

# INSTALLING THE COMMUNITIES THAT CARE PREVENTION SYSTEM: IMPLEMENTATION PROGRESS AND FIDELITY IN A RANDOMIZED CONTROLLED TRIAL

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*This article describes the degree to which high fidelity implementation of the Communities That Care (CTC) prevention operating system was reached during the first 18 months of intervention in 12 communities in the Community Youth Development Study, a 5-year group randomized controlled trial designed to test the efficacy of the CTC system. CTC installation in these communities included the delivery of six CTC trainings from certified CTC trainers at each site, the active involvement of locally selected and community-based CTC community coordinators, ongoing monitoring of progress using the CTC milestones and benchmarks, and proactive technical assistance and coaching. CTC implementation fidelity ratings averaged across three groups of raters show that between 89% and 100% of the CTC milestones in the first four phases of CTC implementation were “completely met” or “majority met” in the 12 intervention communities, indicating that the first four phases*

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DISCOVER SOMETHING GREAT

*of the CTC system have been well implemented in the communities in this trial. © 2008 Wiley Periodicals, Inc.*

Community coalitions are a popular strategy for achieving healthy youth development. Yet there is limited evidence that community-based coalitions produce positive youth outcomes (Berkowitz, 2001; Hallfors, Cho, Livert, & Kadushin, 2002). Using a quasi-experimental design with comparison sites, Hallfors and colleagues evaluated the effectiveness of 12 coalitions funded under the Robert Wood Johnson–funded *Fighting Back Against Substance Abuse* initiative. They found that none of the 12 coalitions evaluated reached the desired outcome of reduced youth or adult substance use. The evaluation made several recommendations to help coalitions avoid negative outcomes and better gauge the success of their efforts. Coalitions should have clearly defined, focused, and manageable goals and outcomes, with corresponding high quality data sources. Evidence-based programs should be encouraged, with careful attention to monitoring of both the dose and quality. Evaluation of program impact should occur, choosing outcomes and goals which are meaningful to the community (Hallfors et al., 2002).

The Communities That Care (CTC) system seeks to provide communities with the process and structure recommended in the *Fighting Back Against Substance Abuse* evaluation, specifically, training and ongoing technical assistance in prevention program selection, implementation, and evaluation tailored to the needs of each community (Feinberg, Greenberg, Olson, & Osgood, 2005). The CTC system is designed to assist coalitions to strategically plan and implement prevention services. CTC is installed in five phases through a manualized series of training events designed to build the capacity of communities to install and sustain the system over time.

Prior research has revealed beneficial effects of CTC training. Research by Greenberg and colleagues (2005) across multiple sites in Pennsylvania found that training of key leaders in CTC was associated with higher levels of perceived community readiness to implement a science-based prevention approach, external and internal CTC coalition functioning, and CTC participants' perceptions of the efficacy and sustainability of the effort. CTC training was also positively related to local CTC participants' understanding of goals and roles in the CTC process, fidelity to a risk-focused approach, and board structure and stability as rated by university research staff (Greenberg et al., 2005). Other evaluation data indicate that the CTC process leads communities to select tested and effective programs for implementation (Arthur, Ayers, Graham, & Hawkins, 2003; Harachi, Ayers, Hawkins, & Catalano, 1996; Jenson, Hartman, Smith, Draayer, & Schurtz, 1997). Positive changes in youth outcomes associated with implementation of CTC also have been reported (Feinberg et al., 2005; France & Crow, 2005; Jenson et al., 1997). Feinberg et al. (2005) found that, after controlling for community poverty, school districts in Pennsylvania using CTC experienced lower levels of risk, higher levels of protection, and lower rates of adolescent substance use and delinquent behaviors than comparison school districts that were not using the CTC framework.

These findings suggest that if coalitions follow the structure and processes outlined in the CTC model, they can increase their probability of achieving desired outcomes of reduced youth substance abuse. The Community Youth Development Study (CYDS) is

the first experimental evaluation of the CTC system's ability to reduce community levels of risk and protective factors associated with problem behaviors, as well as adolescents' involvement in drug use and delinquency. The study involves random assignment to CTC or control conditions of 24 free-standing incorporated towns. This article describes the implementation of the CTC system in the 12 intervention communities in the first 18 months of the CYDS, including the CTC training events, the amount and types of technical assistance provided, the methods used to assess CTC implementation fidelity, and the evaluation of CTC implementation fidelity through the first four phases of CTC. Three primary research questions are addressed:

- To what extent was the CTC operating system implemented in 12 intervention communities during the first 18 months of the CYDS?
- What factors influenced the degree of CTC implementation?
- To what extent, and using what mechanisms, were communities able to overcome challenges related to CTC implementation?

Documenting the extent of CTC implementation in the intervention communities is important, as CYDS outcomes can be attributed to the CTC intervention with greater confidence if there is evidence that intervention communities actually implemented CTC. Further, if hypothesized outcomes are not observed in the CYDS trial, this documentation will allow analysts to distinguish between failure to fully implement CTC and possible deficits in the CTC model itself (Durlak, 1998; Dusenbury, Brannigan, Falco, & Hansen, 2003).

## RESEARCH METHODS AND MEASURES

### *The Community Youth Development Study*

CYDS is a 5-year, group randomized controlled trial designed to test the efficacy of the CTC prevention operating system. The aims of the project include testing the effectiveness of CTC in reducing levels of risk, increasing levels of protection and reducing levels of substance use, delinquency, and other adolescent problem behaviors in communities. The study also assesses the degree to which the use of tested, effective programs in communities predicts changes in community-wide levels and trajectories of risk, protection, drug use, and related behavior outcomes.

