it is possible for training to be very effective if it is fully endorsed by management and staff.

The "Freo Respects You" project had a number of implementation problems that likely affected the outcomes. The training delivered by the Hotel Association was originally intended to be three hours long but was only 1-2 hours, participants were not always fully cooperative (see Stockwell, 1997, p. 21), and feedback from participants indicated the need for more people management training. Moreover, a number of the participants reported that they thought that RBS principles were unfair to bar staff and unrealistic. Also, managers did not develop an explicit policy supporting RBS. The participation rate for bars was also disappointing. Fifty bars had been invited to participate by the Hotel Association but by the end of a 10-month period, only 10 had done so.

RBS programs involving server/manager training, policy development and community mobilization. Mosher and his colleagues (Delewski & Saltz, 1990; Mosher, Delewski, Saltz & Hennessy, 1989) evaluated the implementation of a community-based approach to RBS in two communities and conducted a controlled trial comparing: (1) intensive training, risk assessment, policy development and follow-up staff meetings; (2) the less intensive TIPS training (Russ & Geller, 1987); and (3) no training. One bar in each of the two communities in the study was assigned to each condition (total of 6 bars), and intoxication levels of patrons were monitored using researcher observers. The training generally resulted in significant knowledge change. The outcome study found some changes in policy in bars that received the intensive program and reductions in intoxication of patrons following either versions of the training in one community (with a greater effect for intensive training), but found no effect of the program in the other community (Mosher et al., 1989). They noted that onsite training produced better participation but off-site training attracted a broader group of bars.

“Patron care” is a server training program that includes an 8-step series of pointers in refusing service developed from a key informant study of 400 experienced servers and managers (Carvolth, 1988) as well as early identification of persons experiencing alcohol problems and encouragement of servers to refer for counseling patrons who have a drinking problem. No specific evaluations of Patron Care were identified; however, a half-day “Patron care” training was implemented as part of community action projects in Australia (Hauritz et al., 1998ab; Homel et al., 1997). Although no evaluation specifically related to server training was reported in these studies, pre-post observations in bars indicated increased evidence of written house policies and decreased drink promotions (Hauritz et al., 1998b; Homel et al., 1997) as well as increased refusal of service and other interventions by staff with intoxicated patrons, although there was also evidence of an increase in pressure on patrons to drink (Hauritz et al., 1998b).

Community action projects in Finland (Holmila & Haavisto, 1997) and Sweden (Wallin, Lindewald, & Andreasson, 1998; Wallin, Hjalmarsson, Linewald, & Andreasson, 1999) have reported some success with implementing RBS programs. However, the results of a focus group study of the effects of the training in Sweden (Wallin et al., 1999) suggest that the impact of the training may have been minimal in that servers reported responding to patrons on the basis of whether the person was visibly drunk, not according to the number of drinks served to them; moreover many felt it was unrealistic to expect patrons not to become intoxicated. In addition, there was no support for adopting written RBS policies, as most servers preferred less formal unwritten policies.

Server/manager training and enforcement. A 1979 study by Mosher & Wallack included both increased enforcement (through last drink reports of persons arrested for drunk driving) and licensee and server training. Training was provided to 5,700 persons involving 540 premises. The training appeared to increase concern with the issues and seemed to foster a better working relationships with licensees. No outcome data were reported.

Server/manager training, policy development, enforcement and community mobilization. A community intervention in Rhode Island (Putnam, 1990; Putnam, Rockett & Campbell, 1993; Stout et al., 1993) included a 5-hour server training and policy development for on and off-premise establishments, enhanced enforcement of liquor and DWI laws, training of police, and community mobilization activities including mass media and publicity campaigns, local task forces and community forums. The implementation rate for the RBS program was high with 61% of alcohol servers in bars, restaurants, private clubs and package servers participating in training. Pre-post tests of the server training showed a significant increase in knowledge that decreased over time but was mostly maintained at the time of a follow-up survey (Stout et al., 1993). Injury-related visits to the emergency room declined in the intervention site while remaining stable in the comparison sites, suggesting a possible program effect on injuries (Putnam et al., 1993).

In a 4-year follow-up of the training implemented as part of the Rhode Island project, Buka and Birdthistle (1999) found significant improvement in *self-reported serving behavior* in the test community, with the effect diminishing but still persisting after several years. However, the same study also compared responses from servers in the test community to servers in a control community and found no significant overall effect for better self-reported serving practices in the test community. The authors noted that the lack of effect may have been due to the large number of servers in the control community who had also received server training by the time of the follow-up. Therefore, subsequent analyses compared self-reported serving practices of trained and untrained servers across both sites and identified an overall significant relationship between receiving any form of training and better serving practices.

RBS training for servers and managers was implemented as part of the Community Trials Project in California (Saltz & Stanghetta, 1997). The impact of the program was assessed

using pseudo patrons who consumed a drink every 20 minutes and then ordered six drinks at once on the sixth order. They found no difference between intervention and comparison sites in the level of intervention with pseudo patrons. In terms of implementation, 35 to 65% of targeted bars in the three experimental communities participated in the training, and bar managers were generally positive toward the program. Two of the three communities showed a substantial increase in managers who reported that their policy was to refuse service to intoxicated patrons.

Overall, the pattern of findings suggests a small but positive effect of RBS programs. RBS programs usually produce some changes in knowledge (although those are typically small effects) and tend to decrease server behavior and policies that encourage intoxication. However, the results also suggest that these programs often do not increase the rate of refusing service to an intoxicated patron; moreover, there is no evidence that servers can be trained to refuse service *solely on the basis of number of drinks served* if the patron is not showing overt signs of intoxication. Other components such as policy development and community mobilization did not seem to enhance the impact of server training greatly, in that many of the multi-component programs showed only modest, if any, effects on serving practices.

One issue that affects the interpretation of findings from a number of studies is the problem of recruiting bars for server training (McKnight, 1991; Russ & Geller, 1987; Saltz & Stanghetta, 1997; Stockwell et al., 1993). Mosher et al. (1989) described a number of possible community-based strategies that could be adopted to enhance recruitment (p. 34) but no systematic evaluation of these strategies has occurred to date. Problems in recruitment may mean that there has been a substantial selection bias in the types of bars participating in many studies. On the other hand, the general concern of earlier studies that the intervention would not be widely adopted by the industry has proven to be unfounded, partly because a number of U.S. jurisdictions have made RBS training mandatory or have reduced liability for bars in which staff have been trained (e.g., Simons-Morton & Cummings, 1997). However, server training appears to be widespread even in jurisdictions where training is not mandatory. For example, over 140,000 bar staff in Ontario have received certification for attending server training (Alcohol and Gaming Commission of Ontario, 1999), most of whom have participated voluntarily. Data from Australia also indicate a high level of support for RBS training by the hospitality industry and the public generally (Arnold & Laidler, 1994, p. 97-98).

Although recruitment of bars may no longer be a problem, there is increasing concern regarding the variability in the type and quality of RBS programs. Toomey et al. (1998) rated 22 different RBS programs in the U.S. on a number of criteria including target audience, content, behavioral change methods and communication methods. In general, they found high variability across programs, with only two programs including a strong focus on behavioral change methods; moreover, 11 programs consisted solely of watching a videotape. In sum, poor or minimal implementation of programs may mean that even the small effects identified in formal evaluations of RBS training will not be realized. Finally, as noted by McKnight (1993), server training could even have a negative impact if such training is used to reduce responsibility and/or liability of bar owners or used instead of effective policies or enforcement.

1.2 Training in Preventing and Managing Aggression and Other Problem Behavior

Training programs specifically focused on managing problem or aggressive patrons rather than on serving practices have been developed for several reasons. First, not all problems arise because patrons are intoxicated. For example, some bar settings attract patrons such as groups of young males who may be looking for a fight (Burns, 1980; Graham & Wells, In press). Second, some individuals arrive at the bar already intoxicated rather than being served to intoxication at the bar. Third, sometimes problems in bars are less related to intoxicated patrons and more related to aggressive bar staff (Wells et al., 1998). Finally, in some bars and dance clubs, servers cannot reasonably monitor and control patron drinking. For example, many bars in Ontario and elsewhere are large capacity venues where servers are

unable to exercise any control over intoxication levels of patrons. As described by Kulis (1998), “The bartenders work at a furious pace, snapping off bottle caps for patrons and collecting money; as a consequence, they have little or no time to notice the condition of patrons. At one very large bar there were 30 bartenders (no wait staff) serving approximately 1,700 patrons. There were no limits on the amount of beer purchased at any one time.” (p.88). Clearly, in this situation, training servers about RBS would be a waste of time given the environmental constraints on their ability to monitor and control patron behavior. Therefore, a number of programs have been developed in recent years that address directly prevention and management of problem behavior. Most often these programs are directed towards door staff, although some programs target management (Dickson et al., 1993) and others are designed to be relevant for bar staff generally (Braun et al., 2000).

(a) Doormen licensing and training programs. A number of programs in the UK have been developed specifically for training door staff. These programs typically include training in relevant laws, effects of alcohol and drugs, fire safety, first aid, and social and communication skills (see Gloucester Door Supervisors and Training Project, 1997; MCM Research, 1993). The goals of the training are to (a) deal effectively with persons who are underage, intoxicated or likely to cause trouble in order to keep them from entering the premises; and (b) reduce risk of injury through improved intervention related to fire safety and first aid. No reports of evaluations of these programs or information on the effectiveness of these programs were found.

The Surfers Paradise project in Australia and its replications (Hauritz et al., 1998ab; Homel et al., 1997) implemented a 2-day training program in crowd control and security for bouncers as well as security management training for licensees and police that included: “ethics and good practice; management skills; staff recruitment; conflict resolution; venue security; civil and criminal law related to the operations of public venues; licensing law; the (proposed) Security Providers Bill; major incidents and emergencies; and incident reporting.” (p. 52-53 Homel et al.) The Surfers Paradise project evaluated the overall impact of the multi-component intervention, but no reports have been found relating to the specific effects of security training. However, pre-post observational data in bars indicated improvement in staff behavior and bar management including: friendlier bouncers, more systematic checking of ID at the door, an increase in bouncers controlling areas inside the bar as well as at the door (Hauritz et al., 1998b; Homel et al., 1997), and staff who were less permissive of deviant behavior and friendlier in their interactions with patrons (Hauritz et al., 1998b). Another important finding in terms of potential “buy in” by the hospitality industry was that the changes in the replication sites occurred without a decrease in patronage (Hauritz et al., 1998ab).

(b) Licensee training in dealing with problem behavior. Over a number of years. Allied Domecq has funded researchers and practitioners at the University of Nottingham, England to provide a two-day training program for Allied Domecq licensees covering patron management and related skills. Although outcomes have not yet been evaluated, the course has shown increased knowledge among participants (P. Leather, personal communication).

MCM Research in the UK has also developed a training program for licensees with the course objectives of providing licensees with (a) an understanding of the causes of aggression and conflict and (b) guidelines for effective interventions to prevent and manage aggression (MCM Research, 1993). The course content includes establishing order, monitoring and recognition of early warning signs, calming and controlling angry patrons, understanding frustration, rules for pool tables, and procedures for reducing risks at closing time. No evaluation data on this program have been found.

(c) Bar staff training in preventing and managing aggression. The “Safer Bars” program recently developed in Canada includes a training component (Braun et al., 2000) focused on developing attitudes among bar staff and managers that: (a) aggression can often be prevented, (b) early intervention in conflict can prevent escalation, (c) prevention and

management of aggression depends on teamwork, and (d) physical force by bar staff should only be used as a last resort. The goals of the training are to increase early intervention by staff, improve staff abilities in managing problem behavior, improve strategies for controlling anger, and reduce the risk of injury to patrons. The training has demonstrated knowledge/attitude improvement (Chandler Coutts, Graham, Braun & Wells, In press) and there are plans to undertake a randomized outcome trial (Graham et al., 1999). However, as yet there are no evaluation data regarding the effectiveness of this training on aggression and other bar problems.

2. House Policies and Risk Assessments

Correlational studies have shown a relationship of “bad” policies with greater intoxication and service to persons charged with Driving While Impaired (DWI) (McKnight & Streff, 1994) as well as with aggression (Homel and Clark, 1994). Therefore, a number of RBS programs as well as programs aimed at reducing bar-related aggression have included a policy component. Some have encouraged adoption of a standard set of policies relating to responsible beverage service, while others have used risk assessment procedures to guide policy development geared specifically to the needs of the bar.

