NCHIP | National College Health Improvement Program

LEARNING COLLABORATIVE ON HIGH-RISK DRINKING

Using a Public Health and Quality Improvement Approach to Address High-Risk Drinking with 32 Colleges and Universities

White Paper—March 2014

Using a Public Health and Quality Improvement Approach to Address High-Risk Drinking with 32 Colleges and Universities

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Preface

In June 2011, when then Dartmouth College President Jim Kim officially kicked off the *Learning Collaborative on High-Risk Drinking,* he told the audience that his biggest fear as a college president was receiving a middle-of-the-night phone call that a student had been injured or died from an incident involving acute alcohol intoxication. Indeed, President Kim was not alone in his concern as 31 other college and university presidents elected to join the collaborative, and many more were turned away at the end because full capacity had been reached.

He also told the audience of over 220 participating team members that while he was not certain that a collaborative public health and improvement approach would work to address the issue of high-risk drinking on college campuses, he was certain that we would know a lot more at the end of the collaborative than we did at the beginning. The methodological details of what we learned and the promising results achieved are contained in the accompanying white paper. Impressive indeed.

Perhaps most impressive, though, was the energy, commitment, and belief that change is possible that was afforded the collaborative by the many involved. We acknowledge the following persons and extend our sincerest gratitude for their contributions in trying a new approach to address this pressing public health issue on college campuses.

- Former Dartmouth College President Jim Yong Kim, MD, PhD, for his vision and leadership in creating NCHIP, securing funding, and recruiting 31 other college presidents to participate in this endeavor.
- Dartmouth College Professor Emeritus Paul B. Batalden, MD, for his guidance and support in shaping the design and structure of the Learning Collaborative on High-Risk Drinking.
- NCHIP Faculty Members Dolores Cimini, PhD; Jason Kilmer, PhD; Linda Major, MA; Toben Nelson, ScD; Lloyd Provost, MS; Bob Saltz, PhD; Traci Toomey, PhD; and, Thomas Workman, PhD, many of whom have committed their livelihoods to alcohol harm reduction and prevention, for their unwavering support and dedication to the success of the collaborative and each campus improvement team.

- Former Special Assistant to the President of Dartmouth College and Team Leader of the Dartmouth Campus Improvement Team, AURORA MATZKIN, PHD, for her invaluable contributions as liaison to the NCHIP leadership team.
- Former Dartmouth College Presidential Fellow, WILL SCHPERO, MPH, for his passion and early involvement in assisting with the establishment of NCHIP.
- The seamless and unwavering leadership support provided by DARTMOUTH COLLEGE after President Kim was named World Bank President a year into the collaborative.
- Members—current and former—of the NCHIP TEAM (JAMIE CARMICHAEL, BA; ELLYN ERCOLANO, MS; GEOFF GUNNING, BA; KAREN HOMA, PHD; JON HUNTINGTON, MD, PHD, MPH; AUDEN MCCLURE, MD, MPH; SIR NORMAN T. MELANCON, BA; EUGENE NELSON, DSC, MPH; AITA ROMAIN, MPH; THOMAS PERRY, MS; and, KRISTINA WOLFF, PHD, MPA) who were instrumental to the operations of the collaborative.

And, most importantly:

- CAMPUS IMPROVEMENT TEAM MEMBERS across diverse departments and disciplines who took on this work in addition to their many responsibilities because the health and safety of their student population is of the utmost importance to them.
- Courageous STUDENT leaders who were willing to be part of the change that is happening around them.

As parents of elementary and secondary school-aged children, we have a vested interest in this work, and have been extremely honored to serve as directors and are proud of the collaborative's accomplishments. However, we know much more work remains if we are to experience a sustained shift in the drinking culture on today's college campuses. We remain hopeful that this work will continue, and that with more time and persistence we will witness the start of this cultural change before our children matriculate. Because, of course, our biggest fear as parents is that we will be on the receiving end of that middle-of-the-night phone call.

LISA C. JOHNSON, MBA, DIRECTOR, 2011 - PRESENT
PATRICIA L. LANTER, MD, DIRECTOR, 2011 - 2013
NATIONAL COLLEGE HEALTH IMPROVEMENT PROGRAM

Executive Summary

High-risk drinking (typified by five or more drinks in a sitting) is a dangerous and harmful behavior on college campuses that has continued relatively unabated at a rate of 40% over the past two decades. While the rate has remained stable, the levels of extreme drinking have intensified, with students eager to experience what they believe to be their expected rite of passage upon college matriculation.

The consequences of high-risk drinking—for both students and institutions of higher education—are becoming too dire to ignore. The National Institute on Alcohol Abuse and Alcoholism estimates that over 1,800 college students lose their life each year to alcohol-related incidents, and that over 600,000 are injured. Alcohol-related sexual assaults on campus number close to 100,000 each year. Burgeoning science about the damage to still-developing brains is equally alarming. Colleges and universities can no longer ignore the detrimental impact that high-risk drinking is having on their reputations, their bottom lines, and, most importantly, their moral obligations to limit activities of known risk to their students. The deleterious effects on student mental health and well being, and academic and athletic performance, run counter to institutional missions and exacerbate attrition issues.

Inadvertently, colleges and universities have contributed to these consequences with systems that sustain risky drinking behaviors. Consider the following elements of campus systems that allow the issue to endure:

- Student organizations or living areas that provide and encourage high-risk behaviors, such as fraternities and sororities, residence halls, and off-campus housing;
- Density of bars and liquor stores that surround campuses;
- Traditions, events, and rituals that are deeply engrained in institutional cultures;
- Inconsistent communication and messaging about high-risk drinking and resulting harms as antithetical to an institution's aim of providing a healthy and safe learning and living environment for all students.

Recent studies corroborate the fact that only a third of colleges and universities have a systematic approach to reducing and preventing high-risk drinking by their students or using evidence-based strategies already known to reduce student drinking.

Former Dartmouth College President, Jim Kim, a public health physician, recognized this chasm between the evidence that exists for addressing high-risk drinking and what is being done in practice on college campuses. In 2010, he created the National College Health Improvement Program (NCHIP) to bridge that gap and to improve the health of the college student population. In June 2011, NCHIP launched its inaugural initiative, the *Learning Collaborative on High-Risk Drinking*. The collaborative brought together 32 colleges and universities to work collaboratively over a two-year period to learn about and implement a comprehensive, multi-pronged approach using both a public health and improvement focus, in addressing high-risk drinking on their campuses.

Integrating the Institute for Healthcare Improvement's collaborative improvement model with the existing research and evidence base, NCHIP created a compelling collaborative experience. Participating member teams came together for three face-to-face learning sessions, where faculty experts introduced a progressive approach to building a comprehensive alcohol harm reduction and prevention system. Throughout the collaborative, campus teams engaged with faculty experts and one another to take those well-researched strategies and use rapid cycle testing on their own campuses to see how well they might work. Teams were encouraged to collect and report monthly measures of both outcome and process-level measures to bring a data-driven approach to their work.

In June 2013, teams met for a final time at the Summative Congress session to reflect on their accomplishments and the results of the collaborative as a whole. These included:

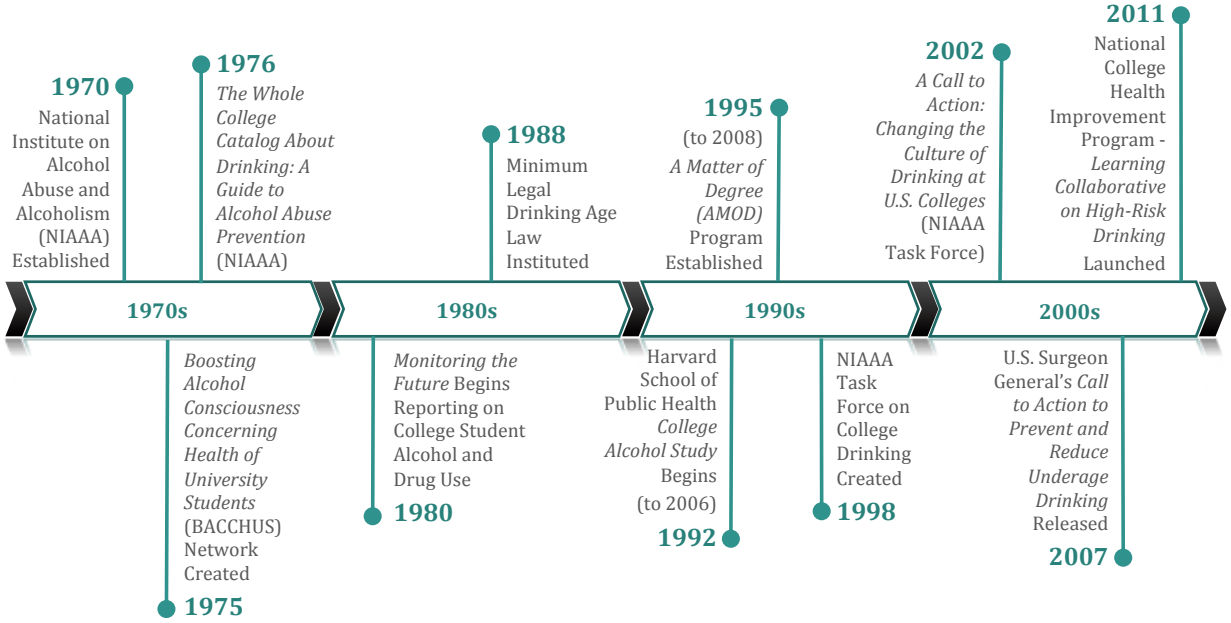
- Over 300 new initiatives tested and implemented with positive impact across the 32 teams;
- A narrowing of the gap between evidence and practice (e.g. the percent of teams preventively screening increased from 53% to 75% over the two-year period);
- Promising early results for several teams that implemented evidence-based strategies at multiple levels and committed to full participation and consistent measurement;
- A proliferation of teams using a multi-disciplinary, comprehensive systems approach to addressing high-risk drinking on their campuses;
- An increase and spread in the use of improvement methods and tools both across the collaborative teams and within institutions (e.g. a student affairs vice-president applied the rapid cycle testing method to address retention issues related to first-generation college students); and,
- Profound philosophical shifts for schools new to examining and addressing this issue in a systematic way (e.g. an institution that encouraged students to make responsible drinking decisions without active enforcement efforts was able to discover why this approach was untenable in providing a healthy and safe environment for students).

The collaborative improvement model provided a new approach to address a complex, age-old issue plaguing college campuses and achieved promising early results. However, as is true with deeply entrenched cultural issues, more time is needed to bring about the kind of systemic cultural change where risky drinking behaviors are no longer considered the norm, but rather viewed as anathema to a healthy and productive college experience. Continued leadership, persistence, and resources are necessary to spread this method to an increasing number of schools, and to create and sustain the changes required to significantly impact the drinking culture on college campuses.