Twenty-four small- to medium-sized communities ranging in population from 1,578 to 40,787 residents were recruited to participate in the study. Inclusion required a letter consenting to participation in required research activities from the superintendent of schools, the mayor or town manager, depending on local government structure, and the head of the law enforcement agency serving the community. In Fall 2002, the communities were randomly assigned as intervention communities, implementing the CTC operating system, or control communities, conducting prevention services as usual. All 24 communities participated in assessments of adolescents, community key leaders, and community service providers. Because the CYDS study seeks to ascertain effects of CTC on adolescent drug use and delinquent behaviors within a 5-year time frame, the study focused on prevention in the early

adolescent years corresponding to grades five through nine when young people transition from elementary to middle or junior high school and again to high school. (For more detail regarding the CYDS intervention design and evaluation, see Hawkins et al., in progress.)

Certified CTC trainers provided the intervention communities with six standardized training workshops that teach community members to use the CTC operating system, as well as phone and email consultation as needed. CYDS implementation staff from the Social Development Research Group at the University of Washington provided additional technical assistance to each intervention community through weekly phone calls, written e-mails and reports, and site visits two to three times per year. Intervention communities were also provided with funding for a full-time, local coordinator to oversee CTC activities and \$75,000 annually to support the implementation of prevention programs selected by the community.

### ***The Communities That Care Intervention***

The CTC operating system is a community-based strategic approach to reducing youth involvement in problem behaviors (Hawkins, Catalano, & Arthur, 2002). It uses a public health approach to prevention. The system addresses risk factors found in longitudinal studies to increase the likelihood of adolescent drug use, delinquency, violence, teenage pregnancy, and school drop-out, and protective factors that reduce the likelihood of these outcomes. The CTC process involves assessing the epidemiology of problem behaviors in a community, identifying the prevalence of risk and protective factors in the community that influence the likelihood of these outcomes, and choosing tested and effective preventive interventions to address these factors. Community members use community-specific epidemiological data to assess levels of risk and protection and to guide selection of tested and effective prevention programs that address elevated risks and depressed protective factors in the community. This strategic, community-specific process is designed to increase communication, collaboration, and ownership among community members and service providers involved in the CTC process (Hawkins et al., 2002; Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001). The following sections provide more detail regarding the CTC system and how it was implemented in the CYDS intervention communities from Phase One to the initiation of Phase Five.

CTC has five phases of implementation: (a) assessing community readiness to implement the system; (b) getting organized and trained to use CTC; (c) conducting an assessment of community levels of risk, protection, and health and behavior outcomes; (d) creating a community action plan; and (e) implementing the plan and monitoring and evaluating program implementation and outcomes. Communities typically progress through the five phases of CTC in 9 months to 1 year. In the CYDS, the CTC system was implemented in an average of over 11 months, which ranged from 9 to 14 months across the 12 communities.

In the first phase of CTC, community leaders interested in preventing problem behaviors assess their readiness to adopt the CTC system and consider barriers to implementing it. To ensure successful implementation, collaboration among members and agencies is required, as well as a shared belief in the utility and effectiveness of using a preventive approach to adolescent problem behaviors. If these elements are lacking, communities need to increase readiness before proceeding. Other key activities in this phase include recruiting one or more key leaders to serve as

champions of the effort, obtaining school district support to conduct a youth survey to provide epidemiological data on risk, protection, and youth behaviors, and hiring a full-time coordinator to manage CTC activities.

In the CYDS, interviewing and hiring the CTC coordinators was conducted jointly between SDRG implementation staff and local community search committees. Coordinators' skills and prior experience varied across communities, but all of them were selected for their ability to mobilize community members to participate in the CTC effort. Coordinators were supervised by SDRG staff and physically located in a designated host agency in the community. Each year, SDRG conducted a 3-day summer training workshop attended by all coordinators, which emphasized the CTC elements that needed to be accomplished in the coming year. During Phase One, SDRG staff ensured that the coordinators understood the CTC model and could explain it to community stakeholders. Coordinators recruited diverse community opinion leaders and stakeholders to participate in the first CTC training workshop, the *Key Leader Orientation (KLO)*.

In Phase Two, each community was provided a half day KLO by a CTC trainer. The KLO introduced influential stakeholders to the principles of prevention science, reviewed risk and protective factors leading to problem behaviors, and described the CTC system. During the training, key leaders discussed community members who might serve on the Community Board, the coalition that carries out the CTC planning and prevention activities. The Board was to be diverse, both in demographic characteristics and in representing key sectors of the community, including elected officials, parents, law enforcement, school personnel, public health officials, faith organizations, social services agencies, business community, young people, and other stakeholders. The second CTC training, the *Community Board Orientation (CBO)* was provided to all CTC Board members. The first half of the CBO workshop was similar in content to the KLO, but it emphasized how the Board would carry out the theory, structure, and process of CTC. In the second half, the Board members created a shared vision statement for their community to guide their work and formed workgroups to perform the core tasks associated with CTC implementation. These workgroups included Board Maintenance, Risk and Protective Factor Assessment, Resource Assessment and Analysis, Public Relations, Youth Involvement, and Funding. Attendance at this training is critical in ensuring that CTC Board members acquire needed knowledge and skills and develop a shared commitment to implementing the CTC process.