2.1 Encouragement to Adopt RBS Policies

A number of projects have encouraged bar owners/managers to adopt a standard set of house policies to discourage intoxication and other problem behaviors. To facilitate this process, the Responsible Beverage Service Council located in California identified the following areas that should be part of a model house policy: monitoring the door, offering and promoting food, promoting alternative beverages, training bar staff, pricing away from intoxication, identifying alternative transportation, checking age identification, monitoring drinking, managing the intoxicated guest, and marketing responsible beverage service (see Muirhead & Kovacs, 1994). In one community study (Putnam et al., 1993), 100% of off-premise and 79% of on-premise establishments adopted written RBS policies. Other studies that combined RBS training and promotion of house policies (McKnight, 1991; Saltz & Stanghetta, 1997) found small improvements in policy, while others (Howard-Pitney et al., 1991; Wallin et al., 1999) found no overall improvement in house policies as a result of the intervention (see Table 1).

2.2 Risk Assessment Approaches to Policy Development

(a) Risk assessments done by the project team. Saltz's (1987) intervention in a U.S. Navy club included policy development but no policy-specific evaluation was reported. Mosher et al. (1989) compared an intensive RBS program to a less intensive program (TIPS, see Russ & Geller, 1987) and to no program. The intensive program included a risk assessment conducted by the project team involving a survey of all bar staff and interviews with specific managers and staff. On the basis of these data, the consultant drew up a list of policy recommendations for management. The results of the process evaluation indicated that some but not all recommended policies were adopted.

The Australian “FREO Respects You” project (Lang et al., 1998; Stockwell et al., 1993) included a House Policy Checklist for assessing risks covering the following topics: providing positive incentives for avoiding intoxication (e.g., food, cheaper prices for low or no alcohol drinks), avoiding incentives for intoxication (e.g., drink specials), policies to minimize harm (e.g., increasing safe transportation options) and policies to minimize intoxication (e.g., slowing then refusing service to intoxicated patrons). They found improvement in 4 out of 11 policy areas among experimental bars.

The Surfers Paradise “Risk Assessment Policy Checklist (Homel et al., 1997) included 16 items regarding alcohol and pricing, responsible serving practices and promotion of food and entertainment. The Checklist was administered with the bar manager, one server and one security employee in eight bars pre and post the community intervention. Substantial improvement was found overall with significant changes on 14 of the items.

(b) Self-administered risk assessments. The “Safer Bars” program includes a self-administered risk assessment workbook for bar owners/manager (Graham, 1999) which is designed to help bar management identify and make plans to change aspects of the bar environment (including physical environment, policies, staff characteristics) that have been identified as increasing risk of aggression (see Arnold & Laidler, 1994; Graham & Homel, 1997). The workbook contains 97 items covering 11 areas including risk factors associated with patrons entering the bar, bar layout, characteristics of servers and security staff, closing time and other aspects of the bar environment. It also includes a section in which the bar owner/manager can write down any plans to change for each area along with target dates for changes to be made. Positive feedback on the usefulness of the workbook was received from bar owners and managers and others during the development of the workbook; however, no evaluation of the impact of the workbook has been conducted.

(c) Incident logbooks. Logbooks and other approaches to recording critical incidents can be used to reduce risks by identifying and correcting trouble spots and problem issues in the bar (Dickson, Leather, Beale and Cox, 1994). For example, an analysis of incidents from a recent study of barroom aggression found that incidents tended to be most likely to occur in certain areas of the bar (e.g., high traffic areas, near the pool tables) (Graham & Wells, In press). Special forms have been printed for use as log books (e.g., Muirhead & Kovacs, 1994); however, no evaluations were found regarding the extent that log books are completed and actually used to identify and reduce risks.

Overall, the results indicate that individualized risk assessments are likely to result in some improvement in policies (see Table 1); however, there are no data evaluating the direct contribution of house policies to improved serving practices, to lower intoxication levels of patrons or to a reduction in problem behavior (independent of other components of the intervention such as server training).

3. Codes of Practice and Other Agreements Among Local Bar Owners

One strategy that has been used when problems in bars are concentrated in a specific identifiable geographic area is for bar owners to agree to a Code of Practice that limits some of the major risk factors for intoxication, violence and related problems. Other local coordination strategies focusing on identifying and banning problem patrons have also been developed.

3.1 Codes of Practice

Voluntary Codes of Practice seem to have been widely adopted in Australia with varying levels of success (Arnold & Laidler, 1994). For example, as part of the Surfers Paradise project, a Venue Management Task Group was set up to develop ways of delivering alcohol in a responsible manner and to establish positive working relationships among the Surfers Paradise licensees, the Surfers Paradise Police and the Queensland Liquor Licensing Division (Homel et al., 1997 p.54). This group undertook a number of initiatives such as the development of a Code of Practice for licensees and was very successful initially; however, it appeared that compliance with practice codes and other safety features fell off as competition between bars led to first one and then others violating agreed upon policies and codes.

One agreement among local bar owners that deserves special mention is the Geelong Accord. This accord was initiated by the local police after a local Code of Practice was found to be ineffective in preventing violence. The primary focus of the initiative was on reducing pub-hopping and associated problems (Felson et al., 1997; Lang & Rumbold, 1997; Rumbold et al., 1998), although it also had goals to minimize over consumption and service to underage patrons. The accord included: cover charges to enter bars after 11pm; removal of exemptions of cover charges for women; prohibition of unlimited re-entry with cover change; banning of drink promotions that lead to intoxication; consistent serving policies among bars; and increased enforcement of prohibitions regarding underage drinking and drinking in the streets. The evidence suggests that this accord had a substantial impact on crime rate (Felson et al., 1997;

Rumbold et al., 1998), although the lack of a controlled evaluation makes this conclusion tentative. An important aspect of the Geelong Accord compared to other community interventions is its sustainability due to oversight from the local Best Practices Committee headed by the police (Rumbold et al., 1998). However, it could be argued that the police leadership in this project made this more of an enforcement intervention than one of “voluntary” agreement among bars (Lang & Rumbold, 1997).

Overall, these experiences suggest that a bar owners’ association provides a useful starting point for raising awareness, but that voluntary policies may need to be combined with enforcement in order to ensure a level playing field in terms of risky practices (such as drink specials) that may give some bars a competitive advantage in attracting patrons. The Surfers Paradise project included a local monitoring and compliance committee that had some success during the life of the project, but the lack of continuing effectiveness of this committee beyond the life of the project suggests that monitoring and compliance needs to be institutionalized effectively in the appropriate authorities (i.e., police and licensing authorities). Accordingly, replications in Cairns and Townsville (Hauritz et al., 1998ab) included establishment of a permanent Council appointment to address community safety. Whether these efforts will result in long-term sustainability of these projects is unknown at this time.

3.2 Other Coordination Strategies

“Pubwatch” is a voluntary agreement among bar owners that involves “a communication system for licensees to warn one another about any disorderly incidents (or any overt criminal activity) in licensed premises, via a ring-around arrangement between the licensees in the group, which often includes a dedicated hot line to the local police” (MCM Research, 1993, p.6). No evaluation of this strategy has been found. MCM Research also described other local associations or agreements, but there appear to be no evaluation data regarding the effectiveness of these programs.

It seems that Codes of Practice and other agreements often develop in response to an unusually high level of problems being associated with bars in a particular area. Therefore, a randomized control study is needed to separate true effects from regression to the mean effects that may be due to the fact that bars are often pressured into developing Codes of Practice at a time when local bar-related problems are peaking and likely to fall even without any action on the part of the community.

4. Enforcement Interventions

Two types of enforcement interventions have been studied: adoption of proactive and preventive policing and increased enforcement of existing laws.

4.1 Proactive Policing

Poor policing practices have been identified as contributing to problems in and around bars (Marsh & Kibby, 1992). Accordingly, some interventions have focused on a more preventive and consistent approach to local policing. In a study of the effects of changes in police enforcement in an English coastal town, Jeffs and Saunders (1983) found that proactive policing (involving regular visits to licensees for the prevention of offenses relating to underage drinking and drunkenness on the premises) resulted in a significant drop in arrests, especially for alcohol-related crimes, compared to the reactive policing of waiting for a disturbance to occur before taking action. However, a replication study in New South Wales (Burns, Flaherty, Ireland & Frances, 1995) did not produce a reduction in arrests. These inconsistent findings may reflect a problem with using arrests as the sole outcome variable in that the number of arrests reflects not only the actual crime rate but also the number of police and the opportunities for arrests. For example, the Rhode Island project produced an increase in arrests (because of increased enforcement); however, the emergency room data indicated an overall positive impact as demonstrated by a decrease in assault-related injuries (suggesting a lower actual assault rate despite the increase in arrest rates).

4.2 Increased Enforcement of Liquor Laws

McKnight and Streff (1994) evaluated the effect of systematically increased enforcement of laws prohibiting sale of alcohol to intoxicated patrons in a Michigan county. They found a dramatic change in refusal of service to pseudo patrons compared to findings from comparison counties (although there were also reductions in serving of pseudo patrons in comparison counties during the same period and the difference between the experimental and control counties was no longer significant by the time of the third follow-up). They also found a significant decrease in Driving While Impaired (DWI) charges in the experimental county compared to no change in DWI charges in the three comparison counties. Moreover, cost-benefit analyses of these data (Levy & Miller, 1995) indicated that the benefits greatly exceeded the costs.

The Rhode Island Project (Putnam et al., 1993) included both increased enforcement and server training. Overall arrest rates and alcohol-related arrests (including arrest rates for alcohol-related assault) increased in the intervention site while decreasing in the comparison sites. However, follow-up data from the intervention and comparison communities suggested that the increased enforcement brought about by the project was not maintained after the project ended (Stout et al., 1993). During the project, there was a decline in ER visits and injuries from assault in the experimental community with no comparable decline in the control community.

The importance of enforcement was also highlighted by Dresser (2000) who found that, although visibly intoxicated patrons were less frequent in states with mandatory training, carding of young patrons was not more frequent in these states. Interviews with managers suggested enforcement practices of the State Alcohol Beverage Control Agency not server training accounted for variability in carding young patrons.

Despite the evidence that enforcement can be effective, a number of researchers in the area have commented on the surprising lack of enforcement. In their 1983 paper, Jeffs and Saunders noted that although there were a large number of arrests for drunkenness and breach of peace in Scotland, prosecution of operators of licensed premises was rare. They suggested that poor enforcement of liquor regulations may relate to a variety of factors including ignorance and a tendency to be sympathetic regarding the enjoyment of drinking. More than a decade later, Stockwell, Norberry and Solomon (1995) noted a reluctance by police to enforce liquor laws against bar owners and managers. They suggested a number of reasons why enforcement might be weak including difficulty in establishing guilt, close relationships between police and bar owners, limited resources, poor knowledge and understanding of liquor laws, ambivalence about interfering with other people's enjoyment, and concern about the effects of enforcement on bar profitability. Research involving systematic controlled trials is needed to better assess the effect of increased enforcement as an intervention. In addition, the factors that help to maintain increased enforcement beyond the initial enthusiasm of a community project also need to be identified given possible decay of enforcement over time.

5. Interventions Involving Laws, Policies or Regulations at Regional or National Levels

Laws, policies and regulations constitute one type of intervention with on-premise drinking. These can include a variety of regulations from restricting hours of operation and density of outlets to banning "happy hours" and other specific drink promotions to requiring that food be available (see Single & Tocher, 1992; Stockwell, 1994a). There are few instances in which changes in liquor regulations have been evaluated as part of a planned experimental intervention; however, there are some evaluation data on the impact of naturally occurring policy changes.

5.1 Policies and Laws Related to Servers

One policy likely to have a significant impact on servers, managers and owners of licensed establishments is the extent that they are held legally liable for harm attributable to the intoxication of persons whom they have served. Evaluations of the impact of this liability on drinking driving fatalities and homicide have been done in the U.S. relating fatalities across the 48 contiguous states from 1982 to 1988 (to 1990 in one study and 1995 in another) with whether the state has legislation or case law holding servers liable (known as “dram-shop liability”). These studies used a variety of analytic strategies and controlling variables and consistently found a negative relationship between dram shop liability and traffic fatalities (Chaloupka, Saffer & Grossman, 1993; Ruhm, 1996; Sloan, Reilly & Schenzler, 1994a; 1994b; Sloan, Stout, Whetten-Goldstein & Liang, 2000), as well as a significant negative relationship between dram-shop liability and homicide (Sloan et al., 1994b). Similarly, Wagenaar and Holder (1991) found that an increase in legal liability of servers in Texas was associated with a 12% decrease in single-vehicle nighttime injury-producing traffic crashes, a significant change compared to rates in other states.