Introduction

High-risk drinking (HRD) is a long-standing issue on college campuses. It has received increasing national attention over the past 30 years (**Figure 1**), which has led to a better understanding of the myriad negative consequences associated with risky drinking behaviors.[1] The National Institute for Alcohol Abuse and Alcoholism (NIAAA) estimates that over 1,800 college students die from alcohol-related accidents or injuries each year, over 600,000 suffer accidental injuries, and an estimated 97,000 are victims of sexual assault.[2]

Figure 1. Timeline of National Interest and Efforts on College Drinking

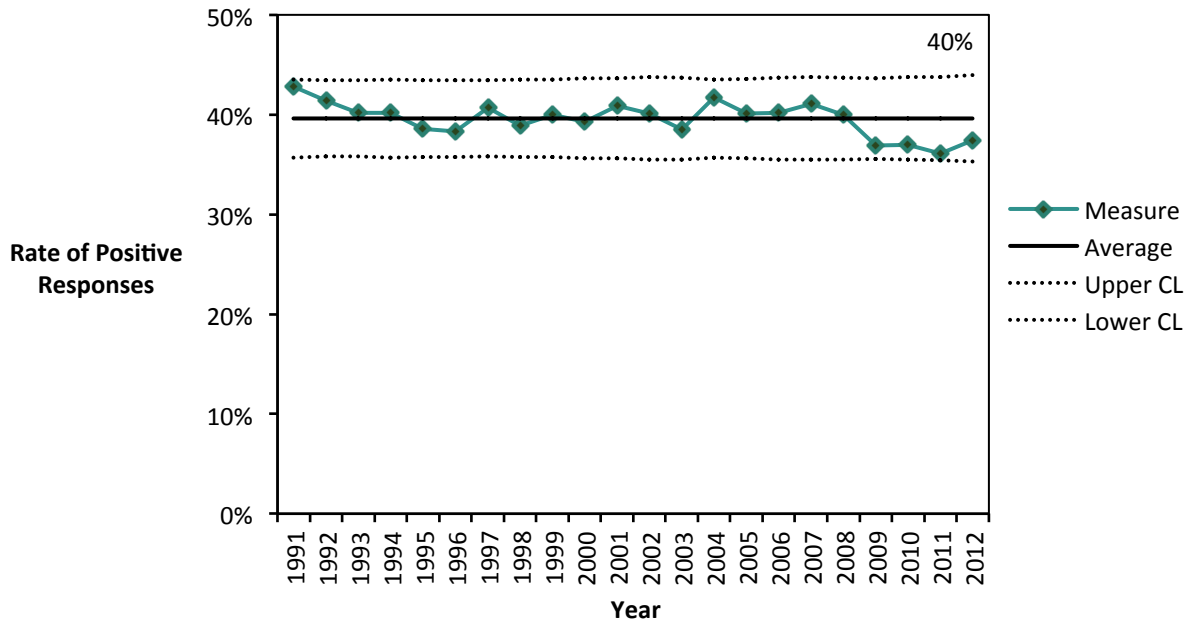


The terminology surrounding heavy alcohol consumption on college campuses has evolved over the years as well. In 1994, as part of Harvard University's College Alcohol Study, Wechsler and colleagues defined *binge drinking* as "the consumption of five or more drinks in a row at least once in the past two weeks for men, and four or more drinks in a row for women."[1] In 2004, the NIAAA Council recommended refining the definition as "a pattern of

drinking that brings blood alcohol concentration to .08 gram percent or greater, a level of consumption that corresponds to five or more drinks for most men and four or more drinks for most women in a period of about two hours."[3] Also compounding the college-drinking lexicon is the controversy that surrounds the use of the word *binge.* Some have taken exception to the term because of its historical use by clinicians as defined by three or more days of sustained drinking by patients with alcohol dependency.[4] Regardless of the naming convention (this collaborative chose to adopt the term *high-risk drinking* as measured by the number of times students consumed five or more drinks in a sitting), most all can agree that heavy episodic drinking is having a deleterious effect across college and university campuses. In fact, both the Centers for Disease Control and Prevention and the U.S. Surgeon General recognize HRD as a dangerous, but preventable public health problem.[5,6]

The magnitude of the issue varies across national studies and survey reports. The American College Health Association's (ACHA) latest survey results (Spring 2013) reported that 33.8% of students consumed five or more drinks in a sitting over the last two weeks, compared with 39.1% a decade earlier.[7,8] Using the same definition, the Core Institute 2011 survey reported that 44.8% of college students engage in high-risk consumption (compared to 44.7% in 2007).[9,10] One of the nation's longest established source of measures for youth and young adult behaviors, the *Monitoring the Future* study, reported in 2012 that 37.4% of college students consumed five or more drinks in a row in the last two weeks, down from 40.1% in 2002 and 41.4% in 1992[11] (**Figure 2**).

Figure 2. Annual HRD Rates from the Monitoring the Future Study[11]



The numbers indicate a modest downward trending of the college drinking rates over the past two decades, despite efforts at the national, state, and local campus levels. With somewhere between 33% and 45% of today's college student population engaging in HRD behaviors, it is clear that a new or more novel approach is needed to make significant inroads into this public health issue.

The National College Health Improvement Program (NCHIP) was formed in 2010 by then Dartmouth College President Jim Yong Kim. NCHIP evolved out of a vision that a new way of addressing HRD, as well as other issues impacting the health of college students, was possible. The vision entailed coupling the Institute for Healthcare Improvement's (IHI) *Breakthrough Series Learning Collaborative,* [12] which incorporates the Model of Improvement,[13] with the body of evidence that exists for addressing HRD on college campuses. President Kim, a public-health physician himself, had successfully applied a similar approach in tackling intractable diseases in third-world countries, and was eager to pilot it in higher education. NCHIP launched its inaugural initiative—the *Learning Collaborative on High-Risk Drinking* (collaborative)—in June 2011. The aim of the collaborative was ambitious—to effect measurable change in reducing the rates of HRD and associated harms at participant institutions during the two-year collaborative period.

President Kim recognized the challenges that colleges and universities face in their ability to quickly identify best practices and adopt them, as well as the external isolation that many schools experience in engaging in this work. An important initial step was the recruitment of a group of institutions committed to working collaboratively and to learning from one another. Thirty-two colleges and universities from across the U.S. and one from Canada signed on to participate (refer to **Appendix A** for a list of institutions), thereby creating the largest cohort of institutions of higher education committed to a multi-year collaboration to address HRD. The schools represented a diverse cross section of institutions—public and private, small and large, and urban and rural. Additionally, each brought a unique context of culture and traditions to the mix, as well as varied histories of efforts to reduce HRD on their campuses.

Remarkably, by the end of the two-year collaborative period much transpired: multi-disciplinary teams were formed and fully functioning; improvement methods and tools were embraced by most teams; changes were being tested and implemented within a comprehensive system framework, resulting in more than 300 documented new initiatives (estimates of double that number including undocumented efforts); and, perhaps most importantly, collaboration occurred within and across teams around an issue that heretofore many were reticent to even discuss with peer institutions. This paper seeks to provide an account of how these profound changes came to fruition.

Methods

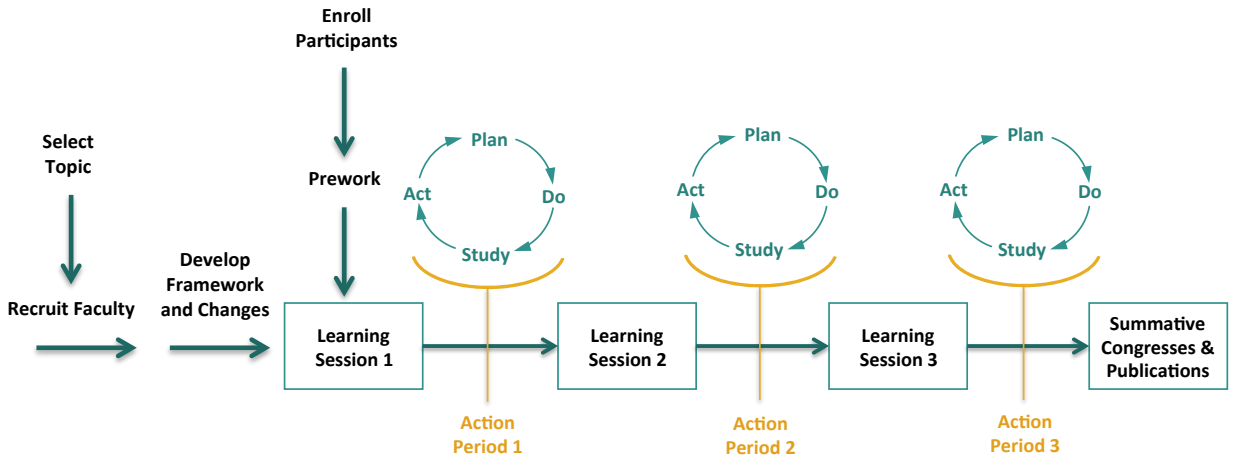
The design of the *Learning Collaborative on High-Risk Drinking* integrated the IHI's collaborative improvement model with the existing evidence base of the most effective ways to address HRD on college campuses. The uniqueness of this approach stemmed from taking a complex issue occurring within a challenging environment with multiple change ideas to address it, and coupling it with a framework and method for making change and improvement. These complexities required a different approach from a typical collaborative improvement project in healthcare, which focuses on improving a well-circumscribed issue, such as a specific medical condition or care process, and devotes all collaborative activities and efforts to that improvement.

The following sections provide a detailed description of the IHI's learning collaborative model and the model for improvement, followed by a summary of the evidence base for addressing HRD on college campuses. The last section describes the integration of these two foundational elements in designing the *Learning Collaborative on High-Risk Drinking*.

IHI Learning Collaborative Model

The IHI's collaborative model for achieving breakthrough improvement (**Figure 3**) was developed on the principle that gaps in healthcare and wide variations in implementation and practice can be addressed by bringing organizations together to work collaboratively to make rapid, measurable, and sustainable improvements.[12]

Figure 3. IHI Breakthrough Series Model[12]



Integral to the model above are several key elements, which are described below.

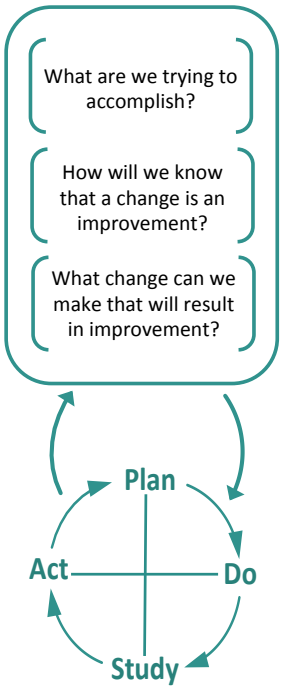
- Once a topic area has been selected for improvement, subject matter experts (also referred to as faculty experts) are recruited to develop the overall aim for the collaborative and to identify the evidence-based changes necessary to achieve the aim.
- Organizations apply and, if accepted, enroll to be a part of the collaborative. Each organization identifies a multi-disciplinary improvement team to be involved and secures an explicit commitment from senior leadership to provide guidance and support to the team. Additionally, baseline data and information about current processes are solicited from teams via a pre-work package.
- Three face-to-face learning sessions bring teams and faculty experts together to exchange ideas and to share and learn from one another. Designated team time is also provided, allowing teams to use the time away from home organizations to reflect and plan next steps.
- Learning Session 1 is typically devoted to education in improvement methods, if not previously covered in pre-collaborative activities. The Model for Improvement (outlined in the following section), which provides the engine for testing and implementing change ideas, is introduced to teams in detail. Faculty experts also share the vision and aim for the collaborative. The specific evidence-based change package of steps or initiatives necessary to achieve the aim, as well as a measurement strategy to monitor and quantify progress, is also introduced.
- Learning Sessions 2 and 3 are structured to encourage teams to communicate and share their results with one another, including successes, failures, barriers, and lessons learned.
- Action periods are the times in between each learning session, typically six months in length, in which teams are testing and implementing change ideas, and measuring results to determine if the changes they are making are leading to an improvement. Teams use an online workspace to document their efforts and measures and to submit a monthly report outlining their progress. Faculty experts provide technical advice and assistance to teams throughout the action periods.
- Monthly calls and webinars foster dialogue and collaboration across teams. Teams are also encouraged to connect with each other through a variety of mechanisms (Listserv posts, site visits, emails, etc.) to seek advice and to share lessons learned related to similar issues or initiatives.