The primary task for CTC coordinators in Phase Two was to establish the CTC Community Boards. This included recruiting diverse community members to attend the CBO, encouraging skilled individuals to lead CTC workgroups, and helping workgroups set appropriate and realistic goals for tasks to be achieved in the coming year. CYDS implementation staff and CTC trainers provided technical assistance during this phase to assist coordinators in achieving these goals, particularly in gaining commitment from community volunteers and ensuring that the Board included a representative group of those interested in promoting healthy youth development. CTC Community Boards were established in all 12 communities during the first year of the project. In three communities, existing coalitions with the mission of healthy youth development integrated CTC into their expanding operations.

A total of 376 Board members participated across all of the communities in the first year, representing a broad range of community stakeholders. With 39% of the total

membership, school district personnel and human service agencies had a particularly strong presence on Boards. Other community sectors represented, and their aggregate rate of participation included business (7%), youth recreation (6%), law enforcement (6%), religious groups (6%), municipal government (6%), community members (5%), youth (4%), health agencies (4%), parent volunteers (3%), citizen advocacy organizations (3%), community coalitions (3%), juvenile justice (2%), substance abuse prevention organizations (2%), media (1%), and local philanthropic organizations (1%). As of December 2004, the Boards ranged in size from 18 to 76 members. The median Board size was 37 members.

During the third phase of CTC, CTC coordinators and Board members conduct a comprehensive community assessment of adolescent behaviors and current prevention services. This phase requires administration of the CTC Youth Survey (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Glaser, Van Horn, Arthur, Hawkins, & Catalano, 2005), a school-based survey designed to measure levels of risk and protective factors experienced by young people, as well as their involvement in problem behaviors such as substance use, delinquency, and violence. In CYDS, members of the Risk and Protective Factor workgroup in each intervention community received the third CTC training, the *Community Assessment Training*, to learn how to interpret survey results and identify elevated risk factors, depressed protective factors, and problem behaviors prevalent among youth in the community.

In the CYDS, the CTC Youth Survey was administered to 6th-, 8th-, 10th-, and 12th-grade students in the intervention communities in Spring 2002, as part of an earlier study. The CTC coordinators and workgroup members reviewed these data during the Community Assessment Training workshop as well as archival data not provided in the CTC survey (e.g., school drop out rates, teenage pregnancy statistics, arrest records). During the Community Assessment Training, all Community Boards identified the problem behaviors, elevated risk factors, and depressed protective factors that their community would prioritize for prevention services, based primarily on data from sixth- and eighth-grade students (given the study's focus on grades five through nine).

The next step in CTC Phase Three is to conduct a resource assessment of current community programs, policies, and resources that address the prioritized risk and protective factors, promote healthy youth development, and prevent problem behaviors. The Resource Assessment workgroup was trained in assessment procedures during the fourth CTC training workshop, the *Community Resource Assessment Training*. In the CYDS, technical assistance was provided to assist coordinators and workgroup members in examining existing community programs and services to determine whether they had demonstrated effects on targeted outcomes. Community members conducted interviews and written surveys of service providers to measure the extent to which high-quality, research-based prevention programs targeting prioritized risk and protective factors currently existed in their communities, and whether these services were reaching the CYDS targeted age group of fifth- to ninth-grade students. The results were then used to identify gaps in prevention services, as well as to educate the broader community about existing resources and to recognize individuals and organizations for their ongoing contributions to positive youth development.

During the fourth phase of CTC, the results of the assessment process were reviewed by the full Community Boards, and a community action plan was developed. The fifth CTC training workshop, the *Community Plan Training*, was provided to assist

Board members in selecting prevention policies and programs that targeted their prioritized risk factors to fill gaps in current prevention services. Board members selected prevention programs from the *CTC Prevention Strategies Guide* (<http://preventionplatform.samhsa.gov>) (Hawkins & Catalano, 2004), which describes prevention programs that have been demonstrated in at least one high-quality research trials to be effective in changing risk, protection, and problem behaviors. The CYDS communities selected programs from a restricted menu of programs from the *CTC Prevention Strategies Guide* that targeted schools, families, or children in grades five through nine and provided materials and training needed to implement the program. The 39 programs on the CYDS menu included parent training programs, school-wide interventions, social skills curricula, mentoring programs, after-school activities, and community-based multi-component interventions.

Once the Board had chosen the new programs it would implement, Board members learned in the *Community Plan Training* to write a prevention action plan that set clear, measurable goals regarding anticipated outcomes and clearly articulated how the selected evidence-based programs or policies would be implemented. The essential task for CTC coordinators during this phase was ensuring that all Board members and key stakeholders participated in the development of the community action plan. SDRG staff provided technical assistance prior to the Community Plan Training to help coordinators ensure good attendance at the training, and SDRG implementation staff attended most community trainings to observe the planning processes. From the 39 eligible programs in the *CTC Prevention Strategies Guide*, the CTC Boards in the 12 intervention communities selected 13 different tested, effective programs. The settings and populations targeted by the selected programs were diverse, with 11 communities selecting after-school activities, 6 selecting school-based programs, and 11 choosing parent training. Communities chose between one and four programs each. Eight programs were chosen by multiple communities, resulting in 28 program replications planned for the 2004–2005 school year.

After the CYDS Community Boards created their action plans, they were reviewed by CYDS implementation staff and representatives from the seven state drug-abuse prevention agencies collaborating in the research study. The latter were involved because their expertise in prevention increased the chances that community action plans were feasible and would be implemented and their involvement was expected to increase their own understanding of the CTC process and currently available tested and effective preventive interventions for possible use in their states.