The causal relationship between dram-shop liability and traffic fatalities and other harms cannot be determined from these analyses. For example, if increases in dram shop liability were highly correlated with increased punishments for drinking driving, the negative relationship over time between dram shop liability and traffic fatalities could be artifactual. Further research is needed to tease apart these causal relationships. Nevertheless, several studies suggest that the effect may be a result of the impact of liability on serving practices of commercial servers. In particular, Holder et al. (1993) found that states with greater liability exposure showed higher levels of awareness and concern among bar owners/managers and different serving practices compared to states with less exposure. Similarly, in their national survey of bar owners/managers, Sloan et al. (2000) found a significant association between strictness of dram-shop liability and actual and perceived risks of being sued. On the other hand, analyses of a subsample of respondents from the U.S. Behavioral Risk Factor Surveys (1984-1990) found no relationship between whether the respondent lived in a state with dram-shop liability and drinking five or more drinks per occasion or drinking and driving (Sloan, Reilly & Schenzler, 1995). Further analyses of responses to this survey (1984-1995) (Sloan et al., 2000) found that dram-shop liability was significantly associated with whether the respondent drank at all and drinking driving among all drinkers, close to significance for drinking driving by those who consumed five or more drinks per occasion, but not significantly related to consumption of five or more drinks per occasion. The association between dram-shop liability and whether the respondent drank any alcohol suggests the possibility of an association between dram shop liability drinking practices and drinking driving that may actually be unrelated to serving practices. Overall, however, the consistent negative relationship between liability and traffic fatalities and the data showing a relationship between liability and serving practices constitute sufficient evidence in favor of this policy, pending further research.

With regards to other policies directed toward servers of alcohol, mandatory server training has also been found to be associated with fewer traffic fatalities. As described previously, Holder and Wagenaar (1994) evaluated the effects of state-mandated serving training in Oregon on single-vehicle nighttime injury-producing traffic crashes using time series analyses controlling for crashes in other states and found a reduction in crashes associated with mandated server training.

5.2 Regulation and Licensing of Doorstaff

Although it appears that licensing requirements for doorstaff is usually combined with training, in their key informant study of interventions in Australia, Arnold and Laidler (1994) described some purely regulatory approaches to regulating doorstaff. Their interviews indicated (see p. 46) that legislation in Victoria prohibiting crowd controllers from being licensed if they

had been convicted of drug trafficking or assault was an effective tool in removing from the industry persons who had a propensity to violence!

5.3 Other Statutory Approaches

Although a number of jurisdictions have banned happy hours and other drink promotions, few systematic evaluations of the effects of these policy interventions have been found. One exception to this was a study of the impact of banning “happy hour” in Ontario (Smart & Adlaf, 1986) which found no apparent effect on observed consumption by bar patrons and no overall effect on alcohol sales at licensed premises. While there was a significant decline in impaired driving charges following the ban, this decline could not necessarily be attributed to the ban itself.

One policy issue that has caught the attention of the media and others in the UK is the use of tempered rather than standard glass. Tempered glass has been recommended for use in bars because tempered glass shatters when broken and is, therefore, less injurious if used as a weapon (Shepherd, 1994). However, the one study of the effects of toughened glassware (Warburton & Shepherd, 2000) found that injuries to bar staff actually increased when toughened glassware was used. Plant, Miller, Plant & Nichol (1994) have recommended taking a broader approach to identifying and eliminating physical risks in the environment, especially artifacts that are likely to increase injury if used as weapons, and replacing glassware with plastic cups wherever possible. Other than the study of toughened glassware, no evaluations of interventions to remove or reduce physical risks were found.

Regulations of hours of operation for licensed premises has also been the subject of a number of studies (see review by Stockwell, 1994a). Although no overall effect of changes in hours has been identified, there has been some research to indicate that there can be negative effects associated with extended hours. For example, a recent study of extended operating hours permits in Perth, Australia, found higher rates of assault and drinking driving among patrons of bars with Extended Trading Permits compared to patrons of bars without such permits (Chikritzhs, Stockwell & Masters, 1997). There is no strong evidence, however, that adjusting hours of operation is an effective policy intervention for reducing bar-related problems. On the other hand, there appears to be a need to develop regulations that focus on identified environmental risk factors such as low control by servers (Kulis, 1998), high levels of bumping and crowding (MacIntyre & Homel, 1997), and frequent milling and movement by patrons (Graham et al., 1980).

6. Designated Drivers and Ride Services Programs

Responsible Beverage Service Training was originally motivated largely to prevent drunken driving and associated accidents and injury. In particular, RBS programs focussed on the drinking part of the drinking driving problem. Other programs, however, have focused on driving rather than drinking, either by encouraging one member of a drinking group to abstain in order to be the “designated” driver or by offering free rides home to those who are too inebriated to drive. Although these programs have not been directed exclusively toward on-premise drinking, drinking in bars has been a primary focus for most programs.

6.1 Designated Driver Programs

In a 1987 study, Apsler, Harding and Goldfein identified 431 drinking establishments alleged to have formal designated driver programs in the U.S. They contacted 40 of these programs to provide an overview of designated driver programs. They found that most establishments had incentives (usually free nonalcoholic drinks) for the designated driver but over half also had eligibility requirements in terms of size of drinking group. Although few bars actively recruited designated drivers, most also had other programs such as providing rides home for intoxicated patrons. Cost of the programs was low but usage was also low, with about three-quarters of establishments reporting 20 or fewer designated drivers per week, accounting for a small proportion of eligible parties. Moreover, observations during site visits at four

establishments suggested that the figures provided were probably overestimates. In addition, interviews with a small sample of designated drivers suggested that at least some proportion of designated drivers were non or light drinkers who would have abstained regardless of the program.

The evaluation of the effects of the Houston TEAM program on designated driving (Simons-Morton & Cummings, 1997) involved six bars and restaurants. The program consisted of designated driver incentives (complementary beverage or food) and vouchers for inebriated patrons to receive a free taxi ride home (partly paid by the bar and partly subsidized by a local coalition). As part of the study, the staff received a 45 minute retraining program on how the designated driver program works and buttons to wear advertising the program. Participating bars were chosen as ones most supportive of the TEAM program. Positive attitudes towards prevention increased slightly but significantly following the training. None of the establishments displayed the counter sign provided by the TEAM program announcing the designated driver program, and only one establishment displayed a sign regarding a free taxi ride home. Observations by researchers in bars indicated that 15.6% of staff wore designated driver buttons prior to the retraining and 26.6% after training; however, no servers in 3 of the 5 establishments in this part of the study wore buttons before or after training. The percent of designated drivers among patrons was estimated from observations in the bars and this percent did not increase following the retraining. The percent of designated drivers was not significantly correlated with the percent of staff wearing buttons. Most staff felt the designated driver program worked well but less than half felt that management was supportive of the program. The study also involved an intensive campaign at one bar to increase use of the designated driver program. This campaign showed no impact.

Brigham, Meier and Goodner (1995) used an ABAB reversal design to evaluate the effect of an intervention that consisted of mounting three framed posters and ten placards in a college student bar advertising free non-alcoholic beers, wines, mixed drinks or coffees to designated drivers. Using graduate student observers, they found an increase in designated drivers from a median of 3 for each baseline to 7.5 during the first intervention and 7 during the replication. Meier, Brigham and Gilbert (1998) replicated the Brigham et al. (1995) study in two college communities with the addition of an advertising campaign in the college newspapers and free "munchies". One bar showed an increase in the mean number of designated drivers but the other did not. In a second replication involving an upscale downtown bar and a country bar, they found an increase in designated drivers in the upscale bar but not in the country bar. Meier et al. (1998) found that few patrons were aware of the newspaper advertisements; therefore, they conducted a T.V. campaign on the local cable system advertising and promoting the designated driver program. Monitoring by staff of the rate of designated drivers in the upscale bar showed an increase in the mean number of designated drivers from .3 at baseline to 4.1 during the campaign to .3 following the campaign.

Overall, the impact of on-premise designated driver programs appears to be small and even intensive promotions produce modest increases. Moreover, there has been some controversy that designated driver programs may do more harm than good by increasing alcohol consumption of those travelling with a designated driver (DeJong & Wallack, 1992). DeJong and Wallack have also suggested that problem drinkers are unlikely to use such programs and that licensed premises would lose too much money and gain little legal protection from such programs. Results from a general population survey and barroom surveys (Caudill & Harding, 1997), however, indicate that those who reached higher BACs when drinking outside the home and younger respondents reported being most likely to use designated drivers, suggesting that the programs do reach the primary target population. In addition, Apsler et al. (1987) and Meier et al. (1998) found no support for the argument that having a designated driver causes an increase in drinking by companions.

A side effect of designated driver programs may be increased awareness of risks of drinking driving. This awareness of the perils of drinking driving may have resulted in the adoption of designated drivers who, although not totally abstinent, drink somewhat less than companions. A recent U.S. roadside survey (Fell, Voas & Lange, 1997) found that a greater proportion of designated drivers had a BAC of .02 or higher than of all other drivers sampled; however, when designated drivers were compared to other drivers coming from bars, they were more likely to have a BAC in the .05 to .08 range and less likely to have a BAC over .10. These data suggest widespread use of designated drivers who limit their consumption rather than abstaining completely.

6.2 Ride Service Programs

The purpose of ride service programs is to provide transportation to intoxicated persons who would otherwise drive. While these programs are usually not restricted to patrons of licensed premises, bar patrons are a primary target and bars often contribute to such programs, in part due to concerns by bar owners related to reducing legal risks. Harding, Apsler and Godfern (1988) provided a very useful summary of ride service programs in the U.S. They identified 325 programs, collected detailed information on 52 programs, and made site visits to 12 programs. They found that programs were highly variable in the approach used, with about two-thirds using cabs, while the remaining used a variety of approaches including volunteer drivers and cars, buses and police. About 15% also transported the rider's car. A variety of sources were used to fund programs, with 95% providing services at no cost to the rider. The programs provided an average of 841 rides per year (range of 28 to 3,312). Eleven percent of programs restricted riders to patrons of licensed premises. Analyses of data from six programs indicated that the majority of riders overall were picked up at licensed premises (range of 31% to 92%). Most programs did not monitor the characteristics of riders, but estimates regarding characteristics were developed from a variety of sources including program records and unobtrusive observations. These estimates suggested that about 60% of riders were male. Estimates of age from five programs indicated that the majority of riders were age 20 to 30.

Molof, Dresser, Ungerlender, Kimball and Schaefer (1995) evaluated two longstanding, well-functioning ride service programs, "I'm Smart," a for-profit year-round program in Syracuse, New York serving primarily bar patrons and persons attending corporate or social host parties and funded by corporate members and drinking establishments on a pro rata basis; and "SoberCab," a Minneapolis program operating over the Christmas and New year season and funded by a consortium of 24 hospitals. The "I'm Smart" program drives people home in their own cars and was providing about 2,500 free rides per year at the time of the study (average waiting time of 20 minutes). The program picked up 84% up at licensed premises or private clubs, 56% were judged to be between 26-35 years of age, 17% of riders were 36 to 40 and 16% were 20 to 25%; 80% of trips included one or more males and 53% included one or more females. "SoberCab" provided approximately 700 free taxi rides home during the two seasons preceding the study. Based on interviews with 17 users of the SoberCab program, riders were estimated to be 88% male with an average age of 31. Several sources of data suggested that both programs were well-known in their communities, especially by bar patrons and heavier drinkers. Based on discussions with bar patrons, it was estimated that 13-16% had used the "I'm Smart" program and 10-12% had used SoberCab. A general population telephone survey found that 2% of those surveyed reported using the SoberCab program. Although the programs in both communities were well-established and popular, analyses of alcohol-involved accidents were unable to demonstrate an identifiable impact of either program on annual crash rates.

The "Operation Nez Rouge" program using volunteer drivers to drive people home who have had too much to drink has been operating in Switzerland since 1993. The program has two goals: safe transport and increased awareness of impairment of driving abilities due to alcohol. A survey of users of the program in 1993-94 (20% response rate based on 730 trips) (Ayer,

FranHois & Rehm, 1994) found that about 70% were men, 50% were 30 years of age or younger, and about half planned on using the service before they were drinking while the other half decided at the time. Almost 75% thought it was a good prevention program, while 7.5% thought it encouraged people to drink. About two-thirds of respondents reported that the program made them more aware of possible impairment due to alcohol. A similar program operates in the province of Quebec in Canada, but no published evaluations of the Quebec program were found.

In summary, ride services appear to be popular, provide a large number of rides to people who would presumably otherwise drive while intoxicated, generally reach high risk groups for drinking driving (i.e., young, male heavier drinkers), and may generally increase awareness of the risks of drinking and driving (Ayer et al., 1994; Molof et al., 1995); however, because these services account for a relatively small percent of drivers, no overall impact on alcohol-involved accidents has been demonstrated.

7. Community Mobilization

Community mobilization has been used both as a strategy for implementing a specific intervention (e.g., RBS programming) and as a primary intervention directed towards changing the culture in which bars operate (see Homel, In press; Kulis, 1997).

7.1 Community Mobilization as an Implementation Strategy for RBS Training and Other Specific Interventions

One of the goals of the Mosher et al. (1989) study was to evaluate the effectiveness of a community mobilization approach to (a) recruiting bars for RBS training and (b) developing the capacity of the community to maintain the training. They found that the response of the community was greater in one community where there were existing controversies and problems related to bars. In general, the study reported some success but also considerable difficulty in recruiting bars and the overall community impact on bar practices was unclear.