MODEL FOR IMPROVEMENT[13]

The Model for Improvement (**Figure 4**) is based on three essential questions to aid in formulating a plan for improvement. Improvement teams are advised to consider these questions throughout their collaborative experience as a compass for their work.

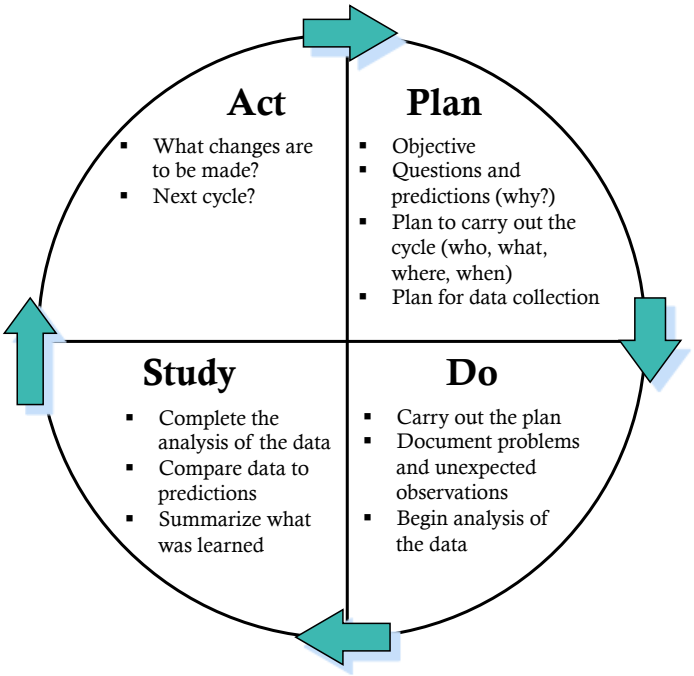
- What are we trying to accomplish? (**Aim**)
- How will we know that a change is an improvement? (**Measures**)
- What change can we make that will result in improvement? (**Ideas**)

Figure 4. Model for Improvement[13]



The improvement model also entails using the PDSA method (bottom half of **Figure 4**) for testing and implementing changes across collaborative teams. PDSA is "shorthand for developing a plan to test the change (**Plan**), carrying out the test (**Do**), observing and learning from the consequences (**Study**), and determining what modifications should be made to the test (**Act**)."[13] PDSA cycles promote rapid tests of change, in which existing evidence or good ideas are tested on a small scale, studied, adjusted, and iteratively tested on increasingly larger scales until full implementation is reached. This cyclic approach (**Figure 5**) encourages teams to *act their way into learning, rather than think their way into acting*.[13]

Figure 5. Plan-Do-Study-Act Cycle[13]



EVIDENCE BASE FOR ADDRESSING HIGH-RISK DRINKING ON COLLEGE CAMPUSES

In 2002, the NIAAA Task Force on College Drinking released a set of findings and prevention recommendations based on a review of available research. At that time, much of the published research specifically focused on college student populations related to individual-drinker interventions.[14] Consequently, the Task Force expanded its review to include strategies that were successful in other general population settings that could be reasonably applied to the college environment. The Task Force findings and recommendations were organized by tiers of effectiveness (**Table 1**) based on relevance to the college student population and the extent of research performed.[15]

Table 1. NIAAA Recommended Strategies[15]

Tier	Evidence of Effectiveness	Interventions/Strategies
1	College Student Population	▪ Brief motivational interventions (BMI) ▪ Cognitive-behavioral skills training with norms clarification and BMI ▪ Interventions challenging alcohol expectancies
2	General Population	▪ Restrict availability of alcohol or create an environment supportive of such restrictions ▪ Examples: *enforce minimal drinking age laws; restrict alcohol outlet density; increase prices and excise taxes on alcoholic beverages; form campus and community coalitions to implement strategies; etc.*
3	Logical and Theoretical Promise, requiring more comprehensive research	▪ Examples: *social norms marketing or normative education; consistent enforcement of campus alcohol policies; provision of safe resides for intoxicated students; regulation of happy hour promotions; information for new students and parents about alcohol use and campus policies; Friday classes; alcohol-free social events; etc.*
4	Ineffective, if used alone	▪ Simple educational and awareness programs

In 2007, the U.S. Surgeon General issued a *Call to Action to Prevent and Reduce Underage Drinking*, which urged institutions of higher education to consider measures to change the cultural factors on their campus that contribute to underage alcohol consumption.[16] **Table 2** summarizes the recommendations from that report.

Table 2. Surgeon General's Call to Action—Recommended Strategies[16]

STRATEGIES TO CHANGE COLLEGE UNDERAGE DRINKING CULTURE
▪ Establish, review, and enforce rules against underage alcohol use with consequences that are developmentally appropriate and sufficient to ensure compliance.
▪ Eliminate alcohol sponsorship of athletic events and other campus social activities.
▪ Restrict the sale of alcoholic beverages on campus or at campus facilities, such as football stadiums and concert halls.
▪ Implement responsible beverage service policies at campus facilities, such as sports arenas, concert halls, and campus pubs.
▪ Hold all student groups on campus, including fraternities, sororities, athletics teams, and student clubs and organizations, strictly accountable for underage alcohol use at their facilities and during functions that they sponsor.
▪ Eliminate alcohol advertising in college publications.
▪ Educate parents, instructors, and administrators about the consequences of underage drinking on college campuses, including secondhand effects that range from interference with studying to being the victim of an alcohol-related assault or date rape, and enlist their assistance in changing any culture that currently supports alcohol use by underage students.
▪ Partner with community stakeholders to address underage drinking as a community problem as well as a college problem and to forge collaborative efforts that can achieve a solution.
▪ Expand opportunities for students to make spontaneous social choices that do not include alcohol (e.g., by providing frequent alcohol-free late-night events, extending the hours of student centers and athletics facilities, and increasing public service opportunities).

Since the release of recommended strategies by both the NIAAA *Task Force* and the Surgeon General's *Call to Action*, numerous studies have continued to emerge and contribute to the body of evidence on this topic.[17] Below are several highlights.

Individual-Drinker Initiatives

- The U.S. Preventive Services Task Force finalized its screening guidelines recommending that "clinicians screen adults aged 18 years or older for alcohol misuse and provide persons engaged in risky or hazardous drinking with brief behavioral counseling interventions to reduce alcohol misuse."[18]
- Additional research has corroborated the effectiveness of BMI in reducing alcohol use and alcohol-related harms among college students. Cronce and Larimer updated their review of the literature through 2010 and found consistent support for use of BMI coupled with personalized feedback interventions (PFI) and personalized normative feedback (PNF), as well as for standalone PFI/PNF interventions.[19]

Web-Based, Education-Focused Interventions

- Paschall et al performed a randomized control study with 30 colleges to evaluate the effectiveness of an online intervention course administered to incoming freshmen, followed by a shorter module distributed 30-to-45 days after the start of school. The

study found reductions in risk for alcohol problems in the past 30 days during the fall semester for students at the intervention schools; however, these reductions dissipated by spring semester. Due to the relatively short-term protective benefits offered by the online course, the authors encourage coupling this intervention with a more comprehensive environmental approach to addressing HRD in college campuses.[20,21]

Parent Initiatives

- Doumas et al documented promising results in a study that disseminated a parent handbook prior to matriculation, followed by three booster brochures sent to parents in early fall semester. These materials provided information related to HRD and encouraged parents to communicate with students about their alcohol use. A four-month follow up found significantly less heavy drinking by students whose parents received the handbook and booster brochures as compared to students in the control groups.[22] An earlier study by Turrisi found longer positive effects (10 months) from coupling the parent handbook with BMI techniques.[23]

College-Community Partnerships

- Two notable initiatives emerged on college-community partnerships (a Tier 2 NIAAA strategy)—the Safer California Universities study (Safer CA) and the Study to Prevent Alcohol-Related Consequences (SPARC).

  Safer CA involved 14 large public universities of which half were randomly assigned to environmental interventions that included nuisance party enforcement, increased enforcement of laws related to selling alcohol to minors, checkpoints to detect driving under the influence, and implementation of social host ordinances. Significant reductions both in the number of students drinking to intoxication and in the number of incidents related to intoxication were observed with the intervention sites.[24]

  SPARC involved 10 universities in North Carolina, randomizing half to a community organizing and coalition intervention to implement strategies aimed at reducing the availability of alcohol, addressing alcohol pricing and marketing, influencing norms related to HRD, and reducing harms associated with HRD. The study reported significant decreases in alcohol-related consequences due to the students' own drinking and in alcohol-related injuries caused to others.[25]

LEARNING COLLABORATIVE ON HIGH-RISK DRINKING

Collaborative Design and Core Elements

Drivers of Change

The first step in the design process was to recruit a faculty team that consisted of national experts and academicians in the field of alcohol harm prevention (refer to **Appendix B** for faculty bios). This group was first charged with synthesizing the latest evidence available to address HRD on college campuses (as summarized in the section above). Facilitated by NCHIP leadership and senior improvement advisors, faculty experts then created a shared view of the contributing factors to the issue of HRD, as well as a theory of change. The theory of change, which identified specific opportunities to drive improvement, was conceptualized as a driver diagram. A driver diagram is similar to a tree diagram, with hierarchical branches that depict a roadmap of possible solutions to an issue.[26]

The HRD driver diagram (depicted in **Appendix C**) identifies three key drivers of change: 1) the individual drinker, 2) the environment, and 3) the system. These represent the primary levers of focus in reducing HRD and associated harms, consistent with the evidence that supports the need to take a comprehensive, multi-pronged approach. For each of the key drivers, faculty experts identified the broad actions to take to achieve a reduction in HRD, followed by more specific areas of focus and possible initiatives to test and implement.

Design and Timeline

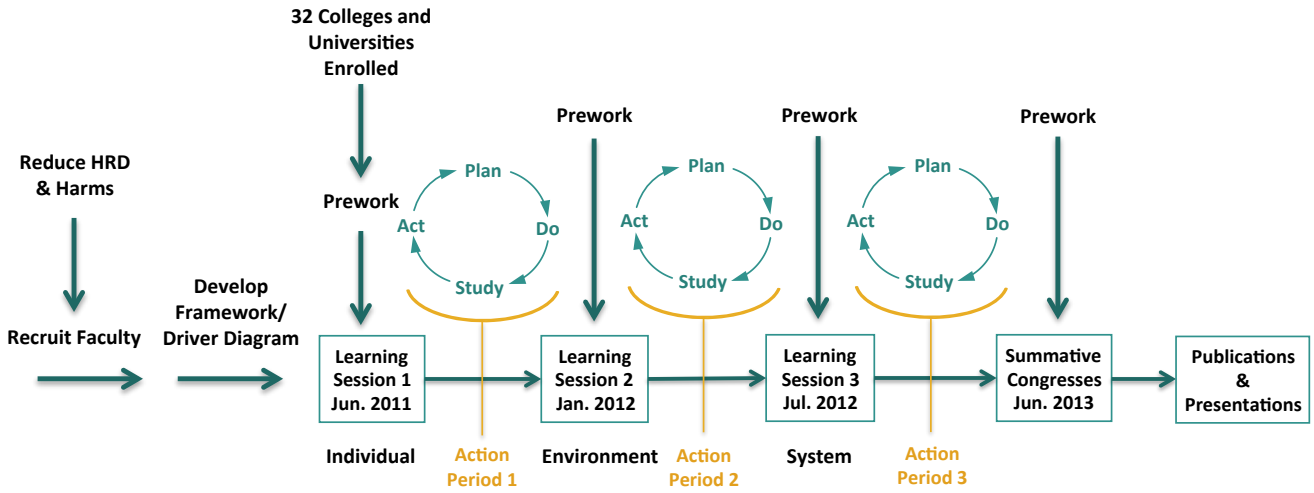
The driver diagram (**Appendix C**) provided the framework for the logic, progression, and content of the learning sessions. The conceptualization of change and improvement within and across the three drivers dictated the modification of the collaborative design to focus each of the learning sessions on a specific driver, starting with the individual drinker, followed by the environment, and then culminating with the integration of the two under a larger system context.