Based on feedback from the state representatives, CTC Board members refined their plans and prepared for the fifth phase of CTC, which involves implementing the chosen policies and programs specified in the community action plan and monitoring this implementation. Community Board members and those scheduled to implement the selected preventive programs attended the final CTC training workshop, the *Community Plan Implementation Training*, which emphasizes the importance of implementing prevention programs with fidelity; that is, ensuring that the programs' content, dosage, and manner of delivery are delivered in adherence to the protocols identified by program developers. Board members and program implementers also learned methods for tracking implementation progress, assessing desired changes in participants, and using this information to make changes in implementation as needed to fulfill program objectives.

CTC is intended as an ongoing process. The process of monitoring implementation progress and community-level changes in risk, protection, and youth outcomes is

repeated every 2 years during Phase Five by readministering the CTC Youth Survey and updating other community assessment data. Based on a review of these data, CTC Boards revise their action plans as needed. All of the CYDS intervention communities had entered Phase Five of CTC by Summer 2004. Activities occurring during this phase are described elsewhere. (See Fagan et al., in press.)

## MEASURING CTC IMPLEMENTATION FIDELITY IN THE CYDS

### *The CTC Milestones and Benchmarks Rating Tool*

The CTC curriculum outlines the steps and procedures, called “milestones” and “benchmarks,” that are to be achieved during the five phases of CTC system implementation. The milestones are goals to be met by communities, and the benchmarks are the actions that community members take or conditions that must be present to achieve those goals. To illustrate, during Phase Three the community should accomplish the milestone “Identify priority risk and protective factors.” One benchmark in this process is “Decide who will be involved in the prioritization process.” The milestones and benchmarks provide a structure for measuring completion of the core components of CTC system implementation and allow a quantitative assessment of the first research question regarding the extent to which the 12 intervention communities implemented the CTC system during the first 18 months of the CYDS.

The milestones and benchmarks are listed and explained in the six CTC training curricula. The CTC trainings provide community members with structured work sessions and skills needed to accomplish most of the milestones and benchmarks, though considerable work must also be done outside the training sessions. In the CYDS, community coordinators were expected to work with key leaders and CTC Board members to achieve these milestones and benchmarks. CYDS intervention staff periodically reviewed the milestones and benchmarks with coordinators, and most tasks were included as expectations in the coordinators’ job descriptions.

After each CTC training workshop (which typically marked the beginning of a new CTC phase), community coordinators rated whether or not they had achieved each milestone and benchmark during that phase and in the previous phase. In December 2004, after 18 months of CTC implementation, coordinators also evaluated their progress on all the milestones and benchmarks from all five phases. Each benchmark was rated by the coordinator using a dichotomous measure (“not achieved” or “achieved”), and each milestone was rated on a 4-point scale (from “none of the milestone is met” to “milestone completely met”). In addition, each coordinator rated the extent to which all work during each CTC phase was completed, using a 4-point scale (from “Board will not meet goal” to “Board accomplished the phase completely”). The validity of the CTC milestones and benchmarks rating tool was assessed, in part, by analysis of coordinators’ self-assessments of implementation progress on the nine Phase Five CTC milestones, at a point in time when the majority of communities had progressed only approximately halfway through Phase Five, through Milestone 5.5. Higher ratings of completion of the early benchmarks of Phase Five compared with the later Phase Five benchmarks suggests valid reporting by coordinators.

SDRG intervention staff and certified CTC trainers also rated each community’s implementation progress in December, 2004. Prior to rating, six CTC experts

reviewed all the milestones and benchmarks and agreed on those essential for the implementation of the CTC operating system in the CYDS. The essential benchmarks were rated independently by SDRG intervention staff and certified CTC trainers from Channing Bete Company using a 4-point scale (from “not at all achieved” to “completely achieved”). Two CYDS intervention staff shared oversight of eight of the intervention communities during the first four phases of CTC. For these eight communities, both staff members conducted independent ratings and then reached agreement on ratings. The remaining four communities were rated by the one CYDS intervention staff member who oversaw implementation in these communities. The certified CTC trainer who provided training in each community completed ratings independently.

The implementation ratings were compared across the three groups of raters: community coordinators, SDRG intervention staff, and certified CTC trainers. The overall level of CTC system implementation in the 12 intervention communities was assessed by calculating the average of the milestone ratings across the three raters for each milestone.

SDRG staff also rated the extent to which each essential benchmark was challenging to achieve on a 4-point scale (from “*not at all challenging*” to “*very challenging*”), and added explanatory comments if the benchmark was rated as “very” or “mostly” challenging. The challenge rating for each milestone was computed as the mean of the benchmark ratings contributing to that milestone. A challenge rating of “*very challenging*” or “*mostly challenging*” was given if a community experienced one or more major obstacles or barriers to benchmark implementation. Obstacles or barriers were considered major if a significant amount of the community coordinator or Community Board time and activity was required to successfully resolve the issue.

Challenge ratings were compared across the 12 communities to ascertain those milestones which were rated as “*very challenging*” or “*mostly challenging*” for at least 6 of the 12 intervention communities. Using this procedure, the four most challenging milestones were identified. Each benchmark rating within these four identified milestones was then assessed in the same manner. Using this process, one benchmark under each of the four most challenging milestones was identified as highly challenging for at least half of the intervention communities. To answer the research question of whether communities were able to overcome major obstacles and achieve high implementation of the CTC prevention system, the implementation ratings assigned by CYDS intervention staff for each of the “high challenge” milestones and associated benchmarks were examined. To ascertain the nature of the challenges communities faced and how obstacles or challenges were addressed, intervention staff rater comments were compiled, reviewed, and grouped by themes or issues common to two or more communities. Once the issues were identified for each benchmark, the rater comments were reviewed again to determine *how* the obstacles were addressed in each community and what strategies were used by the community coordinator and the Community Boards to overcome them.