The Rhode Island project (Putnam et al., 1993), which also used community mobilization to support the project objectives, was very successful in recruiting bars and showed some success in obtaining the goal of reducing injuries. The extent that community mobilization contributed to the success of the project is unknown.

Saltz and Stanghetta (1997) also implemented RBS as part of a community project. While they found that pretest data collected as part of the project evaluation helped in mobilizing the community, they, nevertheless, reported a limited impact on serving practices. Overall, these results suggest that community mobilization may play a role in recruitment of bars but there is no strong evidence that community mobilization is a particularly effective vehicle for enhancing the effectiveness of RBS training in the absence of regulatory pressure or increased enforcement.

7.2 Broad Focus Community Mobilization Relating to Bars

Community mobilization has been used to put pressure on bars to change in a number of projects. These include both grass roots initiated projects (see projects described by Arnold & Laidler, 1994; Cusenza, 1998) as well as funded projects led by a project team that includes community developers hired specifically for the project (Hauritz et al., 1998ab; Homel et al., 1997). Community mobilization is used to raise awareness, develop specific solutions to problems, and use community pressure to ensure that bars recognize that they have a responsibility to the community in terms of such bar-related issues as noise level and patron behavior. Evaluation results from the Surfers Paradise project (Homel et al., 1997) and its replications (Hauritz et al., 1998a,b) as well as results from other projects (Arnold & Laidler, 1994; Cusenza, 1998) suggest that this approach can be highly successful at effecting change. However, funded projects may have problems with sustainability (see Lang & Rumbold, 1997) while grassroots projects depend on the availability of appropriate community leadership.

In sum, community approaches appear to have at least a temporary impact on licensed premises but it is unclear how to make them happen in a systematic way except through specific funded projects which tend to be expensive and difficult to sustain beyond the project (see Graham & Chandler Coutts, 2000 and Holder & Moore, 2000). There are, however, an increasing number of community action manuals available to facilitate the process of grassroots mobilization (e.g., Lander, 1995; Neves et al., 1998) which may increase the likelihood of systematic implementation of grassroots efforts. In a recent review of prevention approaches directed at licensed premises, Homel (In press) recommends that the most effective community model would combine education, coordination and enforcement.

8. Programs Directed Toward Patron Education

The effects of an Australian project entitled “.05 Know Your Limits” which included posters and availability of a breathalyzer was assessed by comparing eight experimental bars with seven control bars (McLean, Wood, Montgomery, Davidson & Jones, 1994). The project involved interviewing and breath testing patrons leaving the bars on Thursday, Friday and Saturday nights. Although one-third of the patrons reported being aware of the promotional materials, there was no significant difference between patrons of experimental and control bars on BAC or on intention to drive with a BAC over the legal limit for driving.

Another program directed at patrons was an advertising program in New Zealand (Wyllie, 1997). The program was successful in raising awareness regarding the legal obligation of bar staff not to serve intoxicated persons, and bar managers reported that they felt the campaign assisted them in doing their job; however, no data on the actual effects of the campaign on patron intoxication or behavior were reported.

Discussion

Overall, there is sufficient evidence to suggest that interventions with bars *can* be effective in reducing alcohol-related problems, but many uncertainties exist. First, most interventions have not been subjected to any outcome evaluation, much less randomized controlled trials that could eliminate artifactual findings. Only Responsible Beverage Service programs and some policy/enforcement interventions have been evaluated using adequate comparisons. For RBS programs, the results have been modest, with studies generally identifying a small improvement in knowledge following the training, but only sometimes an effect on policy, practice and patron behavior. Enforcement interventions have shown generally positive effects and, in at least one study (McKnight, 1991), this effect seemed to be quite substantial. Multi-component community-based approaches have shown an impact on violence (Hauritz et al., 1998ab; Homel et al., 1997) and injuries (Putnam et al., 1993), but there is evidence that these effects decay after the project (Homel et al., 1997; Lang & Rumbold, 1997; Stout et al., 1993), suggesting that sustainability of community-based approaches may be problematic.

There is no question that bars *can* change in terms of intoxication levels of patrons and reduction of other problems such as aggression. On the other hand, intervention studies have found that bar owners, managers and staff (a) usually do not volunteer to change (i.e., recruitment into projects has often been problematic), (b) often do not cooperate fully with interventions, (c) typically do not change very much as a result of most interventions, and (d) often do not sustain changes beyond interventions because of other factors such as competition and patron demand.

On the basis of existing research regarding on-premise interventions, it seems likely that the greatest effects will be achieved by combining training of bar staff, education of patrons, development of lower-risk policies and enforcement of regulations aimed at decreasing risks related to drinking in licensed premises. This is consistent with recommendations made by Homel (In press). However, there are many unknowns. First, there is insufficient research on individual interventions to make recommendations regarding content and implementation. For

example, the maximally effective content, format and length of server training is yet to be determined. Second, effective, efficient and generalizable implementation strategies have not been identified. Third, sustainability of training effects, enforcement and other strategies needs to be addressed.

A major problem in the area is that the development and evaluation of interventions has proceeded in an uncoordinated way. Typically, individual researchers or communities have identified problems and tested out their own solutions. In addition, much of the literature relating to on-premise interventions is in the form of local reports or documents that have not been written for or subjected to peer review. Methodologies are not described and outcomes are often stated in general terms. A further problem is that there have been very few formal evaluation studies of most interventions. Evaluations, especially outcome evaluations, tend to be costly, and research on community interventions can involve a great deal of time spent by researchers on non-research activities (Stockwell, 1992), a prospect that is not likely to be attractive to most scientists. Finally, even among evaluated programs, many interventions included multiple components (e.g., Homel et al., 1997) for which it was usually impossible to identify the particular components responsible for any observed effects.

A General Model for Future Development and Evaluation of On-Premise Interventions

The development of on-premise interventions has involved mostly an ad hoc process, often informed by only a small amount of knowledge of the culture. For example, many server training programs focus primarily on knowledge and attitudes (see Toomey et al., 1998). However, as noted by Stockwell (1992), patron intoxication may not be a result of a lack of knowledge or even skills on the part of bar staff. Other factors such as motivations of patrons to get intoxicated (Wallin et al., 1998), and unwillingness of bar staff to make trouble for patrons (McKnight, 1991) may play a larger role in serving practices than knowledge. Consistent with this view, McKnight and Streff (1994) noted that enforcement appeared to work not by making staff better able to recognize intoxication but rather by increasing pressure and motivation to refuse service. Given the growing recognition of the multiple factors that affect barroom drinking and behavior, it is perhaps time that the field adopt a more systematic approach using a well-articulated causal model.

Figure 1 provides a general model that could be applied to most on-premise interventions. The purpose of the model is to help clarify various strategies for addressing the ultimate concern, namely, reducing harmful behavior by bar patrons. As shown in Figure 1, training, regulations and community pressure are control or intervention factors, practices and behaviors of servers and managers and the barroom environment play a mediating role, intermediate outcomes pertain to patron behavior, and the ultimate outcomes relate to safety of patrons, bar staff and the public generally. However, there are both horizontal and vertical links. For example, among the mediating factors, bar management would be expected to affect both server behavior and the bar environment. In addition some control factors such as enforcement of laws might affect patron behavior directly rather than through the identified mediating factors. On the other hand, other control factors might be more distal – e.g., community pressure -> increased enforcement -> changes in server behavior -> changes in patron behavior. An example of a more complex model of factors involved in community action interventions is described by Hauritz et al. (1998a, p.6-8).

The importance of using a model to guide evaluations of on-premise interventions is not only that a model helps to clarify the relationship between the intervention and the ultimate outcome, but also that it draws attention to important mediating processes. For example, in a model described by Wagenaar & Holder (1991) that linked legal regulations regarding serving practices with traffic crashes (p.944), the paths suggested that the effect of the legislation might be negligible without adequate publicity. Therefore, assessing the extent of publicity was an important part of the causal chain. This same systematic approach needs to be applied to other

on-premise interventions. For example, Homel (in press) recommends a systematic approach to conceptualizing on-premise interventions that uses a situational analysis similar to that employed in situational crime prevention strategies (see Clarke, 1992). Such an approach would lead to a more systematic method of identifying and addressing the factors that control the behavior of bar managers and staff.

Table 2 illustrates how such an analysis might be done with regards to reducing patron intoxication (i.e., the primary focus of RBS programs). The questions described in Table 2 could be asked about an intervention designed to address a problem in a specific bar, but the format is also applicable to community, regional and national level interventions. The importance of the approach shown in Table 2 is that it bases the content and implementation of the program directly on evidence relating to the factors that contribute to intoxication. For example, a server training program to reduce patron intoxication would include a knowledge component only if a lack of knowledge on the part of servers seemed to contribute to staff serving patrons to intoxication. At the time RBS programs were first developed, there was some evidence to suggest that at least some servers were unfamiliar with the law regarding serving underage or intoxicated patrons and that bar owners and managers had tolerant attitudes both toward underage drinking and drinking to intoxication (Bradbury, 1984). Therefore, the initial focus of server training on knowledge and attitudes had some justification. However, whether these issues should continue to be the main focus of programs needs to be revisited.

Developing knowledge of the factors that contribute to problems in bars can help to identify the pressures and countervailing forces that affect the type of drinking and other behaviors that occur in bars. This knowledge can then be used to build interventions that address and exploit these factors. For example, a number of studies have suggested that there is strong support from the public and from bar owners and staff for certain types of preventive interventions (e.g., offering to call a taxi for an intoxicated patron), and that some policies are viewed more favorably by customers than bar owners (e.g., serving free non-alcoholic drinks), while other policies are generally not supported (e.g., policies that limit alcohol sales or reduce availability) (Hawks, Lang, Stockwell, Rydon, & Lockwood, 1993; Turrisi, Nicholson & Jaccard, 1999ab). This descriptive research can be very useful for identifying policies that are easily implemented versus policies that will require extensive education, promotion or enforcement in order to be implemented effectively. In another descriptive study, Sloan et al. (2000) conducted a national survey of barworkers and found that irresponsible serving practices were associated with higher salaries but that responsible practices were associated with higher tips on average (p.214-215). Research findings such as these could be usefully incorporated into both working with managers and server training programs.

In sum, to fully understand the effects of on-premise interventions, we need well-researched models of the factors that contribute to harm. Then, we need evaluations that can assess not only the overall effectiveness of specific programs but also the effects of individual components. This means better need assessments and process evaluations as well as randomized controlled outcome studies. Finally, one difficulty with drawing conclusions from the existing literature is the variability in programs, setting and evaluation methods. With the present uncoordinated approach, if one study finds that RBS training is effective while another finds no effects, it is not clear whether the conflicting findings are due to: (a) a weak effect that is sometimes found and sometimes not found purely by chance; (b) different content of programs; (c) different implementation of programs; (d) different types of bars in the study; (e) different cultural contexts; and (f) different evaluation measures (see Saltz, 1997). In designing evaluation studies, more attention needs to be paid to contributing to the knowledge base regarding on-premise interventions rather than focusing solely on the outcome of a particular intervention.

Summary and Conclusions

This paper reviewed eight distinct approaches to on-premise interventions. (1) Training programs for bar staff and managers have been the focus of more research than any other type of intervention. Two general types of training were reviewed, RBS training and training in people or problem management. Overall, the results indicate that RBS training generally achieves small changes in knowledge and may result in modest changes in practice depending on the type of program and how practice is measured. Several studies found that the proportion of highly intoxicated patrons decreased in bars where server training had been implemented. Although there was no evidence that servers would refuse service solely on the basis of level of consumption of patrons, server training did seem to decrease inappropriate responses (e.g., “pushing” drinks) and may result in a greater likelihood of servers intervening with mild responses such as slowing service when a patron is visibly intoxicated. In addition, broader impacts have been found with statewide mandatory training. Training in behavior or problem management has also shown significant knowledge change but no evaluations were found of the effects of this training on staff behavior or level of problems. In general, the results support continued use of RBS and other training programs, but there remains a need for research on how best to increase the impact of these programs, including revising program content or format and combining programs with enforcement and patron education.

(2) Interventions involving risk assessment and encouragement to adopt house policies that decrease risks of intoxication or problem behavior have usually been combined with other components such as training and community mobilization. Evaluations have usually, although not always, indicated a small but positive impact of these interventions on house policies; however, the effectiveness of these interventions in terms of changing staff or patron behavior has not been assessed independently from other co-occurring interventions. Research is needed to examine the immediate and long-term impact of policy interventions. Although little evidence exists to date of a positive impact of such interventions, the consistent findings regarding correlations of risk factors and negative outcomes justifies continuing risk reduction approaches.