Unlike a typical learning collaborative, in which participants at the start are provided with a specific change package of precise steps or processes for improvement, members of the HRD collaborative were not given a specific set of changes to implement. Rather, the intent of the collaborative was to provide teams with the latest evidence (summarized in the driver diagram), as well as the improvement tools and access to resources (faculty and improvement experts) necessary to identify areas in need of strategic improvement on their campuses. Teams were expected to select specific change ideas for testing and implementing to address the issues within their unique campus contexts.

The timeline, as compared to a typical learning collaborative, was expanded to 24 months to allow for adequate time to learn and process unique content during the first year, and to give teams an entire second academic year to fully implement their strategies and to improve upon events or times of the year (e.g. orientation) that only occur annually.

Figure 6 below captures these adaptations in creating the *Learning Collaborative on High-Risk Drinking*.

Figure 6. Learning Collaborative on High-Risk Drinking



Multi-Disciplinary Teams

Prior to the first learning session, each organization was instructed to form a campus improvement team consisting of five-to-seven individuals, to include a senior student affairs administrator, a health service representative, a faculty member, a student leader, and a data collection specialist.

As the scope of the work broadened over the course of the collaborative, teams expanded their membership to include a variety of other disciplines, such as residential and Greek life, athletics, judicial, campus safety and security, and local police. Total collaborative membership eventually reached over 325 members across the 32 participating organizations.

Measurement Strategy

Measurement is integral to the science of quality improvement work.[27] Key data informs teams if the changes they are making are leading to a measurable improvement. The second question of the Model for Improvement ("How will we know if a change is an improvement?") relies on regular monthly feedback on key measures throughout the improvement project, as well as measures associated with specific PDSA cycles while the cycles are active. [13] The monthly measures defined for the collaborative are described below.

- **Outcome measures** are global measures that provide insight into whether the aggregate changes implemented are bringing about the desired effect across a system.[27] A measurement advisory group comprised of nine NCHIP team members across eight institutions considered a variety of measures based on feasibility and implications of implementation, response rate, ease of measurement, monthly sampling, and desired outcomes. The group recommended four monthly outcome measures for collaborative teams to collect and monitor (refer to **Appendix D** for a detailed description and relevant sources of the measurement strategy).

  HRD rate—defined as having "five or more drinks in one sitting in the past 2 weeks."[11] Teams were encouraged to survey a sample of their students on a monthly basis to obtain this rate.

  Drinking-Related Harms—defined as experiencing "any of the following when drinking alcohol within the last 12 months: did something you later regretted, forgot where you were or what you did, got into trouble with police, someone had sex with me without my consent, had sex with someone without their consent, had unprotected sex, injured yourself or another person, and seriously considered suicide."[7] Teams were encouraged to survey a sample of their students on a monthly basis to obtain these harm rates.

  [Note: in anticipation of the newness of collecting monthly survey data from students, each organization was asked to work with its respective Institutional Review Board (IRB) to ensure appropriate regulatory compliance. The Dartmouth College IRB had determined that member institutions were not conducting human subjects research, but required all members

to confirm this determination with their own IRB. NCHIP also received an exemption from the Dartmouth College IRB under this determination.]

Medical Care Encounter—defined as the number of undergraduate students who receive medical care for an acute intoxication in the past month.

Law Enforcement Encounter—defined as the number of undergraduate students who encounter police, law enforcement, or campus security due to intoxication in the past month.

- **Process Measures** are measures at the initiative or intervention level that provide insight into whether parts of the system are performing as planned and contributing to the overall strategy to reduce HRD and its associated harms.[27] Teams were encouraged to collect, monitor, and report on process measures related to their improvement efforts. A library of suggested process measures for multiple initiatives was created as a reference for collaborative teams and is provided in **Appendix E**.

Teams were introduced to the concept of a run chart to display their monthly data measures. A run chart is widely used in quality improvement to provide a graphical display of data points plotted over time.[28] For example, a run chart of an institution's HRD rate depicts the month of the year on the horizontal or x-axis and the percentage of students engaging in HRD on the vertical or y-axis. Teams were encouraged to aggregate results from each monthly survey and to plot their HRD rate as one data point. The simplicity of the run chart offered teams the ability to quickly assess whether the changes they were making were leading to an improvement.

Pre-work and Storyboards

In preparation for each learning session, teams were asked to complete a pre-work package, which typically consisted of assessment questions and guidelines for gathering information and data related to the domain to be covered during the upcoming session. For example, as part of the pre-work package for the first learning session, teams were asked to develop their aim statements, to include specific accomplishments and numerical goals that they hoped to achieve during the collaborative experience, as well as the expected timeframe for realizing those goals.

Additionally, all teams were asked to prepare and display their storyboards—a large poster that included their aim statement, highlights of their improvement work, and data displays

of their outcome and process measures. Some institutions shared their posters outside the collaborative audience, such as the Cornell University team which publicly posted all four of its NCHIP storyboards on the Cornell health services website[29] to emphasize the importance of the issue and to highlight the initiatives being undertaken to address HRD on their campus. As an illustrative storyboard example, Cornell's June 2013 Summative Congress storyboard is provided for reference in **Appendix F**.

Support Infrastructure

Campus improvement teams were supported during the two-year collaborative through a variety of mechanisms aimed at fostering networking and shared learning across teams, as well as rigorous documentation and data displays or other visual representations of the work performed. Support mechanisms included the following:

- Monthly Webinars (All-Collaborative Calls) on a variety of topics led by experts in the field of alcohol harm reduction and prevention—refer to **Appendix G** for a complete list of call topics
- Periodic small group or special interest calls (also included in **Appendix G**)
- NCHIP Faculty expertise and advisory services
- Facilitation of collaboration and communication amongst teams working on similar initiatives or facing similar issues
- A web-based work space for documentation and resource sharing
- Face-to-face learning sessions
- Assistance with data analysis and visual display of data, including run charts and performance dashboards

Learning Sessions

Learning Session 1 (LS1)—Individual Drinker

The primary emphases for LS1 were changes directed at the individual drinker. The four branches of the individual arm of the driver diagram (**Appendix C**)—*prevention, risk identification and management, acute toxicity management, and effective brief intervention*—provided the framework for sharing the latest evidence base. Teams were encouraged to consider various change options within each of these areas. Some examples shared at LS1 are provided below.[30]

- *Prevention*: implementing efficacious programs, such as Brief Alcohol Screening and Intervention for College Students (BASICS) and Alcohol Skills Training Program (ASTP), for high-risk student groups (e.g. mandated students, first-year students, Greek system members, student athletes, etc.).

- *Risk Identification and Management*: identifying where screening happens, how it happens, and what follow-up occurs.
- *Acute Toxicity Management*: ensuring that students recognize an alcohol poisoning or emergency and know what to do in such situations, overcoming barriers (perceived or real) that prevent students from seeking help, and following-up with students after a high-risk event.
- *Effective Brief Intervention*: considering options for intervention delivery (health center, counseling center, mandated settings, peers, parents), including the optimal timing of an intervention, and maintaining fidelity over time.

Teams were asked to consider the efforts already in place on their campuses and to reflect on the following questions. [30]

- What measures or evidence does your team have that your efforts are having the desired outcome?
- What elements are missing or could be added?
- Where might students "slip through the cracks?" What can be done to prevent this from happening?
- Who are considered to be high-risk students, or high-risk groups, at your institution?
- Who are the key stakeholders or important partners on campus who support (or could support) these efforts?
- What are potential barriers to implementing prevention and intervention programs?

In addition to content directed at the individual drinker, teams were also provided with training and education on the improvement model and PDSA method. For many, this represented their first introduction to these improvement techniques. Teams were introduced to the concept of taking clear evidence that exists (such as screening and brief motivational intervention) and bridging the gap between that evidence and what is currently practiced on their campuses. Based on the reflective scan of current practices (using the questions above), teams were encouraged to identify the first change that they could begin testing immediately upon returning to their organizations.

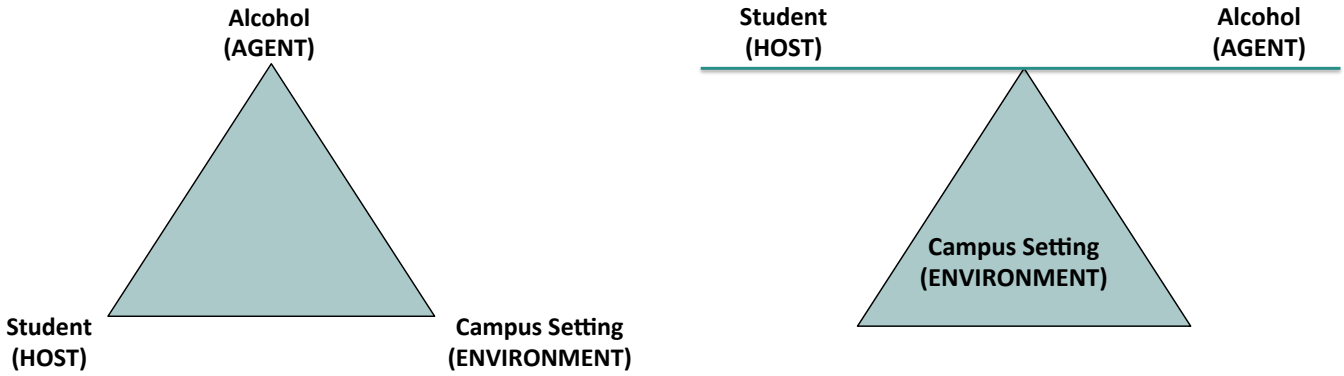
The PDSA method offered teams a new way to approach change on their campuses. Starting with small tests of change and then iteratively ramping up allowed teams to take risks in trying something new and to quickly adapt and account for any unforeseen or unintended consequences. For example, a team that was not doing any screening prior to LS1 was able to return to campus and start testing with just one counselor in the Counseling and Psychological Services center. Studying and modifying the process and testing it on an iterative basis through several cycles allowed the team to adapt the process to its local context before implementing center-wide. Further, teams were encouraged to document

their PDSAs using a standard template or form (**Appendix H**), which supported the learning and reflection process throughout the collaborative.

Learning Session 2 (LS2)—Environment

A plethora of evidence exists for the importance of considering the role that the environment plays in either encouraging or inhibiting HRD behaviors on and around college campuses. Indeed, the public health perspective encourages the examination of the interplay between three important factors (**Figure 7**): the individual drinker (HOST), alcohol (AGENT), and the campus setting (ENVIRONMENT).[31] The diagram on the left assumes equality across the three factors. Some would argue that the diagram on the right, which places more importance on the environment in tipping the scale towards or against student alcohol use, might be a more accurate depiction.

Figure 7. Diagrams—Public Health Perspective[31]



In preparation for LS2, teams were encouraged to assess their environments using the methods outlined in the pre-work package contained in **Appendix I**. Teams collected data as well as qualitative information from key informant interviews, and were asked to rank the places on their campuses from highest-to-lowest risk in terms of HRD and associated harms. Teams were also asked to select an initial area of focus for their environmental efforts. A compilation of the pre-work results is presented in **Table 3** below.