*CTC training implementation assessment tools.* Three measures were used to assess outcomes associated with the CTC training workshops: participant attendance records, changes in participant attitudes and knowledge from before to after training events, and surveys of CTC Board members 5 to 11 months after the CBO training. The number of participants attending trainings was documented using a Web-based documentation system and onsite sign-in lists. Attendance was expected to vary

because some trainings were for the full Community Board, while others were for workgroup members only. Two data sets provided information on the effects of CTC trainings on participant knowledge and understanding of prevention science. The first consisted of 174 paired pre-post surveys completed by participants in the 12 *Community Board Orientation (CBO)* training events at the beginning and conclusion of the event. Pre- and post-surveys were matched using anonymous ID codes. The second data set was the Community Board Interview (CBI), a telephone survey with 218 participants (15–20 per community) completed during the Spring of 2004, approximately 8 months after the CBO training in each intervention community. These data were analyzed to assess the longer term impact of the trainings and linked participant attendance at the CBO event with CBI responses to questions focused on awareness and understanding of prevention science.

## RESULTS

### *CTC Training Participation and Changes in Participants*

On average, 32 Board members attended the *Community Board Orientation* in each community, representing an average of 75% of the Board members at the time of the training (May to November 2003). Attendance ranged from 12 to 59 members, representing 41% to 100% of the total Board membership.

As shown in Table 1, analysis of paired pre- and post-surveys from the CBO across the 12 communities showed significant improvements on a number of items. Of the 17 questions, 14 showed significant changes in a positive or desired direction. Significant improvements were found in participants' awareness of prevention science, understanding of the CTC process, and knowledge of prevention science. These changes indicate that the CBO training was effective in delivering key content of CTC to participants.

In addition to immediate effects of the CBO training on participant knowledge and understanding, attendance was correlated with longer term outcomes. According to Community Board Interview responses 8 months after the Community Board Orientation, attendance at the Community Board Orientation was significantly related to greater Board member knowledge and understanding of CTC, assessments of community readiness, greater attendance at Board meetings, and more hours dedicated to the CTC process. The findings shown in Table 2 suggest that the Community Board Orientation strengthened participants' commitment to, understanding of, and participation in their local CTC process.

### *CTC Milestones and Benchmarks and the Implementation of CTC*

As shown in Table 3, CTC system implementation was rated highly by all raters for the first four phases of CTC. When ratings were averaged across community coordinators, SDRG intervention staff, and certified CTC trainers, between 89% and 100% of the milestones in the first four phases of CTC were rated as "completely met" or "majority met" for the 12 intervention communities. There was high overall agreement (95%) in milestone ratings among the three groups of raters.

Though their communities were, on average, halfway through Phase Five implementation, community coordinators rated their community's progress on all CTC benchmarks in December 2004. At the time, most of the coordinators rated their communities as having fully implemented ("*fully achieved*" or "*mostly achieved*")

**Table 1. Change in Knowledge of Prevention Science Following the Community Board Orientation<sup>a</sup>**

<i>Construct</i>	<i>Pre-test</i>	<i>Post-test</i>
Community support for prevention		
In my community, prevention of substance use, violence and delinquency is a high priority ( <i>1 = Strongly disagree, 4 = Strongly agree</i> )	3.06	3.27*
Our community is unlikely to be successful at preventing violence and drug, alcohol, and tobacco abuse ( <i>1 = Strongly agree, 4 = Strongly disagree</i> )	3.33	3.26
Awareness of prevention science ( <i>1 = Strongly disagree, 4 = Strongly agree</i> )		
Research shows that there are many effective prevention programs	2.76	3.05*
Methods for assessing the impact of prevention programs on student violence and drug use are readily available	2.52	2.83*
Methods for identifying the most important prevention needs of youth in my community are readily available	2.43	2.85*
Data and scientific evidence are important when making decisions about prevention activities	3.29	3.48*
Personal support for prevention ( <i>1 = Strongly agree, 4 = Strongly disagree</i> )		
Prevention programs distract teachers and students from our schools' core educational objectives	3.00	3.04
Prevention programs for youth don't work	3.32	3.44*
Knowledge of prevention science ( <i>Number of correct responses, Range = 0–5</i> )	3.44	3.84*
Understanding the CTC process ( <i>1 = Not important, 4 = Very important</i> )		
Understanding the research on risk and protective factors	3.53	3.82*
Identifying levels of specific risk factors in the community	3.81	3.89*
Providing opportunities, skills, and recognition for children and youth in the community, family, and school	3.90	3.93
Identifying levels of specific protective factors in the entire community	3.71	3.86*
Defining the community to be mobilized and assessed	3.55	3.73*
Identifying a manageable set of priority risk and protective factors to serve as the focus of a comprehensive youth development plan	3.69	3.87*
Use of risk and protective factor data to establish baselines and monitor progress	3.54	3.79*
Selecting tested, effective prevention/youth development approaches that address the unique risk and protective factor profile of the community	3.71	3.84*

<sup>a</sup>Mean scores for all communities combined.

\*Significant ( $p < .05$ ) change from pretest to posttest based on analyses of paired *t*-tests (two-tailed tests).

Milestones 5.1 through 5.5, while 50% or fewer of the coordinators identified the remaining four milestones of Phase Five as fully implemented, suggesting the validity of their self-assessments.