(3) Codes of Practice and other coordination efforts among groups of bar owners have shown some promise but there is no direct evidence that these efforts reduce bar-related problems. Process data from community mobilization projects suggest that while the project is ongoing, the Code of Practice helps to eliminate some harmful practices; however, the stability and sustainability of voluntary codes is questionable. One code (the Geelong Accord) implemented by the local police appeared to be quite successful at eliminating bar hopping and associated problems, suggesting that a friendly but powerful community watchdog and specific intervention goals (e.g., decreasing bar hopping) may help to increase the effectiveness of this type of agreement. Other communication schemes such as “pub watch” where bar owners/managers inform one another about troublemakers are less likely than Codes of Practice to have compliance problems; however, no evaluation data regarding the overall effects of such programs on bar problems were found.

(4) Enforcement interventions including proactive policing at the local level and increased, systematic and well-advertised enforcement at various levels have shown positive results. As with other interventions, however, increased enforcement often happens in response to high problem levels or a specific mobilization project; therefore, maintaining funding to sustain high level enforcement can be problematic, especially if community leaders believe that there has been adequate reduction in the problems that led to increased enforcement. Nevertheless, the evidence is fairly strong that highly publicized high enforcement will reduce problems. Although the evidence on proactive policing is inconclusive, this approach seems most likely to be effective when problem bars are concentrated in a small area and there are local problems with drunkenness, noise and violence on the streets after the bars have closed.

(5) There is some evidence to suggest that laws and policies regulating licensed premises can reduce alcohol-related problems. However, changes in regulations usually occur as part of a political process, often involve multiple changes, and typically provide few opportunities for controlled evaluation. Therefore, hard data supporting most specific policy/regulatory interventions seem to be lacking. Also, research-based approaches to developing and implementing regulations seem to be rare. At present the balance of evidence favors both server liability for harmful consequences due to intoxicated persons (i.e., dram shop laws) and mandatory server training as effective policy approaches. In the absence of conclusive evidence regarding other policy interventions, these interventions should be rationalized according to the particulars of the situation.

(6) Both designated driver and ride service programs appear to prevent some driving by intoxicated person, but because they affect only a small proportion of drinkers, have not shown wide impact. In general, the greatest impact of these programs may have been on sensitizing people to the risks of drinking and driving and to the potential for use of other modes of transportation when intoxicated. Ride services appear to offer the safest alternative in that they apply to all intoxicated persons who are potential drivers not just to groups (especially given that 50% of fatal crashes involve single occupant vehicles, Wagenaar, 1992) and do not require planning prior to the social event. Concerns that these programs lead to increased drinking and risks have not been substantiated; therefore, continuing to promote and implement such programs seems warranted. However, the general lack of active support by bar management who implement designated driver programs suggests that such programs should not be used to justify reduced legal liability for bar owners.

(7) Community mobilization as a strategy for implementing a specific intervention such as RBS does not appear to be especially effective compared to regulatory approaches (e.g., mandatory training) or increased enforcement. Community mobilization as a way to apply multiple interventions and generally put pressure on bars to “clean up their act”, however, does seem to have a substantial impact. Questions remain, however, regarding how to make mobilization happen outside of funded research projects and how to sustain gains made by communities. In general, the multi-component environmental model developed by Homel and others in Australia shows promise of being an effective local approach to prevention.

(8) Only two studies of patron education were found, and the one study that measured outcomes did not find an impact. However, it is possible that patron education can be used to enhance the effects of server training, more restrictive house policies and Codes of Practice. At present, there is no research evaluating these combinations of interventions.

An Area of Promise But Little Research

As shown in Table 1, many types of interventions have been proposed to increase safety in bars (e.g., Hauritz et al., 1998a; Homel, In press; MCM Research, 1993) and most have good face validity – that is, they are based on reasonable arguments and sound as if they should work. However, the hard data to support the effectiveness of most interventions does not currently exist and will be difficult and expensive to obtain. In particular, there are two important gaps in knowledge that need to be addressed to provide a basis for recommendations regarding effective interventions. First, we need a lot more knowledge about the content, process and effects of individual interventions. Although most approaches to prevention of on-premise problems use multiple interventions, there needs to be some a priori evidence that each intervention is suitable and effective in its own right. For example, despite two decades of research on RBS training, we still do not know the optimal content, format and length of training. This means better logic models analyzing exactly how an intervention is expected to work and measuring outcomes at multiple levels in order to check that the expected intermediate outcomes have been obtained. Second, as difficult as they are to conduct, we must have at least some randomized controlled trials. We can learn a great deal about interventions that

develop in response to problems but we still need randomized trials in order to rule out regression to the mean and other cyclic patterns likely to result in falsely strong positive effects.

References

- Alcohol and Gaming Commission of Ontario. (Fall, 1999). "License Line".
- Apsler, R., Harding, W., & Goldfein, J. (1987). The review and assessment of designated driver programs as an alcohol countermeasure approach. (DOT HS 807 108) Springfield, Virginia: National Technical Information Services.
- Arnold, M. J., & Laidler, T. J. (1994). Situational and environmental factors in alcohol-related violence (Vol. 7). Canberra,AU: Government Publishing Services, Australia.
- Ayer, S., FranHois, Y., & Rehm, J. (1994) Op9ration Nez Rouge, Hiver 1993-1994. Evaluation auprTs des usagers. Lausanne, Switzerland: Insitut suisse de pr9vention de l'alcoolisme et autres toxicomainies.
- Babor, T. F., Mendelson, J. H., Uhly, B., & Souza, E. (1980). Drinking patterns in experimental and barroom settings. Journal of Studies on Alcohol, 41, 635-651.
- Bradbury, J. (1984). The implementation and enforcement of the liquor legislation in hotels and taverns in New Zealand. In E. Single & T. Storm (Eds.), Public drinking and public policy (pp. 153-160). Toronto, Canada: Addiction Research Foundation.
- Braun, K., & Graham, K. with Bois, C., Tessier, C., Hughes, S., & Prentice, L. (2000). Safer Bars Trainer's Guide. Toronto, Canada: Centre for Addiction and Mental Health.
- Brigham, T.A., Meier, S.M., & Goodner, V. (1995). Increasing designated driving with a program of prompts and incentives. Journal of Applied Behavior Analysis, 28, 83-84.
- Buka, S. L., & Birdthistle, I. J. (1999). Long-term effects of a community-wide alcohol server training intervention. Journal of Studies on Alcohol, 60, 27-36.
- Burns, L., Flaherty, B., Ireland, S., & Frances, M. (1995). Policing pubs: What happens to crime? Drug and Alcohol Review, 14, 369-375.
- Burns, T. F. (1980). Getting rowdy with the boys. Journal of Drug Issues, 10, 273-286.
- Bushman, B. J. (1997). Effects of alcohol on human aggression: validity of proposed mechanisms. In M. Galanter (Ed.), Recent developments in alcoholism, Vol. 13, Alcohol and Violence (pp. 227-244). New York: Plenum Press.
- Carvolth, R. (1988). Patron care: Initial process evaluation of hospitality industry interventions. Australian Drug and Alcohol Review, 7, 157-161.
- Carvolth, R. (1995). The contribution of risk assessment to harm reduction through the Queensland Safety Action approach. Proceedings of the "Window of Opportunity Congress", Brisbane, Australia.
- Casswell, S., Zhang, J.F., & Wyllie, A. (1993). The importance of amount and location of drinking for the experience of alcohol-related problems. Addiction, 88, 1527-1534.

Caudill, B.D., & Harding, W.M. (1997). Designated drivers: Who are they and do at-risk drinkers use them? Paper presented at the annual meeting of the Research Society on Alcoholism, San Francisco, CA.

Cavan, S. Liquor license: An ethnography of a bar. Chicago: Aldine.

Chaloupka, F.J., Saffer, H., & Grossman, M. (1993). Alcohol-control policies and motor-vehicle fatalities. Journal of Legal Studies, 22, 161-186.

Chandler Coutts, M., Graham, K., Braun, K., & Wells, S. (2000). Results of a pilot program for training bar staff in preventing aggression. Journal of Drug Education, 30, 171-191.

Chikrizhs, T., Stockwell, T., & Masters, L. (1997). Evaluation of the public health and safety impact of extended trading permits for Perth hotels. Paper presented at the 23rd annual meeting of the Kettil Bruun Society for Social and Epidemiological Research on Alcohol, Reykjavik, Iceland, June 1-6.

Clark, W. B. (1981). The contemporary tavern. In Y. Israel, F. B. Glaser, H. Kalant, R. E. Popham, W. Schmidt, & R. G. Smart (Eds.), Research advances in alcohol and drug problems (Vol. 6, pp. 425-471). Toronto: Addiction Research Foundation.

Clarke, R. V. (Ed.) (1992). Situational crime prevention. Successful case studies. New York: Harrow & Heston.

Curran, P. J., Harford, T. C., & Muthen, B. O. (1996). The relation between heavy alcohol use and bar patronage: A latent growth model. Journal of Studies on Alcohol, 57, 410-418.

Cusenza, S. (1998). Organizing to reduce neighborhood alcohol problems: A frontline account. Contemporary Drug Problems, 25, 99-111.

Damkot, D. K. (1982). Alcohol incidence in rural drivers: Characteristics of a population and clues for countermeasures. Drug and Alcohol Dependence, 9, 305-324.

DeJong, W., & Wallack, L. (1992). The role of designated driver programs in the prevention of alcohol-impaired driving: A critical reassessment. Health Education Quarterly, 19, 429-442.

Delewski, C., & Saltz, R. F. (1990). A community action approach to server intervention in two California counties. Contemporary Drug Problems, 17, 345-368.

Denton, K., & Krebs, D. (1990). From the scene to the crime: The effect of alcohol and social context on moral judgement. Journal of Personality and Social Psychology, 59, 242-248.

Dickson, R., Leather, P., Beale, D., & Cox, T. (1994). Intervention strategies to manage workplace violence. Occupational Health Review, August, 15-18.

Dresser, J. (2000). Comparing statewide alcohol server training systems. (unpublished manuscript).

Dyck, N. (1980). Booze, barrooms and scrapping: Masculinity and violence in a western Canadian town. Canadian Journal of Anthropology, 1, 191-198.

Fahrenkrug, H., & Rehm, J. (1995). Drinking contexts and leisure-time activities in the prephase of alcohol-related road accidents by young Swiss residents. SUCHT, 41(3), 169-180.

Fell, J., Voas, R.B., & Lange, J.E. (1997). Designated driver concept: Extent of use in the U.S.A. In C. Mercier-Guyon (Ed.), Alcohol, Drugs and Traffic Safety, Annecy, France; Centre d'Etudes et de Recherches en Médecine du Traffic.

Felson, M., Berends, R., Richardson, B., & Veno, A. (1997). Reducing pub hopping and related crime. In R. Homel (Ed.), Policing for prevention: Reducing crime, public intoxication and injury (Vol. 7, pp. 115-132). Monsey, New York: Criminal Justice Press.

Geller, E. S., Russ, N. W., & Delphos, W. A. (1987). Does server intervention training make a difference? An empirical field evaluation. Alcohol, Health and Research World, 11, 64-69.

Gliksman, L., Single, E., McKenzie, D., Douglas, R., Brunet, S., & Moffat, K. (1993). The role of alcohol providers in prevention: An evaluation of a server intervention programme. Addiction, 88, 1189-1197.

Gloucester Door Safety: A Multi-agency approach to the registration of nightclub and pub door supervisors. (photocopy of manual).

Graham, K. (1999). Safer Bars: Assessing and reducing risks of violence. Toronto, Canada: Centre for Addiction and Mental Health.

Graham, K., Bois, C., Osgood, D. W., & Gliksman, L. (1999) Safer Bars: Evaluating an intervention to reduce barroom aggression. (NIAAA Project Number: ROIAA11505-OIA2) Funding for 2000-2003.

Graham, K., & Chandler Coutts, M. (2000). Community action research: Who does what to whom and why? Lessons learned from local prevention efforts (international experiences). Substance Use and Misuse, 35, 87-110.

Graham, K., & Homel, R. (1997). Creating safer bars. In M. Plant, E. Single, & T. Stockwell (Eds.), Alcohol: Minimising the harm (pp. 171-192). London, England: Free Association Press.

Graham, K., LaRocque, L., Yetman, R., Ross, T. J., & Guistra, E. (1980). Aggression and barroom environments. Journal of Studies on Alcohol, 41, 277-292.

Graham, K., Leonard, K.E., Room, R., Wild, T.C., Pihl, R.O., Bois, C., & Single, E. (1998). Current directions in research in understanding and preventing intoxicated aggression. Addiction, 93, 659-676.

Graham, K., & Wells, S. (In press). Aggression among young adults in the social context of the bar. Addiction Research.

Graham, K., West, P., & Wells, S. (2000). Evaluating theories of alcohol-related aggression using observations of young adults in bars. Addiction, 95, 847-863.