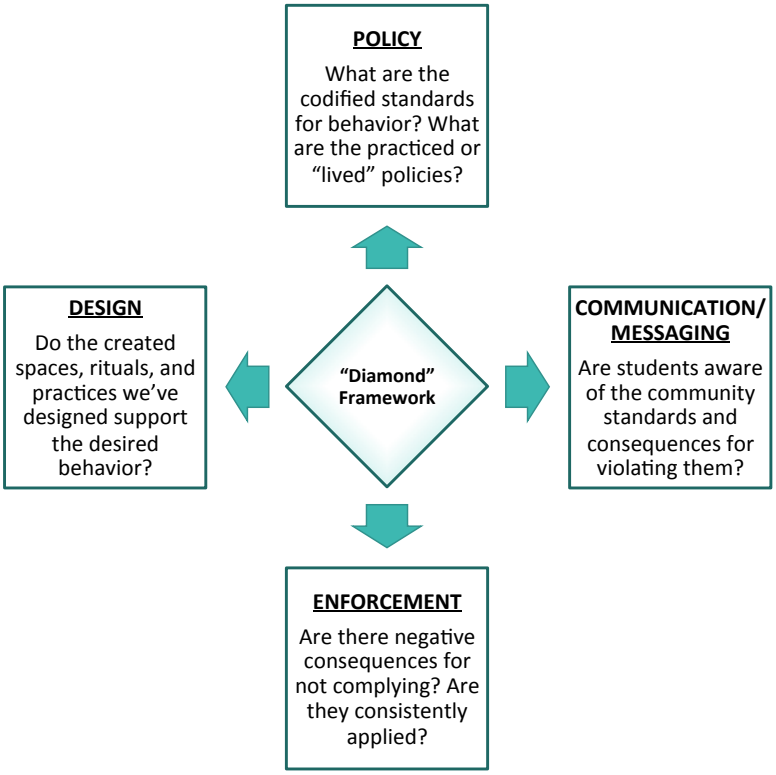
Table 3. Environmental Assessment Results and Areas of Focus

Rank (High to Low)	High-Risk Drinking Prevalence (Data)	Risk of Harm	Ability to Effect Change	Chosen Area of Focus (N=32)
1	Greek System	Off Campus	On Campus	On Campus (N=18)
2	On Campus	Greek	Special Events	Off Campus (N=9)
3	Off Campus	On Campus	Greek System	Special Events (N=3)
4	Special Events	Special Events	Off Campus	Greek System (N=2)
5	Commercial	Commercial	Commercial	Commercial (N=0)

Although the Greek system and off campus settings were ranked highest in terms of HRD and risk of harm, respectively, over half the collaborative teams chose to focus their initial efforts on campus, in part because of their ability to effect change more easily. To complete their pre-work, teams were then instructed to perform an in-depth environmental assessment of their selected area of focus (also outlined in **Appendix I**).

At LS2, teams were introduced to a comprehensive framework for environmental change, developed by the NCHIP faculty. The model (**Figure 8**), referred to as the diamond framework, is comprised of four key levers: policy, communication/messaging, enforcement, and design. The framework provided teams with the structure and areas of leverage for making changes to their environments, starting with their chosen area of focus.

Figure 8. Diamond Framework for Environmental Change



At LS2, teams were encouraged to identify specific levers of the diamond framework (policy, communication/messaging, enforcement, and design) related to their chosen space or place that explain current HRD behavior. Teams were also asked to identify specific changes to those levers that would result in a change in behavior, such as adding an element that is missing, removing an element that is sustaining a behavior, or modifying an element so that it is more effective.

Policy Considerations

Under the Drug-Free Schools and Communities Act, Part 86, institutions receiving any federal funds or financial support must have standards of conduct in place that prevent "the unlawful possession, use, or distribution of illicit drugs and alcohol by all students and employees on school premises or as part of any of its activities."[32] These standards may extend to activities held by any student organization that is officially recognized by an institution, such as fraternity and sorority events.[32]

Beyond compliance with the federal regulations, teams were encouraged to consider how their alcohol policies fit into the larger context of creating healthier and safer learning environments for their students. Nelson and Winters, in their book *Preventing Binge Drinking on College Campuses*, encourage colleges and universities to consider the mission of their organizations and the broad impact that an effective alcohol policy can have on setting community expectations around behaviors that support, rather than hinder, their missions as institutions of higher learning.[33]

At LS2, teams were advised to consider the following tips in developing effective policies:[34]

- Select the most important problem to target.
- Identify the policy that is most likely to address the problem.
- Ensure that the policy contains critical components to make it as effective as possible, including how it will be enforced, minimum number of components for functionality, penalties for lack of compliance, and loopholes to avoid.
- Plan the logistics of implementing the policy, including who needs to know about the policy and what skills and training are needed to comply with or implement the policy.
- Build in plans for institutionalizing or sustaining the policy over the long-term.

Communication/Messaging Considerations

Teams were encouraged to create an awareness and understanding of potential additions and/or changes to a policy by communicating with students about expected behaviors, skills needed to comply with the policy, ways that the policy would be enforced, and consequences for violating the policy.

Beyond communication of specific policy and enforcement considerations, teams were also introduced to broader communication strategies to support overall environmental change, which are highlighted below.[35]

- Reframing the Issue of College Student Drinking
    - From moral mandate to focus on healthy and safe learning environments
    - From "drinking" to high-risk consumption
    - From administrative war to collective effort
    - From generic "culture" to specific contributors
    - From defeat to recognition of change

- Role of Strategic Communication
    - To frame perceptions, beliefs, and attitudes surrounding college alcohol issues
    - To establish or maintain perceptions, beliefs, and attitudes of normative behaviors

  - To develop or maintain community identity as collaborative and efficacious
  - To create or maintain intention to act (formal or informal policymaking)
  - To reduce resistance or opposition

- Key Elements of Strategic Communication
  - Outcomes Oriented—supports and enhances the accomplishment of goals and objectives in the broader campus and community strategic plan
  - Targeted—audiences are clearly identified, messages are clearly modified for audience characteristics, and mediums are determined for reach and impact
  - Evaluated—an assessment is performed of the reach, short-term and/or long-term impact, and the identification of barriers to effectiveness

Enforcement Considerations[35]

Guidelines for effective policy enforcement, highlighted below, were presented to teams and discussed at LS2 as well.

- To deter policy violators, ensure that consequences are certain and swift.
- Perceived certainty of getting caught is perhaps most important in deterring policy violations.
- Put into place reasonable penalties that are meaningful, but not too severe, and contain graduated surveillance and consequences for repeat offenses.

Design Considerations

Lastly, teams were asked to consider whether they could change any of the physical aspects of their chosen place or space that promote high-risk behavior, and to consider creating opportunities for students to engage successfully in social interaction and recreation without the high-risk consumption of alcohol. Ideas that were shared at LS2 included the following.

- Changing the day or time an event is scheduled
- Providing a physical barrier (e.g. fence) to control entry to and exit from an event
- Offering late night programming or recreation
- Identifying low-risk social spaces or activities
- Collaborating with responsible vendors to offer off-campus social events
- Creating spaces for successful abstinence and recovery

EXAMPLE: DIAMOND FRAMEWORK ASSESSMENT QUESTIONS—SPECIAL EVENT HARM REDUCTION

To mitigate HRD and harms at special events on campus, the following is an example of the application of the diamond framework to generate assessment questions for teams to review their traditions and special events and to develop ideas for making them safer.

- **Policies**—Is alcohol allowed at the event? If so, under what conditions? How is legal compliance assured? Is the use of third-party alcohol vendors mandated? Is a guest list maintained? Does the student code of conduct differentiate between individual and group violations that may occur at special events on campus?
- **Communication/Messaging**—What is the common story shared by students about special events and alcohol on campus? How many stories include alcohol/intoxication? How many stories include student aversion to the egregious behaviors they witness? Do different campus constituents believe that there are different standards, expectations, or different levels of tolerance or acceptance of alcohol use across different campus special events?
- **Enforcement**—Who responds to loud, out-of-control special events on campus? Is enforcement conducted just in response to a problem, or is there proactive enforcement to prevent the problems from occurring? What usually determines when a citation/policy violation is given versus a warning? Is there anyone who is unhappy or disagrees with how special events on campus are conducted?
- **Design**—Are there factors in the physical space where the event is held that contribute to increased risks? Are there other social spaces or activities that enable student social success without violating campus policy? Are there ways to redesign the event to make it safer—change the time of day or day of the week the event is held, use ID bracelets to track of-age students, etc.

Learning Session 3 (LS3)—System

Schools and districts are not organized in ways that promote continuous learning; work is often done in silos, policy demands push for quick results, data isn't provided frequently or quickly enough for it to meaningfully inform and change practice, and poor outcomes are viewed as individual failures rather than a by-product of a misaligned system.[36]

While the above excerpt refers to elementary and secondary school systems, similar—but perhaps exponentially greater—issues pervade institutions of higher education. Colleges and universities are composed of complex, decentralized multi-unit systems. Within each of these constructs is a leadership hierarchy. Consider, for example, the number of deans on a college campus: deans of academic clusters (e.g. sciences, humanities), deans of academic units (e.g. arts and sciences, business, engineering), and deans of non-academic areas (e.g. student affairs, public relations). Reporting to the deans are directors, heads, or chairs of departments, who typically coordinate and oversee the faculty and staff within their individual departments. Not surprisingly, this structure fosters independence and isolation, with work done in silos and infrequent communication and data sharing across internal boundaries being the norm.

Taking a systems approach in addressing HRD on college campuses required explicitly defining what is meant by an alcohol harm reduction and prevention system, followed by assisting teams in overcoming some of the structural barriers to creating and sustaining this system. The collaborative positioned the three key drivers (individual, environment, and system) and the latest evidence base within an explicit framework of a comprehensive alcohol harm reduction and prevention system. NCHIP faculty and staff crafted a definition, including key attributes, which was shared broadly across the collaborative teams at LS3.

A **Comprehensive Alcohol Harm Reduction and Prevention System** is defined as an integrated network of policies, programs, and processes that addresses high-risk drinking and associated harms. The system supports the educational experience and goals of students, faculty, and the broader campus community.