The overall ratings of completed milestones by phase (i.e., the coordinator rating that the “Board accomplished the phase completely”) also indicated the validity of the community coordinators’ self-assessments. The overall ratings for Phase 5 were much lower (25% of milestones achieved) than the overall ratings for Phases One through Four (100% achieved).

Table 4 shows the University of Washington staff challenge and implementation ratings for the five milestones and benchmarks which were rated as “*very challenging*” or “*mostly challenging*” for half or more of the communities. Despite the challenge apparent, University of Washington staff rated the CTC intervention communities as having achieved nearly full implementation of these milestones and benchmarks.

**Table 2. Relationship Between CTC Board Member Attendance at the Community Board Orientation and Responses to the Community Board Interview**

<i>Construct</i>	<i>Description</i>	<i>Mean (SD)</i>	<i>Community means (SD)</i>	<i>r (with CBO attendance)</i>
Understanding of CTC Knowledge of CTC	Additive scale of the number of correct responses to 5 questions about prevention science	4.00 (0.98)	3.50 (0.92) to 4.41 (0.71)	0.19*
Understanding of CTC	4-point item on Board understanding of the CTC model	3.22 (0.63)	2.89 (0.88) to 3.41 (0.62)	0.21*
CTC efficacy	4-point scale based on 5 questions relating to how well respondents perceive CTC will work in their community	3.52 (0.38)	3.29 (0.40) to 3.67 (0.30)	0.09
Community readiness and support for CTC	4-point scale based on 4 questions relating to perceptions of how ready the community is to work together and support CTC	2.72 (0.43)	2.42 (0.48) to 2.96 (0.37)	0.13*
Community readiness	4-point scale based on perceptions of involvement of 14 sectors in the CTC process	2.95 (0.41)	2.65 (0.54) to 3.18 (0.33)	0.15
Engaging key leaders and the community	Percentage of respondents who had regularly attended Board meetings in the last six months	70%	38.9% to 86.7%	0.26*
Participation in CTC	Average number of hours spent attending Board meetings in the last six months	4.33 (3.81)	2.61 (1.85) to 5.60 (4.17)	0.18*
Community board	4-point scale based on 6 questions of perceptions of the Board's level of cohesion	3.37(0.43)	3.06 (0.49) to 3.70 (0.45)	-0.01
Attendance at meetings	4-point scale based on 3 questions of perceptions of the Board's focus and directedness	3.73 (0.44)	3.44 (0.59) to 3.90 (0.23)	-0.11
Hours at meetings	4-point scale based on 6 questions of perceptions of the Board's efficiency (agenda setting, note taking, etc)	3.42 (0.45)	3.17 (0.44) to 3.71 (0.43)	-0.03
Coalition cohesion	3-point scale based on 4 questions about the structure of the Board	2.44 (0.69)	1.89 (0.68) to 3.00 (0.00)	-0.05
Coalition directedness	Average number of barriers (out of 13) faced by the Board	1.69 (0.41)	1.44 (0.26) to 2.02 (0.55)	-0.02

\*p < .05.

**Table 3. Percentage of Communities Achieving Each CTC Milestone and Percentage Agreement Among Raters<sup>a</sup>**

CTC milestone	Percentage achieving milestone (averaged across raters)	Agreement among raters
Phase 1		
1.1	94.4%	88.9%
1.2	88.9	83.3
1.3	91.7	83.3
1.4	91.2	84.3
Phase 2		
2.1	100.0	100.0
2.2	100.0	100.0
2.3	97.2	94.4
Phase 3		
3.1	100.0	100.0
3.2	100.0	100.0
3.4	100.0	100.0
3.5	100.0	100.0
Phase 4		
4.1	94.1	90.6
4.2	100.0	100.0
4.3	100.0	100.0
4.4	100.0	100.0
4.5	100.0	100.0
4.6	97.1	94.1

<sup>a</sup>Raters included CTC community coordinators, SDRG staff, and CTC trainers.

Implementation scores on these steps ranged from 1.00 to 2.75, in which a score of 1 out of 4 indicates the milestone was completely met.

### ***The Most Challenging Benchmarks and How Their Implementation Was Achieved***

Five benchmarks and associated milestones were rated as challenging to implement for at least six of the 12 CTC communities. Two of these challenges, though noteworthy, will not be discussed in depth here due to space limitations. First, six of the communities encountered challenges in completing the Phase Three benchmark of preparing archival data to supplement the CTC Youth Survey data. CTC Board members found that in these small communities, statistics on indicators such as drug or alcohol-related emergency room visits and juvenile crime rates were sometimes difficult to obtain from local agencies, were not kept in a readily accessible form, or were available only for the county or at some other level. A second challenge for eight of the communities was the Phase Four benchmark: “Identify resources required for new programs and policy implementation.” In the CTC planning process, communities often identified needs exceeding the resources available.

The remainder of this section discusses the three remaining challenging benchmarks and the actions that facilitated implementation in spite of these challenges.