Graves, T. D., Graves, N. B., Semu, V. N., & Sam, I. A. (1981). The social context of drinking and violence in New Zealand's multi-ethnic pub settings. In T. C. Harford & L. S. Gaines (Eds.), Research Monograph No.7. Social drinking contexts (pp. 103-120). Rockville, MD: NIAAA.

Graves, T. D., Graves, N. B., Semu, V. N., & Sam, I. A. (1982). Patterns of public drinking in a multiethnic society: A systematic observational study. Journal of Studies on Alcohol, 43, 990-1009.

Gruenewald, P., Mitchell, P., & Treno, A. J. (1996). Drinking and driving: drinking patterns and drinking problems. Addiction, 91(11), 1637-1649.

Gruenewald, P. J., Stockwell, T., Beel, A., & Dyskin, E. V. (1999). Beverage sales and drinking and driving: The role of on-premise drinking places. Journal of Studies on Alcohol, 60, 47-53.

Harding, W.M., Apsler, R., & Goldfein, J. (1988). The assessment of ride service programs as an alcohol countermeasure. (DOT HS 807 290). Springfield, Virginia: National Technical Information Service.

Hauritz, M., Homel, R., McIlwain, G., Burrows, T., & Townsley, M. (1998a). Reducing violence in licensed venues through community safety action projects: The Queensland experience. Contemporary Drug Problems, 25, 511-551.

Hauritz, M., Homel, R., Townsley, M., Burrows, T., & McIlwain, G. (Eds.). (1998b). An evaluation of the local government safety action projects in Cairns, Townsville and Mackay: A report to the Queensland Department of Health, the Queensland Police Service and the Criminology Research Council. Australia: Griffith University, Centre for Crime Policy and Public Safety; School of Justice Administration.

Hawks, D., Lang, E., Stockwell, T., Rydon, P., & Lockwood, A. (1993). Public support for the prevention of alcohol-related problems. Drug and Alcohol Review, 12, 243-250.

Holder, H. D., Janes, K., Mosher, J., Saltz, R., Spurr, S., & Wagenaar, A. C. (1993). Alcoholic beverage server liability and the reduction of alcohol-involved problems. Journal of Studies on Alcohol, 54, 23-36.

Holder, H. D., & Moore, R. S. (2000). Institutionalization of community action projects to reduce alcohol-use related problems: Systematic facilitators. Substance Use and Misuse, 35, 75-86.

Holder, H., & Wagenaar, A. (1994). Mandated server training and reduced alcohol-involved traffic crashes: A time series analysis of the Oregon experience. Accident Analysis and Prevention, 26, 89-97.

Holmila, M., & Haavisto, K. (1997). Responsible service and drinking environments. Community prevention of alcohol problems. (pp. 123-135). London, UK: MacMillan Press Ltd. In M. Holmila (Ed.)

Homel, R. (In press). Creating safer drinking environments. In N. Heather, T. J. Peters, & T. Stockwell (Eds.), Handbook of alcohol dependence and alcohol-related problems. Sussex, England: John Wiley and sons.

- Homel, R., & Clark, J. (1994). The prediction and prevention of violence in pubs and clubs. Crime Prevention Studies, 3, 1-46.
- Homel, R., Hauritz, M., Wortley, R., McIlwain, G., & Carvolth, R. (1997). Preventing alcohol-related crime through community action: The Surfers Paradise Safety Action Project. Crime Prevention Studies, 7, 35-90.
- Homel, R., Tomsen, S., & Thommeny, J. (1992). Public drinking and violence: Not just an alcohol problem. Journal of Drug Issues, 22, 679-697.
- Howard-Pitney, B., Johnson, M.D., Altman, D.G., Hopkins, R. & Hammond, N. (1991). Responsible alcohol service: A study of server, manager, and environmental impact. American Journal of Public Health, 81, 197-199.
- Ireland, C. S., & Thommeny, J. L. (1993). The crime cocktail: Licensed premises, alcohol and street offences. Drug and Alcohol Review, 12, 143-150.
- Jeffs, B. W., & Saunders, W. M. (1983). Minimizing alcohol related offences by enforcement of the existing licensing legislation. British Journal of Addiction, 78, 67-77.
- Kulis, R. E. (1998). The public interest and liquor licenses in Ontario. Contemporary Drug Problems, 25, 85-97.
- Lander, A. (1995). Preventing alcohol-related violence: A community action manual. Darlinghurst, NSW, Australia: St. Vincent's Alcohol & Drug Service.
- Lang, E., & Rumbold, G. (1997). The effectiveness of community-based interventions to reduce violence in and around licensed premises: A comparison of three Australian models. Contemporary Drug Problems, 24, 805-826.
- Lang, E., Stockwell, T., Rydon, P., & Beel, A. (1998). Can training bar staff in responsible serving practices reduce alcohol-related harm? Drug and Alcohol Review, 17, 39-50.
- Lang, E., Stockwell, T., Rydon, P., & Lockwood, A. (1995). Drinking settings and problems of intoxication. Addiction Research, 3, 141-149.
- Langley, J., Chalmers, D., & Fanslow, J. (1996). Incidence of death and hospitalization from assault occurring in and around licensed premises: A comparative analysis. Addiction, 91(7), 985-993.
- Lapham, S. C., Skipper, B. J., Chang, I., Barton, K., & Kennedy, R. (1998). Factors related to miles driven between drinking and arrest locations among convicted drunk drivers. Accident Analysis and Prevention, 30(2), 201-206.
- Levy, D. T., & Miller, T. R. (1995). A cost-benefit analysis of enforcement efforts to reduce serving intoxicated patrons. Journal of Studies on Alcohol, 56, 240-247.
- MacIntyre, S., & Homel, R. (1997). Danger on the dance floor: A study of interior design, crowding and aggression in nightclubs. In R. Homel (Ed.), Policing for prevention: Reducing

- crime, public intoxication and injury (Vol. 7, pp. 91-113). Monsey, New York: Criminal Justice Press.
- Marsh, P., & Kibby, K. (1992). Drinking and public disorder. London, England: Portman Group.
- Mass Observation (1943). The pub and the people: A worktown study. London: Victor Gollancz.
- McKnight, A. J. (1991). Factors influencing the effectiveness of server-intervention education. Journal of Studies on Alcohol, 52, 389-397.
- McKnight, A. J. (1993). Server intervention: Accomplishments and needs. Alcohol Health and Research World, 17, 76-83.
- McKnight, A. J., & Streff, F. M. (1994). The effect of enforcement upon service of alcohol to intoxicated patrons of bars and restaurants. Accident Analysis and Prevention, 26, 79-88.
- McLean, S., Wood, L., Montgomery, I., Davidson, J., & Jones, M. (1994). Promotion of responsible drinking in hotels. Drug and Alcohol Review, 13, 247-255.
- MCM Research. (1993). Keeping the peace: A guide to the prevention of alcohol-related disorder. London, England: Portman Group.
- Meier, S.E., Brigham, T.A., & Gilbert, B.J. (1998). Analyzing methods for increasing designated driving. Journal of Prevention and Intervention in the Community, 17, 1-14.
- Molof, J.J., Dresser, J., Ungerleider, S., Kimball, C., & Schaefer, J. (1995). Assessment of year-round and holiday ride service programs. (DOT HS 808 203). Springfield, Virginia: National Technical Information Service.
- Mosher, J. F. (1984). The impact of legal provisions on barroom behavior: Toward an alcohol-problems prevention policy. Alcohol, 1, 205-211.
- Mosher, J. F., Delewski, C., Saltz, R., & Hennessy, M. (1989). Monterey-Santa Cruz Responsible Beverage Service project. Final Report.
- Mosher, J. F., & Wallack, L. M. (1979). The DUI project. Contemporary Drug Problems, 8, 193-208.
- Muirhead, J. C., & Kovacs, M. D. (1994). The LOG BOOK. Toronto, Canada: The LOG BOOK Company.
- Neves, P., De Pape, D., Giesbrecht, N., Kobus-Matthews, M., Kruzel, E., Abbott, D., Cusenza, S., Gliksman, L., Hyndman, B., Oliver, R., & Single, E. (1998). Communities take action! Toronto, Canada: Centre for Addiction and Mental Health.
- O'Donnell, M. (1985). Research on drinking locations of alcohol-impaired drivers: Implications for prevention policies. Journal of Public Health Policy, 6(4), 510-525.
- Pernanen, K. (1991). Alcohol in human violence. New York: The Guilford Press.

Plant, M., Miller, P., Plant, M., & Nichol, P. (1994). No such thing as safe glass. British Medical Journal, 308, 6-7.

Putnam, S. (1990). Planning, development and process issues in the Rhode Island Alcohol-Related Injury Prevention Project. In N. Giesbrecht, P. Conley, R. W. Denniston, L. Gliksman, H. Holder, A. Pederson, R. Room, & M. Shain (Eds.), Research, action and the community: Experiences in the prevention of alcohol and other drug problems (pp. 183-195). Rockville, Maryland: Office for Substance Abuse Prevention.

Putnam, S. L., Rockett, I. R. H., & Campbell, M. K. (1993). Methodological issues in community-based alcohol-related injury prevention projects: Attribution of program effects. In T. K. Greenfield & R. Zimmerman (Eds.), Experiences with community action projects: New research in the prevention of alcohol and other drug problems (pp. 31-39). Rockville, MD: Center for Substance Abuse Prevention.

Rossow, I. (1996). Alcohol related violence: The impact of drinking pattern and drinking context. Addiction, 91, 1651-1661.

Ruhm, C.J. (1996). Alcohol policies and highway vehicle fatalities. Journal of Health Economics, 15, 435-454.

Rumbold, G., Malpass, A., Lang, E., Cvetkovski, S., & Kelly, W. (1998). An evaluation of the Geelong Local Industry Accord. Final Report. Fitzroy, Australia: Turning Point Alcohol and Drug Centre Inc.

Russ, N. W., & Geller, E. S. (1987). Training bar personnel to prevent drunken driving: A field evaluation. American Journal of Public Health, 77, 952-954.

Saltz, R. F. (1987). The roles of bars and restaurants in preventing alcohol-impaired driving: An evaluation of server intervention. Evaluation and the Health Professions, 10, 5-27.

Saltz, R. F. (1997). Evaluating specific community structural changes. Examples from the assessment of Responsible Beverage Service. Evaluation Review, 21, 246-267.

Saltz, R. F., Parker, R. N., & Cartmill, R. S. (1999). Drinking situations and driving while impaired. (Unpublished manuscript)

Saltz, R. F., & Stanghetta, P. (1997). A community-wide responsible beverage service program in three communities: early findings. Addiction, 92 (Supplement 2), S237-S249.

Shepherd, J. (1994). Violent crime: The role of alcohol and new approaches to the prevention of injury. Alcohol and Alcoholism, 29, 5-10.

Simons-Morton, B.G., & Cummings, S.S. (1997). Evaluation of a local designated driver and responsible server program to prevent drinking and driving. Journal of Drug Education, 27, 321-333.

Single, E. (1985). Studies of public drinking: An overview. In E. Single & T. Storm (Eds.), Public drinking and public policy (pp. 5-34). Toronto, Canada: Addiction Research Foundation.

Single, E., & McKenzie, D. (1992). The epidemiology of impaired driving stemming from licensed establishments. Presented at 18th Annual Alcohol Epidemiology Symposium, Toronto, June 1-5, 1992.

Single, E., & Storm, T. (Eds.). (1985). Public drinking and public policy. Toronto, Canada: Addiction Research Foundation.

Single, E., & Tocher, B. (1992). Legislating responsible alcohol service: An inside view of the new Liquor License Act of Ontario, British Journal of Addiction, 87, 1433-1443.

Single, E., & Wortley, S. (1993). Drinking in various settings as it relates to demographic variables and level of consumption: Findings from a national survey in Canada. Journal of Studies on Alcohol, 54, 590-599.

Sloan, F.A., Reilly, B.A., & Schenzler, C.M. (1994a). Tort liability versus other approaches for deterring careless driving. International Review of Law and Economics, 14, 53-71.

Sloan, F.A., Reilly, B.A., & Schenzler, C. (1994b). Effects of prices, civil and criminal sanctions and law enforcement on alcohol-related mortality. Journal of Studies on Alcohol, 55, 454-465.

Sloan, F.A., Reilly, B.A., Schenzler, C. (1995). Effects of tort liability and insurance on heavy drinking and drinking driving. Journal of Law and Economics, 38, 49-77.

Sloan, F.A., Stout, E.M., Whetten-Goldstein, K., & Liang, L. (2000). Drinkers, drivers and bartenders. Balancing private choices and public accountability. Chicago, Ill.: The University of Chicago Press.