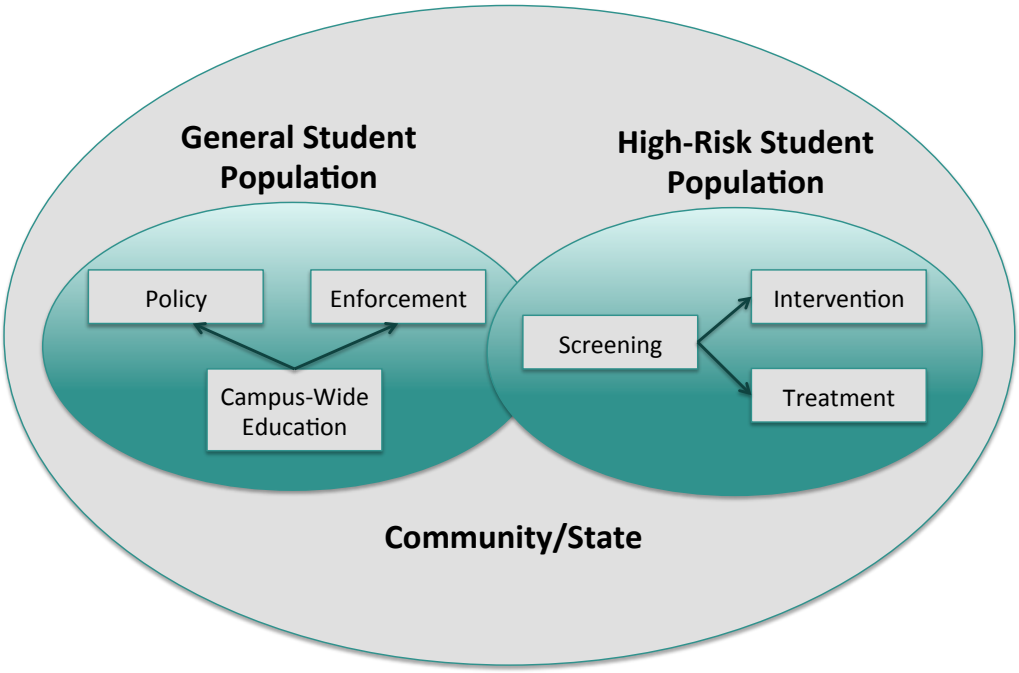
Key Attributes of a Comprehensive Alcohol Harm Reduction and Prevention System Include:

- Supports the institutional education mission
- Chief executive officer (president, chancellor, or rector) and governing board (trustees, regents, or governors) recognize this issue as a key priority
- Regards student alcohol abuse as a public-health issue
- Comprehensive strategies target individual students, groups of students, the entire student population, and the surrounding community
- Uses data to adapt and implement evidence-based initiatives to ensure maximum effectiveness and full integration with other programs
- Engages leaders of the system in the continuous analysis of the interdependence of policies, implementation, and enforcement
- Considers the cyclical nature of the campus calendar in the optimal timing and type of initiatives implemented
- Addresses campus, community, state, and Federal environments

- Ensures sustainability and resiliency of efforts through interdependent coordination, communication, and clear accountability across involved campus departments
- Relies on measurement and assessment to inform progress of specific strategies, as well as the performance of the system as a whole

The task of graphically depicting the defined system and attributes was more difficult. The following model (**Figure 9**), developed by the Alcohol Epidemiology Program at the University of Minnesota,[37] was shared with the collaborative at LS3 as one way of viewing the system.

Figure 9. Campus Alcohol System Model, University of Minnesota

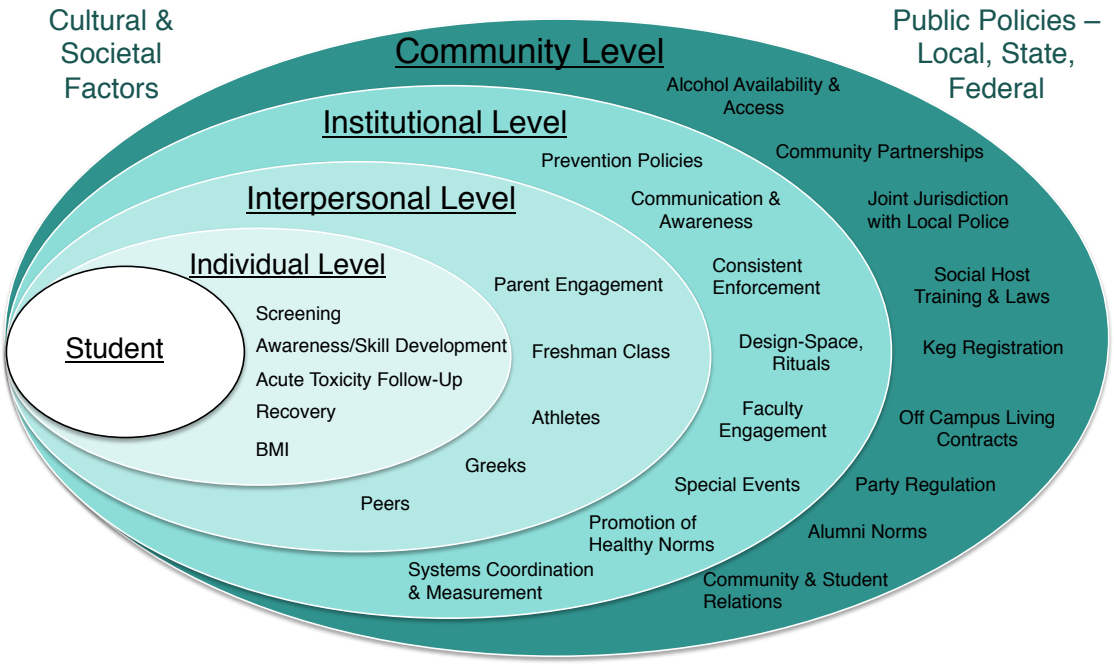


The model in **Figure 9** includes strategies directed at both the general student population and those students at high-risk for alcohol-related issues. Preventive strategies for all students include implementing policies that limit the availability of and access to alcohol, along with communicating and enforcing those policies. Existing guidelines and best practices are available to colleges for screening and identifying students at high-risk, and providing intervention and treatment services.[37]

Another way of looking at the system stems from a social ecological perspective, which offers a visual depiction of the multiple influences and levels of intervention required to impact this issue. The following socio-ecological system diagram (**Figure 10**) was adapted

from the University of Minnesota's Alcohol Epidemiology Program's *College Alcohol Systems Model.*[38] For teams, this system model underscored the complexities of implementing and integrating varied strategies and interventions across a campus setting.

Figure 10. Socio-Ecological Alcohol Harm Prevention System



At LS3, teams were also introduced to the concept of a system performance dashboard. A dashboard is a tool used to monitor progress towards a specific aim(s), similar to a pilot's instrument display in which various measurements are summarized in one place.[39] During Action Period 3, teams were guided in creating their own system performance dashboards, to include key indicators that strategically related to their team's aim, and that were easy to understand, relevant, and quantitative. Teams were encouraged to use their dashboards as a communication tool for discussion with senior leaders about the impact and cost effectiveness of their prevention initiatives. Frostburg State University's system dashboard is presented in **Appendix J** as an illustrative example.

Collaborative Evaluation Efforts

NCHIP invested in two formal assessment efforts: 1) to gauge the impact of the collaborative process on member institutions; and, 2) to better understand the contextual

factors that contribute to, or inhibit, the success of improvement teams in addressing the issue of HRD on their campuses. Each is described below.

- **Program Evaluation**—NCHIP contracted with Dartmouth College's Center for Program Design and Evaluation (CPDE) to evaluate the effect of the collaborative on participating institutions with a particular focus on the following questions:
    - What does 'success' look like?
    - What effect is the process having on the experts and institutions involved in the collaborative?
    - Is this process a viable one for studying and improving other college health problems?

  Interim findings are presented in the Mid-Project Report in **Appendix K**. A final report will be made available to NCHIP in Spring 2014.

- **Realist Evaluation**—CPDE also was contracted to perform a realist evaluation or a comprehensive study of a subset (eight) of the collaborative teams. The eight institutions represented a varied cross-section of the 32 collaborative teams. The purpose of the evaluation was to better understand the interplay between contextual factors and the efforts to address HRD at these institutions, including emerging effects on processes, systems, and alcohol-related outcomes. Findings from this comparative study are presented in the realist evaluation main report included in **Appendix L**.

Results—Reported PDSAs/Initiatives

"There's no silver bullet for this, but the more levels at which we try to intervene, the more effective we'll be. Colleges and communities need to work together, because neither can do it alone."[40]
- Ralph Hingson, Director—NIAAA Division of Epidemiology

The intent of the collaborative was to provide teams with the structure, tools, and expert advisory resources necessary to strategically select the specific improvement initiatives to address HRD on their campuses, given their unique campus contexts and varied histories of harm reduction and prevention efforts. Although there is no known exact, or optimal, combination of initiatives and interventions that all colleges should implement, NCHIP faculty experts communicated the importance of a multi-level package of initiatives and interventions grounded in evidence and prioritized based on system needs.

The collaborative construct was intentionally designed to build logically and progressively over time, starting with changes at the individual-drinker level, followed by the environment, and culminating with the system. In preparation for each learning session and throughout the collaborative, teams were encouraged to scan and assess components of their campus systems and to gather and use data to make informed decisions about areas to focus. Teams were also encouraged to examine previously implemented initiatives through the improvement lens of using measurement to determine if these initiatives were having the desired impact. If not, teams were urged to consider modifying or discontinuing these efforts, and substituting with more impactful approaches.

The 32 NCHIP teams shared 334 documented initiatives over the course of the two-year period, with estimates of nearly double that amount for efforts not documented in team reports and learning session pre-work assignments. These initiatives ranged from small PDSAs—to test the feasibility of a new idea or to gather information or interest levels in moving forward with a specific initiative—to multiple PDSA cycles ramping up to full implementation of an intervention or program.

A majority of teams (80%) undertook a broad approach, targeting their efforts across three or more levels of the socio-ecological model (individual, interpersonal, institutional,

community, and local, state, and Federal levels). **Table 4** offers a summary of the areas that teams concentrated their efforts, with a more detailed compilation provided in **Appendix M**.

Table 4. Areas of Concentration for Reported PDSAs/Initiatives from NCHIP Teams*

PDSAs/Initiatives – 334 Total	# Reported
Individual Interventions (55)	
▪ Screening	25
▪ Brief Motivational Intervention	19
▪ Acute Toxicity Management and Follow Up	7
▪ Recovery Support	4
Education and Awareness	30
Parent Engagement	21
Support and Training of Key Staff	20
On-Campus Initiatives (60)	
▪ Alcohol Policy Initiatives	27
▪ Enforcement; Pre-Gaming in the Residence Halls	5
▪ Special Event Harm Reduction	16
▪ AOD Incidents – Process and System Analysis	6
▪ Faculty Engagement	6
Off-Campus Initiatives (31)	
▪ Community Partnering	13
▪ Commercial Initiatives	13
▪ Collaboration with Local, State Governments, Agencies	5
Strategies to Promote Healthy Campus Cultures (75)	
▪ Messaging; Social Norms and Marketing Campaigns	30
▪ Alcohol-Free Social and Housing Options	28
▪ Bystander Intervention, Peer Programs, and Training	17
Measurement and Gaining Insight (42)	
▪ Student Surveys and Focus Groups on Drinking Behaviors	20
▪ Outcome Data Tracking of Medical, Law Enforcement, Violations	8
▪ GIS Mapping and Off-Campus Incidents	7
▪ Other Data – First Years, Medical Amnesty Policy, Strategic Planning	7

*** Refer to Appendix M for a detailed list of PDSAs/Initiatives for each concentration area.**

INDIVIDUAL-LEVEL INTERVENTIONS

Screening

Most students will seek services at the health center on campus at least once during their matriculation. The opportunity exists to cast a wide net across the general student population and to screen for at-risk students during health care visits and to intervene as warranted.

Two pre-work questions on screening practices were asked prior to each learning session: 1) is screening in your health and/or counseling center using a standardized measure being performed (yes/no); and, 2) how do you rate your institution's thoroughness of implementation relative to screening and identification of high-risk drinkers (high/medium/low). A summary of the aggregate longitudinal responses, which indicate an increase in both the percent of teams with screening programs and in the thoroughness of screening implementation, is captured in **Figures 11 and 12** below.