#### ***Challenge One: Addressing Readiness Issues***

In Phase One of CTC, 10 of the 12 communities experienced challenges in developing an action plan for addressing identified readiness issues. To achieve this benchmark,

**Table 4. The Five Most Challenging Milestones (and Benchmarks) Faced by the 12 CYDS Intervention Communities, with Mean Challenge and Implementation Scores**

<i>Milestone and benchmark</i>	<i>Number of communities finding milestone "mostly" or "very challenging"*</i>	<i>Challenge score (1 = very challenging, 4 = not at all challenging)</i>	<i>Implementation score (1 = completely implemented, 4 = not at all implemented)</i>
1.1 The community is organized to begin CTC	4	1.47	1.50
1.11 A key leader "champion" has been identified to guide the CTC process	8	1.63	2.75
1.4 Community readiness issues have been analyzed and either addressed, or a plan for addressing them has been developed	7	1.86	2.07
1.43 An action plan for addressing outstanding readiness issues has been developed	10	1.70	2.10
3.2 Community assessment information has been collected and prepared for prioritization	6	2.00	1.00
3.23 CTC youth survey and archival data has been prepared for prioritization	6	1.83	1.00
4.1 The Community Board has the capacity to create a focused community action plan	10	1.60	1.73
4.12 All stakeholders whose support is required have been engaged	10	1.60	2.30
4.4 Implementation plans for each program, policy, or practice to be implemented have been developed	6	1.92	1.13
4.43 Resources required to implement each new program, policy, or practice have been identified	8	1.75	1.38

community leaders were expected to assess their community's readiness to adopt the CTC prevention system, identify barriers to implementation, and then develop action steps for addressing these barriers. A readiness challenge faced in some communities was that youth issues other than the five problem behaviors directly addressed by CTC already had been identified as community priorities, and community stakeholders were committed to addressing these issues. In one community, a group had been formed to address youth suicide and related mental health issues. In another, a work group was focusing on the need for enhanced youth substance abuse treatment but not prevention. CTC supporters used four tactics to enhance readiness for CTC in these communities: enumerating shared risk factors, publically linking the outcomes, emphasizing the need for a continuum of prevention and treatment approaches, and using the CTC Youth Survey data to identify both prevention and treatment needs. For example, CTC key leaders and coordinators cited research showing that wide-ranging adolescent health and behavior problems are predicted by common shared risk factors that can be addressed by preventive action and that these problems often

co-occur in the same adolescents (Donovan & Jessor, 1985; Dryfoos, 1990; Kessler et al., 2003; Lewinsohn, Rohde, & Seeley, 1998; McGee & Newcomb, 1992). Family management problems, family conflict, and academic failure are shared risk factors for adolescent substance abuse and depression (Hawkins, Catalano, & Miller, 1992; Reinherz, Giaconia, Carmola Hauf, Wasserman, & Paradis, 2000). CTC coordinators and champions suggested that installing programs shown to effectively reduce such factors would hold promise for reducing both teen substance abuse and depression (Kessler et al., 2003; Mason et al., 2007). Interpreting and sharing CTC youth survey data facilitated partnerships between CTC advocates and existing prevention and treatment providers. CTC coordinators helped service providers discover potential uses of the CTC data, such as citing data in funding proposals, to increase their support of CTC and endorse a continuum of prevention and treatment services in the community.

CTC seeks to enhance the work of existing prevention coalitions in communities where such coalitions already exist rather than duplicate such services. Prevention-focused coalitions or organizations already existed in 6 of the 12 CTC intervention communities. In two intervention communities with existing coalitions, the CTC process was adopted by those coalitions without significant challenges. However, four communities with existing coalitions experienced challenges during Phase One in integrating the CTC effort with the work of the existing coalitions. The issues encountered and solutions that emerged in these communities are described next.

One community's challenge, noted earlier, was that youth suicide, a problem not explicitly addressed by CTC, had been identified as a community priority prior to the inception of CTC. As coalition members learned of the shared risk factors for youth suicide and the problem behaviors addressed by CTC and learned of the research on the co-occurrence of substance abuse problems and youth suicide, they adopted the CTC process as a means for achieving their goals. In a second community some stakeholders attending the first CTC training, the *Key Leader Orientation* (KLO), thought that CTC was "reinventing the wheel." Human services providers and school representatives believed that they were already incorporating many aspects of the CTC planning approach. They also expressed concern that certain key leaders had not attended the KLO event. To address these issues, those who had attended the KLO convened a follow-up meeting with all community stakeholders to review the KLO materials and discuss how best to integrate CTC into existing efforts in the community. The previously absent leaders attended this meeting, and a detailed plan for CTC implementation, including the formation of a single, cohesive prevention board, was developed. In two other communities, the existing coalition served a broader geographic area than the CTC town. In one of these communities, the coalition's mission was broader in scope than that of CTC and included promotion of adult fitness and recreational activities. In the other community, there was an emphasis on family-focused programs, and an initial reluctance to consider peer or community programs. In both cases, community leaders decided to create independent boards to oversee the CTC process, with several members serving on both the existing coalition and the CTC Board to ensure coordination and avoid duplication of effort.

### ***Challenge Two: Securing a Champion***

The second challenging benchmark in Phase One encountered in eight of the intervention communities was the initial lack of a highly visible champion to guide,

publicize, and legitimize the CTC process. To address this challenge, community coordinators and CTC Board members reviewed the necessary characteristics of a champion, including the ability to influence public opinion around the issue of healthy youth development, and clarified the role and time commitment requirements of a champion, which included speaking to the media about CTC and publicly recognizing CTC volunteers. Likely candidates were then identified, and exploratory meetings were held with these individuals. In recruiting potential champions, coordinators and CTC leaders emphasized that the CTC youth survey data showed that levels of youth substance use in the community were unacceptably high and that to lower these behaviors, the risk and protective factors predictive of these behaviors needed to be addressed by tested and effective preventive interventions. In this way, they ensured that prospective champions would support the principles of prevention science which form the basis of the CTC system.