Smart, R.G. & Adlaf, E.M. (1986). Banning happy hours: The impact on drinking and impaired driving charges in Ontario, Canada. Journal of Studies on Alcohol, 47, 256-258.

Snow, R. W., & Landrum, J. W. (1986). Drinking locations and frequency of drunkenness among Mississippi DUI offenders. American Journal of Drug and Alcohol Abuse, 12(4), 389-402.

Spradley, J.P. & Mann, P. J. (1975). The cocktail waitress: Women's work in a man's world. New York: John Wiley & Sons.

Stockwell, T. (1992). On pseudo-patrons and pseudo-training for bar staff. British Journal of Addiction, 87, 677-680.

Stockwell, T. (1994a). Do controls on the availability of alcohol reduce alcohol problems? In T. Stockwell (Ed.), An examination of the appropriateness and efficacy of liquor licensing laws across Australia. (Vol. 5). (pp.119-144). Canberra, AU: Government Publishing Services, Australia.

Stockwell, T. (Ed.). (1994b). An examination of the appropriateness and efficacy of liquor licensing laws across Australia. (Vol. 5). Canberra, AU: Government Publishing Services, Australia.

Stockwell, T. (1997). Regulation of the licensed drinking environment: A major opportunity for crime prevention. In R. Homel (Ed.), Policing for prevention: Reducing crime, public intoxication and injury (Vol. 7, pp. 7-33). Monsey, New York: Criminal Justice Press.

- Stockwell, T., Lang, E., & Rydon, P. (1993). High risk drinking settings: the association of serving and promotional practices with harmful drinking. Addiction, 88, 1519-1526.
- Stockwell, T., Norberry, J., & Solomon, R. (1995). Liquor laws and the prevention of violence in and around Australian pubs and clubs. Paper presented at an International Conference on the Social and Health Effects of Different Drinking Patterns, Toronto, Canada, November, 1995.
- Stockwell, T., Rydon, P., Lang, E., & Beel, A. (1993). An evaluation of the "Freo Respects You" responsible alcohol service project. Report of the National Centre for Research into the Prevention of Drug Abuse, Curtin University, Perth, Australia.
- Stockwell, T., Somerford, P., & Lang, E. (1992). The relationship between license type and alcohol-related problems attributed to licensed premises in Perth, Western Australia. Journal of Studies on Alcohol, 53, 495-498.
- Stout, R. L., Rose, J. S., Speare, M. C., Buka, S. L., Laforge, R. G., Campbell, M. K., & Waters, W. J. (1993). Sustaining interventions in communities: The Rhode Island community-based prevention trial. In T. K. Greenfield & R. Zimmerman (Eds.), Experiences with community action projects: New research in the prevention of alcohol and other drug problems (pp. 253-261). Rockville, MD: U.S. Department of Health and Human Services.
- Tomsen, S. (1997). A top night out -- Social protest, masculinity and the culture of drinking violence. British Journal of Criminology, 37, 990-1002.
- Toomey, T. L., Kilian, G. R., Gehan, J. P., Perry, C. L., Jones-Webb, R., & Wagenaar, A. C. (1998). Qualitative assessment of training programs for alcohol servers and establishment managers. Public Health Reports, 113, 162-169.
- Tuck, M. (1989). Disorder in the paired towns. In Drinking and disorder: A study of non-Metropolitan violence (Home office research study #108 ed., pp. 11-103). London: Her Majesty's Stationery Office.
- Turrisi, R., Nicholson, B., & Jaccard, J. (1999a). A cognitive analysis of server intervention policies: Perceptions of bar owners and servers. Journal of Studies on Alcohol, 60, 37-46.
- Turrisi, R., Nicholson, B., & Jaccard, J. (1999b). An examination of the utility of server intervention to reduce alcohol-related problems in college students. Journal of Applied Social Psychology, 29, 622-638.
- Wagenaar, A.C. (1992). Designated driver programs: A commentary on the DeJong and Wallace article. Health Education Quarterly, 19, 443-445.
- Wagenaar, A. C., & Holder, H. D. (1991). Effects of alcoholic beverage server liability on traffic crash injuries. Alcoholism: Clinical and Experimental Research, 15, 942-947.
- Wallin, E., Hjalmarsson, K., Lindewald, B., & Andreasson, S. (1999). Effects of RBS training: A focus group study. Paper presented at the 25th annual meeting of the Kettil Bruun Society for Social and Epidemiological Research on Alcohol, Montreal, Canada.

Wallin, E., Lindewald, B., & Andreasson, S. (1998). Evaluation design for a prevention program targeting responsible beverage service in restaurants. Paper presented at the 24th annual meeting of the Kettil Bruun Society for Social and Epidemiological Research on Alcohol, June, Firenze, Italy.

Warburton, A.L., & Shepherd, J.P. (2000). Effectiveness of toughened glassware in terms of reducing injury in bars: A randomized controlled trial. Injury Prevention, 6, 36-40.

Wells, S., & Graham, K. (1999). The frequency of third party involvement in incidents of barroom aggression. Contemporary Drug Problems, 26, 457-480.

Wells, S., Graham, K., & West, P. (1998). "The good, the bad, and the ugly": Responses by security staff to aggressive incidents in public drinking settings. Journal of Drug Issues, 28, 817-836.

Wieczorek, W.F., & Coyle, J.J. (1998). Targeting DWI prevention. Journal of Prevention and Intervention in the Community, 17, 15-30.

Wyllie, A. (1997). Evaluation of a New Zealand campaign towards reduction of intoxication on licensed premises. Health Promotion International, 12, 197-207.

Table 1. Listing of On-Premise Interventions, Components Addressed (Shown as Footnotes) and Main Evaluation Results

Intervention	Evaluation
Training for Intervention Procedures by Servers of Alcohol "TIPS" (Russ & Geller, 1987; Geller, et al., 1987). ^{1.1}	After training, servers initiated 3.5 interventions (e.g., delaying service) (compared to .8 for untrained servers) in response to heavy drinking pseudopatrons; pseudopatrons served by trained servers had lower BACs (.06 vs. .10).
Server Intervention Program (SIP) (Gliksman et al., 1993). ^{1.1}	Increased knowledge and decrease in inappropriate serving practices to actors who drank heavily or appeared intoxicated (overall average score on serving practices of -5 at pretest and +.05 at posttest on serving practices).
Time series evaluation of effects of mandatory server training in Oregon on single-vehicle nighttime injury-producing crashes (Holder & Wagenaar, 1994). ^{1.1, 5.1}	Mandatory training was associated with a reduction in crashes.
Comparison of mandatory, incentive and free market systems (Dresser, 2000). ^{1.1, 5.1}	More servers trained and fewer visibly intoxicated patrons in states with mandatory training.
Server Intervention Program in U.S. Navy Club (Saltz, 1987). ^{1.1, 2.2}	Fewer patrons in the experimental bar had estimated BACs exceeding a specified limit than in the control bar (30% pretest vs. 19% at posttest). Policy-specific evaluation not reported.
Program of Responsible Alcohol Service (McKnight, 1991). ^{1.1, 2.1}	Increased knowledge; improved self-reported serving practices; increase in partial intervention with pseudopatrons who feigned intoxication (9.4% to 19.9%). Scores on self-reported adherence to policy increased from .58 to .65.
Responsible Beverage Service program (Howard-Pitney et al., 1991). ^{1.1, 2.1}	Increased knowledge but no measurable effect on policies or practices.
"FREO Respects You" (Stockwell et al., 1993; Stockwell, 1997; Lang et al., 1998). ^{1.1, 2.2}	Reduction in patrons whose BAC exceeded .08 in experimental bars but no change in self-reported practices or proportion of patrons who reported seeing intoxicated patrons. Prepost scores on House Policy checklist improved from -6.6 to 18.1.
Monterey-Santa Cruz RBS Project (Mosher et al., 1989; Delewski & Saltz, 1990). ^{1.1, 2.2, 7.1}	Increased knowledge; patron intoxication (measured using observations and interviews) decreased in both experimental conditions in one community but showed no impact in other community. Some recommended policies were adopted.
"Patron Care" (Carvolth, 1988; Hauritz et al., 1998ab; Homel et al., 1997). ^{1.1, 2.1}	No direct evaluation.
Lahti Community Action Project (Holmila & Haavisto, 1997). ^{1.1}	No outcome evaluation.
Stockholm Prevents Alcohol and Drug Problems (STAD) project (Wallin et al., 1998; 1999). ^{1.1, 2.1}	Increased knowledge; focus groups with bar staff indicated some improvement in attitudes toward RBS but also much resistance; no adoption of written policies.
The DUI project (Mosher & Wallack, 1979). ^{1.1, 4.2}	No outcome evaluation.

Intervention	Evaluation
Rhode Island Community Alcohol Abuse/Injury Prevention Project (CAAIPP) (Buka & Birdthistle, 1999; Putnam, 1990; Putnam et al., 1993; Stout et al., 1993). ^{1.1, 2.1, 4.2, 7.1}	Increased knowledge; 9% reduction in emergency room visits for injury, 21% for assault, 10% for motor vehicle crashes; 27% increase in alcohol-related assault arrest rates; 79% of on-premise establishments adopted written RBS policies. 4-year follow-up found no difference between test and control communities but a significant overall relationship between having received RBS training and better self-reported serving practices.
Community-wide RBS programs in 3 communities as part of the Community Trials Project (Saltz & Stanghetta, 1997). ^{1.1, 2.1, 4.2, 7.1}	Some evidence of increased enforcement; non-significant trend for improved policies in experimental communities; no impact on response of servers to pseudopatrons who consumed many drinks in a short time period.
Gloucester Door Safety Program (Gloucester Door Supervisions and Training Project, 1997). ^{1.2}	No evaluation.
Several programs in the UK described in the report (MCM Research, 1993). ^{1.2}	No evaluation.
Surfers Paradise project (Hemel et al., 1997). ^{1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 7.2}	Improved staff and management practices; significant improvement on 14 of 16 items on checklist (pre-post overall scores changed from -6.6 to 18.1); significant improvement in the bar environment; physical assaults dropped from 9.8 per 100 hours of observation to 4.7, but rose again to 8.3 by 2 years later.
Safety Action Projects in Cairns, Townsville and Mackay (Hauritz et al., 1998ab). ^{1.1, 1.2, 2.2, 3.1, 3.2}	Improved staff and management practices; improved environment; physical assaults fell from 12.2 per 100 hours of observation to 3.0.
Training program for licensees (MCM Research, 1993). ^{1.2}	No evaluation.
"Keeping Pubs Peaceful" (Dickson et al., 1994). ^{1.2, 2.1}	Increased knowledge; no outcome evaluation.
"Safer Bars" (Braun et al., 2000; Chandler Coutts et al., In press; Graham, 1999; Graham et al., 1998). ^{1.2, 2.2}	Increased knowledge; no outcome evaluation.
Section 4 of the report by Arnold & Laidler describes results of their key informant study relating to agreements and codes of practice (Arnold & Laidler, 1994). ^{3.1}	No evaluation.
Geelong Accord (Lang & Rumbold, 1997; Felson et al., 1997; Rumbold et al., 1998). ^{3.2}	Bar owners reported a positive impact of Accord; the assault rate fell from .8 per day to .5.
"Pub watch" and other local agreements (see MCM Research, 1993). ^{3.2}	No evaluation.
Policing project in Torquay, England (Jefferies & Saunders, 1983). ^{4.1}	Arrests for alcohol-related crimes decreased.
Policing project in New South Wales (Burns et al., 1995). ^{4.1}	Assault arrests increased.
Blackwood Initiative involving monitoring and warning bars mentioned frequently in last drink program (MCM Research, 1993). ^{4.1}	No formal evaluation but police records indicated a decrease in drunkenness and arrests for public disorder.