Figure 11. Self-Reported Screening Program Implementation and Performance Ratings

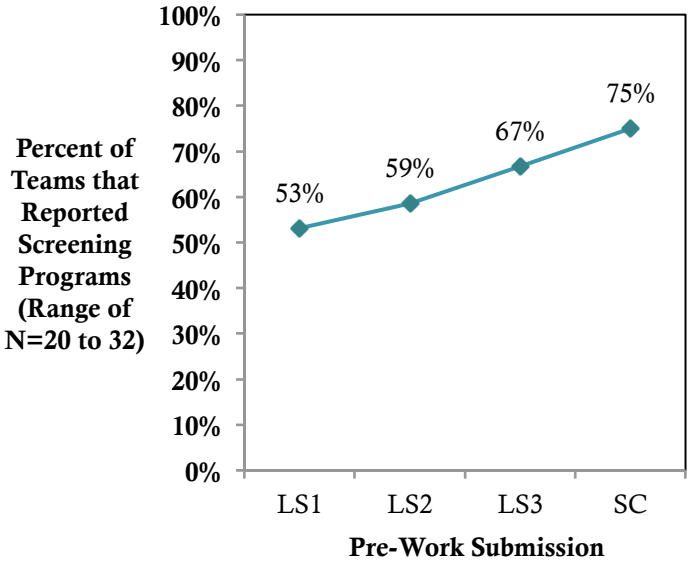
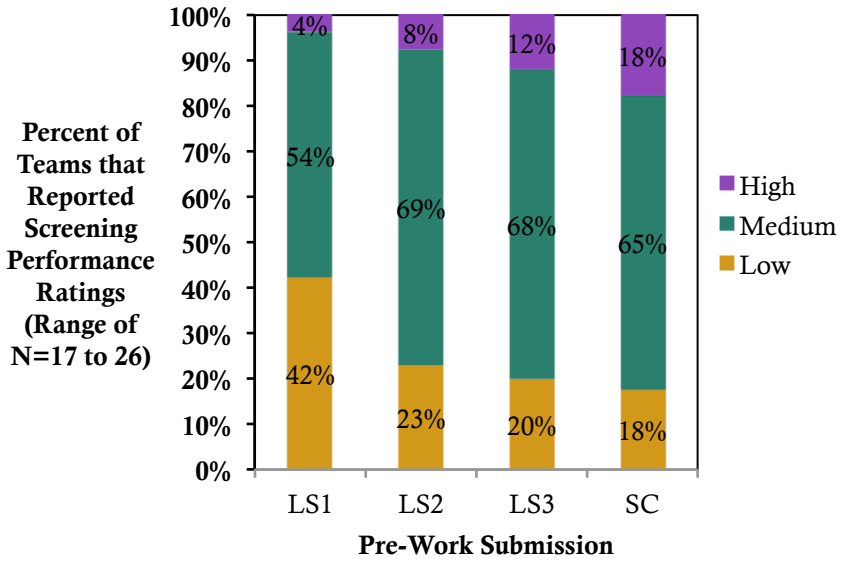


Figure 12. Self-Reported Screening Program Performance Ratings



Sixteen teams reported testing and implementing 22 new screening programs: 13 in student health, 4 in counseling centers, and 5 with high-risk groups (student athletes, first-year students, academically at-risk students, and fraternity/sorority members). Teams were encouraged to collect and monitor screening process measures (e.g. percent screened, percent positive screens, percent receiving BMI from a provider, percent referred for follow up, etc.) to ensure that this initiative was operating as planned—to screen as many students as possible and to identify and intervene with those students who may be at-risk for alcohol-related harms.

Some schools experienced challenges in their efforts to screen. Barriers to screening effectiveness included fewer than anticipated positive responses to the screen (as compared to monthly survey data), a lack of provider buy-in or comfort with the process, and no definitive follow-up and/or tracking related to positive responses. Faculty assisted with trouble-shooting and teams were encouraged to use the PDSA method to make iterative adjustments to their processes—such as streamlining the number of screening questions asked, working with providers to set realistic goals for screening, offering training boosters to increase provider comfort with performing BMIs—before attempting full implementation of their screening programs.

CASE EXAMPLE – TESTING AND IMPLEMENTING SCREENING IN STUDENT HEALTH

The Dartmouth team made considerable progress with their screening efforts in both student health and with student athletes (the latter using a recent Dartmouth graduate to implement BASICS with all student athletes).

The team started with a small PDSA—students were asked one question about their drinking behaviors when they arrived at the student health center check-in area. Iterative PDSA cycles included refining data collecting and reporting using the electronic medical record, training providers to use BMI with students that screen positive, and creating and testing tools developed to engage students in a conversation about their alcohol use.

The Dartmouth team selected a single item screening question that was consistent with the ACHA's HRD survey question (also used as an outcome measure for the collaborative): *"In the past two weeks, have you had five or more drinks at a sitting?* Yes/No." Very recent research by Saitz el al suggests that single screening questions can identify substance dependence as well as longer tools in primary care settings.[41] Furthermore, use of the ACHA's HRD question allowed for benchmarking with historical institutional survey data, as well as data from other colleges and universities.

The Dartmouth team collected and monitored data on the percent of students being screened at student health, the percent of students with positive screens, and the percent of students with positive screens that received BMI. Frequent monthly reporting of these process measures allowed the team to troubleshoot and intervene quickly when they fell below their targeted rates (Ann C. Bracken, MD, PhD, personal communication, May 8, 2014).

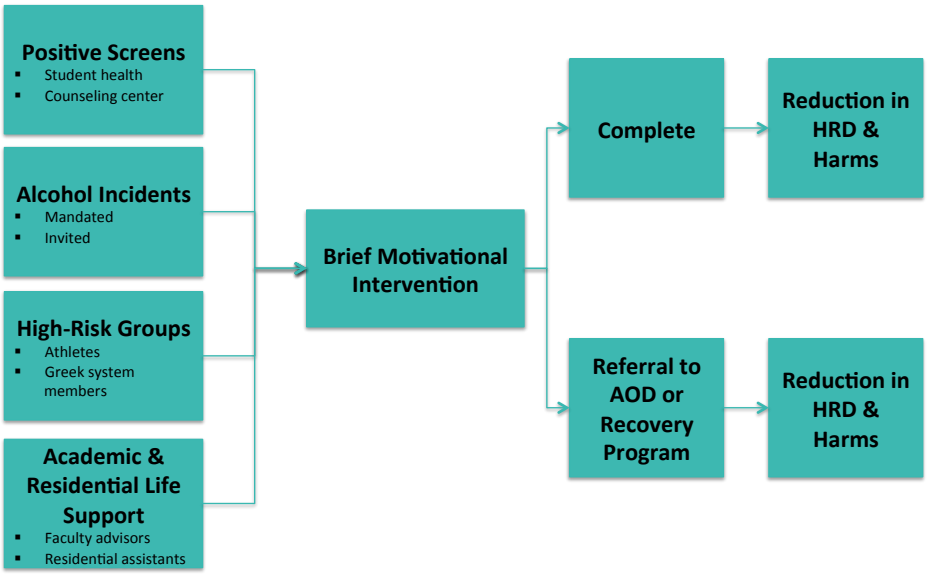
President Philip Hanlon reflected on Dartmouth's screening efforts at the Summative Congress in June 2013.

Our team started their first PDSAs to screen for high-risk drinking in primary care just after the first NCHIP learning session in July 2011. Our screening rates jumped the month our team integrated the screening questions into the electronic medical record and "forced" providers to complete these questions before signing their notes. This use of EMR technology vastly improved our process and is now a routine part of care at our health service. This academic year, we screened students in over 10,000 patient encounters. Those who screen high receive a brief motivational intervention from the healthcare provider they are meeting with.
- Philip Hanlon, President, Dartmouth College, Summative Congress Address, June 2013

Brief Motivational Intervention

Teams were encouraged to think about screening and intervention as a process (**Figure 13**) so that the impact of resources and other factors could be considered as these initiatives were implemented (e.g. increase in positive screens requires staff trained to perform BMI).

Figure 13. Screening and BMI High-Level Process Flow



Nineteen BMI initiatives were reported, with two-thirds focused on planning and testing new BMI programs (excluding those screening initiatives with BMI incorporated—e.g. BASICS with athletes—which are included in the screening initiatives in the section above). The majority of the new programs were developed to accommodate referrals of mandated students following an alcohol incident (policy violation or medical transport due to acute intoxication). Other BMI initiatives were aimed at 1) providing the support and training necessary for key staff members who regularly interact with students (faculty advisors, resident assistants, and athletic coaches) to engage in conversations with students using BMI techniques; and, 2) examining and modifying existing processes to be more timely and responsive.

Documented barriers to effective implementation included 1) lack of sufficient resources and training to provide BMI with fidelity, 2) student pushback particularly with policy violations where the student had not been engaging in high-risk drinking (5 or more drinks in a sitting), and 3) BMI provided by those in positions of authority (dean, conduct officers, faculty).

CASE EXAMPLE—REDUCING TIME TO FOLLOW UP AFTER AN ALCOHOL INCIDENT

One of Stanford University's early PDSAs focused on improving the consistency and timeliness of follow up with students after an acute alcohol incident involving a medical transport and/or citation by local police. Prior to the Stanford team's improvement efforts (2010 baseline), approximately 40% of students who experienced an alcohol incident were followed up, usually within a three-to-four week period.

The team improved the follow-up process by 1) standardizing a BMI letter sent to students within days following an incident, with a goal of having students respond within one day of receipt; and, 2) implementing a BMI scheduling and tracking protocol to increase accountability and timely response and follow up with students after an alcohol incident.

Once the changes were fully implemented, the team reported that nearly 100% of students who receive the BMI letter respond within a day and complete their BMI session within one week. This represents a two-and-a-half fold improvement in the percent of students completing BMIs, and has enabled Stanford to connect with students much closer to the time of incident, which research has indicated to be important to eliciting change talk from students about their risky behaviors.

EDUCATION AND AWARENESS

In high school, college-bound students are less likely to drink than students who don't plan to continue their education. But during freshman year, students who already drink start to drink more, and students who never drank are likely to start.[42]
- Jonathan Gibralter, President, Frostburg State University

While data suggest that non-college peers are actually more likely to drink on a daily basis, the data also suggest that college students are more likely to engage in frequent, heavy episodic drinking over weekends and at social events.[43] It is also known that the first six weeks of college is a high-risk period for first-year students, in large part due to social expectancies and normative pressures that encourage heavy drinking.[44] In-person education-only programs typically provided during orientation week to educate students on the harms and consequences of high-risk drinking do increase knowledge, but are rarely effective at changing behaviors. Some promise, however, has been found in using an online intervention administered to incoming freshmen prior to matriculation.[20]

NCHIP teams reported 30 education and awareness initiatives. Thirteen of the PDSAs related to the use of an online pre-matriculation course administered to incoming first-year students. The follow-up module associated with these tools, which are typically distributed a month or two after the start of school, provides schools with important data about the progression of freshmen drinking behaviors. **Table 5** is an example of a school's measures indicating an improvement in reducing the percentage of high-risk drinkers 45-to-60 days post-arrival at college.

Table 5. Frequency of Drinking Among First-year Students at One NCHIP Institution

	Pre-Matriculation	
	2011	2012
Non-Drinkers	60%	63%
Moderate	17%	17%
High-Risk	22%	20%

	~45-60 Days Post	
	2011	2012
Non-Drinkers	44%	46%
Moderate	20%	24%
High-Risk	36%	29%

This same NCHIP team combined online education with their screening and BMI system and invited students that reported higher levels of drinking on their pre-matriculation tool to a BMI session once they arrived on campus.

Eight of the initiatives focused on orientation curricula and activities, and on providing education workshops to incoming freshmen. While education alone has been shown to be ineffective in changing behaviors, some teams incorporated normative feedback (highlighting the gap between what students think is the drinking norm and the reality of

drinking practices among their peers), motivational enhancement, and skill building into group alcohol awareness activities provided to freshmen.

Two initiatives related to the milestone of students turning 21, providing these students with birthday cards encouraging safety and moderation in celebrating their legal drinking age. Research has shown celebrating 21st birthdays to be a dangerous rite of passage; a 2011 study reported that participants drank an average of 10.9 drinks on their 21st birthdays.[45]

Other education and awareness initiatives included 1) videos created by two schools to educate their students on how to recognize and respond to peers in distress from acute alcohol intoxication; 2) a social host training program run by graduate students; and, 3) a mixology course offered in conjunction with TIPS (Training for Intervention ProcedureS).