Through these efforts, four of the eight intervention communities secured champions during the first 18 months of implementation. The remaining four communities secured the support of influential leaders in the community but did not secure the leadership of a highly visible community individual to lead the CTC effort as CTC champion and spokesperson.

### ***Challenge Three: Engaging All Stakeholders to Support the Community Action Plan***

The final challenging benchmark was encountered in Phase Four, as 10 of the 12 CTC communities experienced challenges in engaging all stakeholders whose support was required to create the community action plan. Involving and engaging all of the necessary stakeholders and sectors of the community is an important step to finalizing the selection of tested, effective programs for the community's action plan. While all of the Boards ultimately engaged the necessary stakeholders to finalize and enact their action plan, it took time and perseverance to accomplish this benchmark in some communities.

Two issues emerged. First, seven CTC Boards lacked support of key community sectors for the community plan. In six of the seven communities, representatives of these sectors had been involved in earlier phases. However, in Phase Four, when selection of new tested, effective programs was the task, differences of opinion arose. In two communities, a key stakeholder was not convinced of the need to install tested, effective programs to address identified community priorities and advocated instead for programs that had not been tested and shown to be effective. In both of these communities, CTC Boards convened meetings and included individuals who were influential with the dissenting stakeholders and who could consistently advocate that tested, effective programs offered the best chance to reduce youth problem behaviors in the community. Ultimately, in both cases, the dissenting individuals agreed to move forward using tested, effective programs.

A second issue, in 5 of the 12 communities, occurred when CTC Boards initially considered including new classroom prevention curricula in their action plans, but experienced resistance from schools to adding such programs. The major reason school personnel resisted the adoption of new school prevention curricula was that, given the requirements of the *No Child Left Behind* Act of 2002, classroom time should not be diverted from teaching math, reading, and writing skills; they saw no time in the school day to add a substance abuse prevention curriculum. In one district, an influential school leader was a strong advocate for continuing an existing district-wide

prevention curriculum as the exclusive offering, despite a lack of evidence regarding the curriculum's effectiveness. In another district, tested effective prevention curriculum had been eliminated 1 year prior to CTC implementation, due to personnel cuts.

In all five communities where schools were not initially ready to implement a tested, effective preventive school curriculum, Community Boards decided to start with programs that did not require classroom time but were consistent with the schools' academic goals. These programs were based in or closely linked to the schools, in hopes of building support for the inclusion of classroom-based prevention curricula in future years. Four of these Boards offered tutoring programs, while a fifth offered an after-school prevention program focused on life and health skills. One of these communities offered both tutoring and an after-school recreation program, in response to the district's request for more after-school opportunities for young people.

Of the five districts initially facing challenges to the implementation of tested, effective prevention classroom curriculum, three subsequently installed new tested, effective classroom prevention curricula during the third or fourth year of program implementation. Support for classroom curriculum was achieved in these districts through several means. When turnover occurred in school leadership, CTC Board members and staff immediately and enthusiastically approached new staff, and they consistently reinforced that tested, effective programs offered the best chance to reduce youth problem behaviors in the school and community and that high levels of risk and substance use among students predict academic problems as well. Even when turnover did not occur, informal and formal meetings were conducted with school boards, superintendents, parents, principals, ministerial associations, and teachers. Prior to these meetings, CTC Board members identified the health curriculum needs of each school and then presented information regarding how new, tested effective curricula could address these needs.

This approach was successful in one district, which was not meeting certain required health benchmarks at two schools. In a different community, school staff expressed concerns about the high rate of bullying and youth violence, evidenced anecdotally and in CTC youth survey results. The CTC coordinator arranged for a trainer from the Olweus Bullying Prevention Program (<http://www.hazelden.org>) to visit the district and talk about the program, after which the district adopted the program. In a third district where there had been significant budget cuts, the Board worked with school leaders to install the Project Alert curriculum (<http://www.projectalert.best.org>), which was delivered initially at low cost to the district by a team of a certified teacher from the regional educational agency and a certified teacher from the school district.

In summary, the three challenges to implementing CTC described above were addressed successfully by the communities. This is evidenced by the fact that the milestones and benchmarks discussed were rated on average as "*completely met*" or "*majority met*" by university intervention staff at the conclusion of the first 18 months of the study.

## DISCUSSION

Data gathered in the first 18 months of the CYDS show that high fidelity implementation of the first four phases of CTC was achieved, on average, in 11

months. Factors that likely contributed to high-fidelity CTC implementation included the delivery of CTC trainings by certified CTC trainers in each community, user-friendly guides and materials designed to support CTC implementation, the use of the CTC Youth Survey as a data source for setting outcome goals, locally based coordinators of the CTC process, a system for monitoring progress in achieving the CTC benchmarks and milestones, and technical assistance and coaching from university research staff.

The data from the first 18 months of implementation of the CYDS indicate that, with training and technical assistance in CTC, communities can mobilize, organize, assess need, and develop a community action plan that specifies tested and effective preventive interventions to address priority community risks and protective factors. The CTC benchmarks and milestones tool and the system described here for monitoring CTC implementation can be used by training and technical assistance organizations to help communities advance their prevention efforts and install the CTC system with high fidelity. Core components appear to include high-quality training delivered by certified trainers, the hiring and retention of skillful coordinators who are locally selected and community based, and a high-quality technical assistance and monitoring system (Greenberg et al., 2005; Mitchell, Florin, & Stevenson, 2002). The results of the present study indicate that with these ingredients in place, CTC offers a process that can help communities implement science-based prevention.

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