Intervention	Evaluation
Increased enforcement of law regarding service to intoxicated patrons; awareness campaign to make bar owners and staff aware of enforcement (McKnight & Streff, 1994; Levy & Miller, 1995). ^{4.2}	Rates of refusal to serve at pretest, 3 months, 6 months and 12 months were (comparison county shown in parenthesis): 17.5% (11.5%); 54.3% (32.7%); 47.4% (29.1%); 41.0% (25.7%); DWIs from bars and restaurants dropped from 31.7% to 23.3% in experimental county.
Analyses of the relationship between laws holding commercial servers responsible for injuries done by intoxicated persons they had served ("dram shop" liability) and driving fatalities (Chaloupka et al., 1993; Ruhm, 1996; Sloan et al., 1994ab; 2000). ^{5.1}	Time series analyses (1982-88) for 48 contiguous U.S. states found a significant negative relationship between whether a state had dram shop liability laws and all traffic, night driver and alcohol-involved driver fatalities (Chaloupka et al., 1993). The percent reduction in fatalities due to dram shop laws was estimated at 2-4%. Other analysis (Ruhm, 1996; Sloan et al., 1994a; 1994b; Sloan et al., 2000) found similar effects; negative relationship between dram shop laws and homicide also found (Sloan et al., 1994b).
Analyses of the relationship between whether person lives in a state with dram shop liability and self-report of heavy drinking and drinking driving (Sloan et al., 1995; Sloan et al., 2000). ^{5.1}	Regression analyses of a subset of respondents to the U.S. Behavioral Risk Factor Surveys (1984-1990) found that whether the respondent lived in a state with dram shop liability was unrelated to drinking 5+ drinks per occasion but related to whether respondent drank at all and drinking driving among all drinkers.
Analyses of the relationship between strictness of dram shop liability and bar owners' perceived and actual risks of being sued (Sloan et al., 2000). ^{5.1}	A survey of 778 owners or managers of a stratified sample of licensed establishments indicated that managers of bars operating in a state with strict dram shop liability had greater perceived and actual likelihood of being sued.
Time series evaluation of effects of change in legal liability of servers in Texas on single-vehicle nighttime injury-producing crashes (compared with other states); media coverage of change in liability (Wagenaar & Holder, 1991). ^{5.2}	Small but significant reduction in crashes associated with change in liability.
Study of the relationship between liability exposure and bar owners' awareness and practices (Holder et al., 1993). ^{5.1}	High liability status associated with more media coverage on liability; managers in high liability states reported greater awareness, higher refusal of intoxicated patrons (50% vs. 34%) and a lower rate of drink specials (9% vs. 30%).
Key informant study of practices in Australia (see Arnold & Laidler, 1994). ^{5.2}	Key informant data suggested positive benefit of licensing.
Banning of "Happy Hour" (Smart & Adlaf, 1986). ^{5.3}	No impact of banning "happy hour" on observed consumption of alcohol by patrons or on alcohol sales.
Hours of operation (see Stockwell, 1994a; Chikrizhs et al., 1997). ^{5.3}	No clear general impact relating to hours of operation.
Use of tempered glass (Shepherd, 1994; Plant et al., 1994; Warburton & Shepherd, 2000). ^{5.3}	A randomized control trial actually found greater injury to bar staff when toughened glassware was used.
Houston Team program (Simons-Morton & Cummings, 1997). ^{6.1, 6.2}	Improved attitudes toward prevention; no change in % of patrons who were designated drivers; on average .7 cab vouchers per month per establishment were used. An intensive campaign to increase % of designated drivers in one establishment showed no impact.

Intervention	Evaluation
Increased promotion of designated driver program in 3 college bars, an upscale downtown bar, and a country bar (Brigham et al., 1995; Meier et al., 1998). ^{6.1}	ABAB design showed a significant increase in designated drivers from a median of 3 per night to 7 to 7.5 in one student bar; test-retest in two other student bars showed a significant increase in mean number of designated drivers in one bar (1.0 to 4.2) and a non-significant increase in the other (2.2 to 3.0); a significant increase was found with the upscale bar (.7 to 1.6) but not in the country bar (6.3 to 6.6). A television advertising campaign increased designated driving in the upscale bar from a mean of .3 at baseline to 4.1 during the campaign.
"I'm Smart," Syracuse (Molof et al., 1995). ^{6.2}	2500 rides per year; well-established popular program but no overall impact on annual rate of alcohol-involved accidents for community.
"SoberCab," Minneapolis (Molof et al., 1995). ^{6.2}	700 rides during Christmas–New Year season. Well-established popular program but no apparent impact on annual alcohol-related crashes for the community.
Melbourne's West End Project; Hindley Street, Adelaide Project (described in Arnold & Laidler, 1994; Lang & Rumbold, 1997). ^{7.2}	No outcome evaluation.
Parkdale Focus Community Project (Cusenza, 1998; Kulis, 1998). ^{7.2}	No evaluation.
".05 Know Your Limits" intervention (McLean et al., 1994). ⁸	No significant impact of program on BACs or intention to drive.
Host responsibility program to make public aware of the legal obligation not to serve intoxicated persons (Wyllie, 1997). ⁸	Increase awareness; no outcome evaluation.

1.1 RBS training

1.2 Training in managing problem behavior

2.1 Encouragement to adopt house policies

2.2 Risk assessment approaches

3.1 Codes of practice

3.2 Other coordination among bar owners

4.1 Proactive policing

4.2 Increased enforcement

5.1 Policies and laws relating to servers

5.2 Regulations and licensing of door staff

5.3 Other statutory approaches

6.1 Designated driver programs

6.2 Ride services

7.1 Community mobilization for RBS training

7.2 Broad focus community mobilization relating to bars

8 Patron education

Table 2. Sample of a Partial Analysis of Developing an Intervention to Address Patron Intoxication

Examples of specific factors identified as contributing to intoxication	Examples of questions to be asked related to that factor	Possible interventions to address the factor
<p>Bar staff continue to serve patrons even after they are obviously intoxicated</p>	<p>Do staff serve patrons because they do not know the law about serving intoxicated patrons? If they know the law, do staff ignore the law because they believe that they are unlikely to be charged or held liable if they have served an intoxicated patron?</p> <p>Do staff serve intoxicated patrons because they do not know strategies for slowing down the person's drinking?</p> <p>Do staff serve patrons to intoxication because they are unable, unwilling, not allowed and/or not encouraged to slow down the patron's drinking?</p> <p>What prevents a server from refusing service to an intoxicated person (e.g., unable to recognize when a person is intoxicated, afraid of reaction, don't want to lose tips, bad for business, etc.)?</p> <p>How much contact does the server have in order to judge intoxication level or prevent intoxication (e.g., does one patron pick up drinks for a group of patrons by purchasing the drinks from a serving bar)?</p>	<p>Teach servers the law.</p> <p>Increase enforcement of law and/or perceptions that law will be enforced.</p> <p>Teach strategies for slowing drinking (e.g., offering a nonalcoholic beverage, encouraging food consumption).</p> <p>Increase enforcement.</p> <p>Change management so that servers are encouraged to avoid serving to intoxication. If unable to recognize when a person is intoxicated, teach the signs of intoxication. If afraid of reaction from patron or don't want to lose tips, examine alternative interventions such as increased enforcement (that might over-ride financial concerns), patron education to make patrons more tolerant of being refused service, etc.</p> <p>Examine alternative serving strategies that would allow control. Change liquor licensing regulations to prohibit these serving practices.</p>

Examples of specific factors identified as contributing to intoxication	Examples of questions to be asked related to that factor	Possible interventions to address the factor
Drink specials or pricing that encourage heavier drinking	Why does the bar have this pricing policy (e.g., competition, lack of knowledge of the effects)? -- i.e., can the policy be changed without affecting business or profits?	Encourage management to eliminate drink specials that contribute to intoxication. Encourage a local agreement among bar owners for all bars to eliminate such specials. Pass legislation prohibiting drink specials.
Patrons come to the bar to get drunk.	Do patrons believe that the bar will tolerate drunkenness? To what extent are profits related to serving patrons to intoxication? Is it possible to offer activities that will maintain profits while decreasing focus on drinking to intoxication? Explore the appeal of drunkenness among patrons – what is the reason for the focus and how widespread is it?	Encourage a tighter door policy regarding admission of intoxicated persons. Encourage policies and serving practices that eliminate service to intoxicated persons. Increase enforcement to counteract economic incentives. Encourage bar to implement policies and entertainment that will increase business from patrons who do not come to the bar to get drunk or act out (i.e., change clientele). Because drinking to intoxication is culture-specific, develop patron interventions that reduce risks of intoxication (e.g., “friends don’t let friends drive drunk”).

Table 3. Summary of General Types of On-Premise Interventions and Policy Recommendations

Type of Intervention	Strength of rationale	Research evidence	Policy recommendations
1. Training Programs	The general argument that some bar staff and owners can benefit from training in some areas is reasonable, given the lack of professional standards and high variability in knowledge and skills.		
RBS training	The rationale that servers lack knowledge regarding laws and effects of alcohol or skills in responsible serving needs to be revisited to more effectively target RBS programs. In addition, programs need to be developed that take into account disincentives for refusal of service.	Overall, the evidence suggests that RBS programs can produce a modest effect in terms of preventing intoxication. The particular aspects of RBS programs that produce this effect have not been clearly identified.	RBS training should be supported while recognizing its minimal effects. Greater attention needs to be paid to combining RBS training with enforcement and possibly patron education.
Other training	Documented evidence of ineffective and aggressive bar staff and owners suggests that training in people management skills and self-control may have beneficial effects.	Although a number of programs are known to exist, the only evaluation data to date relate to improved knowledge/attitudes. The effects of training on skills and practice are unknown.	Given that bars are high risk environments and the evidence of inappropriate and violent behavior by bar staff, programs with well-justified content should be given provisional support pending outcome evaluation data.
2. House policies and risk assessments	The rationale for reducing environmental risks is based on a fairly substantial body of research correlating environmental factors (e.g., discount drinks) with greater intoxication and related harm. The individualized approach to risk reduction is also consistent with the research literature, although the extent that bar owners/managers will voluntarily follow through with risk reduction is unknown.	Policy development with individual bar owners, including basing policies on risk assessments, has been done in combination with RBS training or other interventions. The effects specific to house policies are unknown.	Although direct evidence of the effectiveness of risk reduction approaches is lacking, the strong correlations between risks and negative outcomes justify continuing this approach; however, direct evaluations of the impact of risk reduction/policy approaches should be undertaken.

3. Codes of Practice and other agreements	The rationale for local Codes of Practice is that the worst practices can be eliminated if all agree to eliminate them. Codes of practice are also used to raise salience of owner responsibility. Other approaches such as “pub watch” are based on the assumption that problems can be eliminated by preventing entry to one or two serious trouble-makers.	The available evidence suggests that Codes of Practice can reduce specific targeted risk factors but that compliance will not be maintained without external pressure. No evaluation data were found on other types of agreements.	Codes of Practice may be very useful in addressing specific local problems if led by the police or another local body capable of obtaining compliance. The value of generic Codes of Practice and other agreements has not been proven.
4. Enforcement interventions	Proactive policing is based on the rationale that it is more effective to prevent problems than to deal with problems after they occur. The rationale for increased enforcement is that liquor laws are violated primarily because servers perceive a low risk of consequences.	The evidence for the effectiveness of proactive policing is inconclusive. The evidence of the effectiveness of increased enforcement is strong, including some evidence of cost-effectiveness relating to the effects of increased enforcement on drinking and driving.	A policy of highly publicized high enforcement should be adopted to the extent possible. Proactive policing may be particularly useful when problem bars are concentrated in a small area.
5. Interventions involving laws, policies and regulations	Policies and regulations have a long history of use for controlling drinking in licensed premises. Correlational data have shown a substantial link between some policies and increased risks associated with licensed premises.	Both server liability (dram shop laws) and mandatory server training have been negatively associated with traffic fatalities. There is anecdotal evidence supporting the effectiveness of licensing of door staff. The effectiveness of other policy interventions has either not been demonstrated or not been tested.	Holding servers and licensed establishments liable for harms done by intoxicated persons to whom they serve alcohol and mandatory server training appear to be justified on the basis of existing evidence. Other policies remain unproven but should be adopted in situations where the rationale closely fits the problem to be addressed.

6. Designated driver and ride services programs	Designated driver programs attempt to prevent drinking and driving by having one person in a drinking group stay sober to serve as a sober driver for the group. Ride services prevent driving by intoxicated persons by providing free rides home to intoxicated persons who would otherwise be driving.	Designated driver programs are widespread and drinkers are generally aware of the need to use designated drivers. Ride services are also common and in some communities provide thousands of rides to potential intoxicated drivers. Broad impact of these programs, however, has not been demonstrated.	These programs appear to prevent a substantial number of intoxicated persons from driving. Given the lack of evidence of a negative impact of the programs, these programs should receive continued support, especially in areas where walking to bars is not possible and there are few transportation alternatives.
7. Community mobilization	Community mobilization is more a strategy for implementing other interventions than an intervention in its own right. Community approaches have the advantage of tailoring the interventions to meet local needs.	Case examples suggest that multi-component community mobilization can be highly effective, at least in the short run. On the other hand, successful implementation of community approaches depends on the characteristics of the community and a number of other factors.	Community approaches that emphasize enforcement and environmental and policy changes are most likely to be effective.
8. Patron education	The rationale for patron education programs is the assumption that at least some patrons become intoxicated or drive while under the influence of alcohol because they are unaware of their level of intoxication or of legal restrictions and that increased awareness will result in a reduction in problem behavior.	There is no evidence that patron education programs by themselves result in changes in behavior.	Patron education programs alone are unlikely to have an impact; therefore, there is no reason to use them as isolated interventions. Patron education may be used to enhance other interventions (e.g., community mobilization, increased enforcement), but research is needed to confirm the effectiveness of this approach.

Figure 1. A General Model for On-Premise Intervention