Parent Engagement

NCHIP teams reported 21 parent initiatives, seven of which were aimed at gauging interest from parents in receiving information about HRD and being involved in the prevention process. The remaining 14 initiatives provided information to parents of first-year students via various mediums—written letter, email, booklet, online program for parents, webinar, and parent blog—and encouraged parents to have ongoing conversations with their students about alcohol use.

Case Example—Emails to Parents Prior to Known Times of Risk

The University of Vermont (UVM) team chose to channel parent involvement by sending emails to parents of first-year students prior to a celebratory or high-risk event/weekend throughout the year. The emails provided information about HRD and urged parents to initiate conversations with their students prior to these risky times. The UVM team reported a 61% open rate for their emails, with 87% of those parents indicating that the emails prompted them to take action and to have conversations with their students. Data on whether these conversations resulted in a change in student drinking behaviors was not reported.

Support and Training of Key Staff

Engaging a broader cross-section of the campus community to be part of the solution in addressing HRD required teams to identify the knowledge and skill sets necessary to expand involvement. NCHIP teams reported 20 initiatives that offered BMI training and other educational support to key staff, which included faculty, resident assistants, peer educators, athletic coaches, and judicial/conduct officers. Such support is paramount to enabling key staff that most directly interact with students in their living and learning environments to effectively identify and engage with those that may be at-risk for drinking-related harms.

On-Campus Initiatives

Documented on-campus initiatives focused on three key areas: 1) alcohol policy revisions or changes, 2) efforts to reduce pre-gaming in the residence halls, and 3) harm reduction at campus special events. Teams also reported working to improve alcohol sanctioning processes and increasing the number of Friday classes offered to deter heavy drinking on Thursday nights.

Alcohol Policy Initiatives

Teams reported 27 alcohol policy initiatives that ranged from complete policy overhauls to specific policy measures, such as the ban of hard alcohol in residence halls and revision of party registration systems. Six of the initiatives sought to reduce first-year student access to Greek system events, including a ban on participation during the first few weeks of school and exclusion of alcohol at recruitment and new member events.

CASE EXAMPLE—HARD ALCOHOL POLICY CHANGES[46]

Over the course of the 2011-12 academic year, Lehigh's campus improvement team noticed an escalating number of students being transported to the local emergency department due to acute alcohol intoxication. Delving deeper into the data, the team also discovered that students were arriving at the hospital with dangerously high blood alcohol concentration (BAC) levels. Further analysis of the spring 2012 data revealed that 59% of the first-year students transported had consumed hard alcohol.

In response to this growing trend, the Lehigh team enacted more severe sanctions for students violating the hard alcohol policy. The team reported the following on its Learning Session 3 storyboard: "The Office of Student Conduct uses a severity scale to rank all infractions of the social policy. The scale ranges from 1-6 with six being the most severe. Any situation involving hard alcohol is automatically assigned a 4. This reflects the seriousness of the policy infraction when contemplating consequences for those incidents involving hard alcohol."

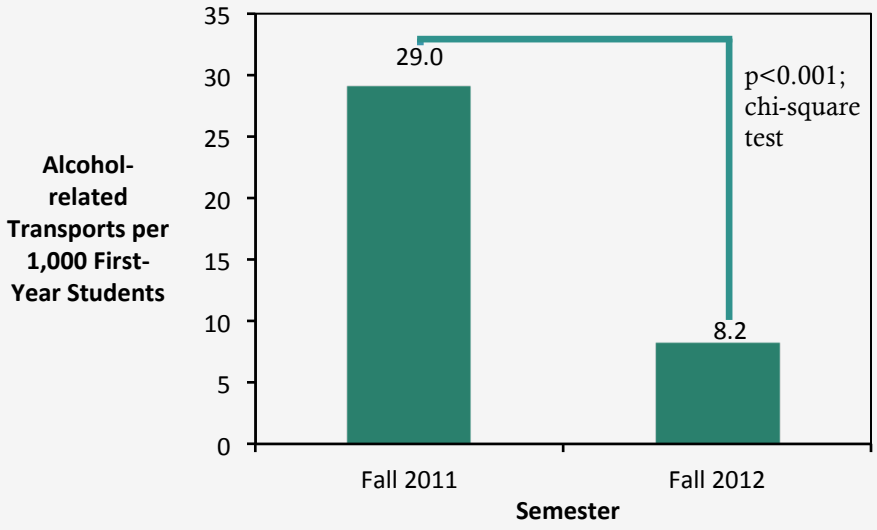
Also in spring 2012, Greek Life student leaders approved a ban on hard alcohol at all new member events. The Lehigh team reported strong support from students who felt the ban led to safer and more enjoyable events. As a sign of solidarity, President
Alice Gast praised the students for their decision and pledged to eliminate hard alcohol from events held at the President's House. Below is an excerpt from the letter sent to the Lehigh University community.

> *While the Lehigh administration is working on both national and local levels to confront the problems of high-risk drinking, the student initiative of a social policy is the most powerful force in this effort. I applaud the students' efforts and, in solidarity with their ban on the serving of hard alcohol at events in their houses, I will eliminate the serving of hard alcohol from events in the President's House. I am asking everyone on our campus who hosts social events to consider doing the same. I want to hear your ideas. Together, we can make Lehigh University a safer and healthier place.*
> - Alice P. Gast, President, Lehigh University

CASE EXAMPLE – HARD ALCOHOL POLICY CHANGES (CONT'D)

The Lehigh team believes that their efforts contributed to the measurable decline in first-year medical transports from Fall 2011 to Fall 2012 as highlighted in **Figure 14** below.

Figure 14. First-Year Medical Transports at Lehigh University



Pre-Gaming in the Residence Halls

Pre-gaming (also commonly referred to as pre-partying, front-loading, or pre-funking) is the consumption of alcohol prior to going out socially or attending a social function or event, where additional alcohol may be consumed.[47] Studies have shown that students who pre-game are at greater risk for heavy drinking and negative alcohol consequences, particularly as their drinking progresses throughout the day/evening.[48] Anecdotally, students' motivations for pre-gaming include social reasons; uncertainty of access to alcohol when out; to imbibe cheaply, or less expensively, before going out; and, to relieve social anxiety.

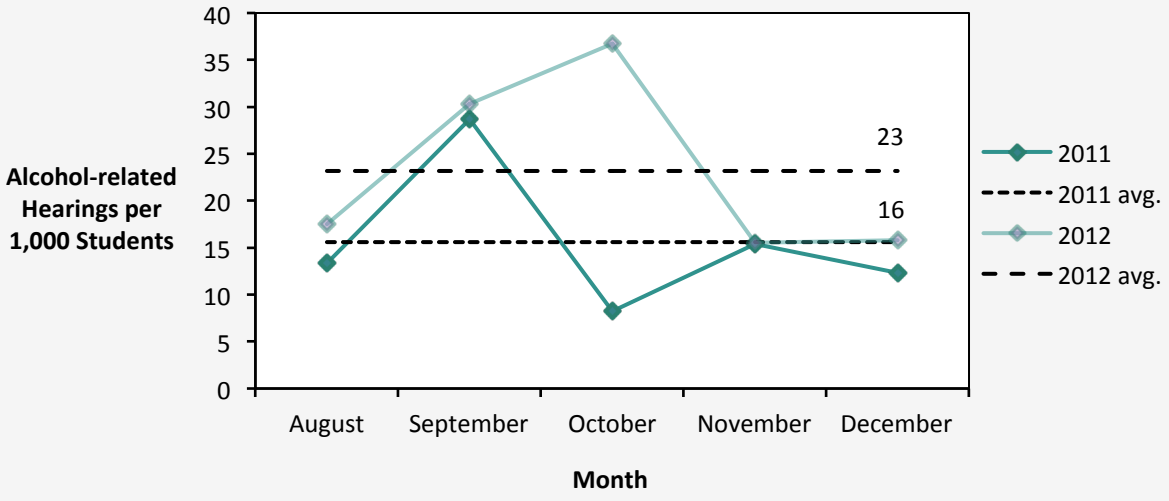
Five highly residential schools (**Colgate, Dartmouth, Stanford, Wesleyan, and Yale**) reported initiatives focused on interrupting or reducing pre-gaming in the residence halls. One of these initiatives is described below.

Case Example—Increased Enforcement in First-Year Residence Halls

Colgate University selected two of its first-year residence halls (by reviewing damage data and custodial alcohol bottle counts) to strategically perform directed enforcement. Executed by Campus Safety and Residential Life, officers patrolled the halls of these two dormitories on selected occasions that were not advertised to students beforehand.

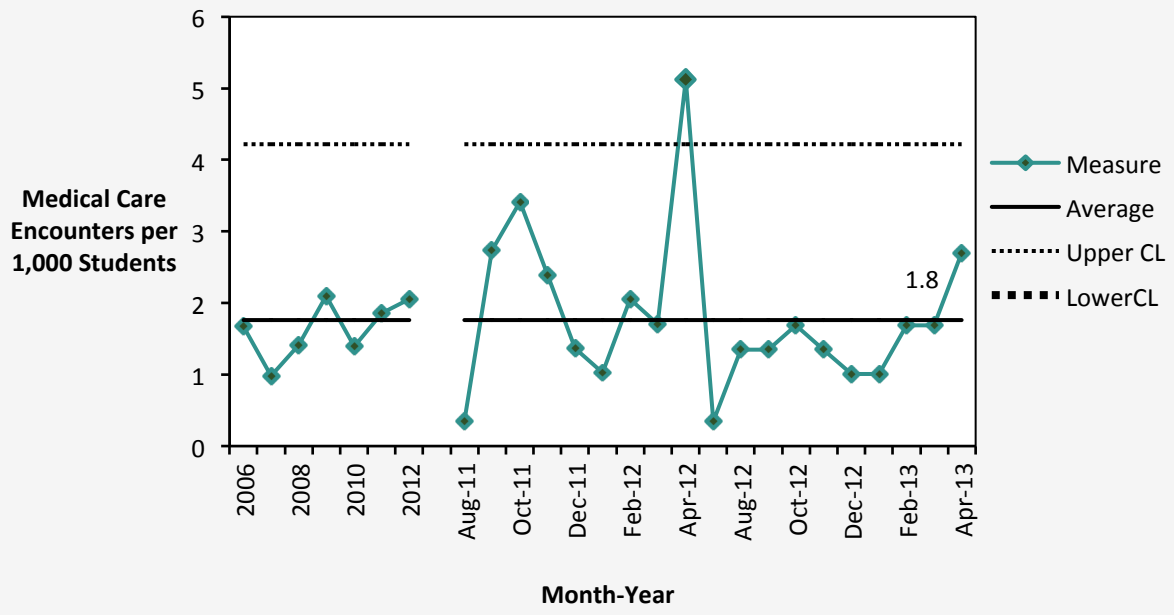
Average alcohol-related citations and hearings went up in academic year 2012 as compared to 2011 (**Figure 15**), while medical transports due to dangerous levels of drinking decreased over the same period (**Figure 16**), both of which may be attributable to the deterrence strategy.

Figure 15. First-Year Alcohol-Related Hearings at Colgate University



CASE EXAMPLE – INCREASED ENFORCEMENT IN FIRST-YEAR RESIDENCE HALLS (CONT'D)

Figure 16. Medical Care Encounters at Colgate University



Special Event Harm Reduction

Many college campuses are steeped in large, campus-wide traditions and events that have evolved over time to become synonymous with drunken melees and escalating egregious behaviors. Such events are known times of risk for alcohol harms and offer schools a well-circumscribed opportunity to reduce growing concerns and the dangerous drinking behaviors that are fueling these events.[49]

In intervening with special events, thirteen NCHIP teams documented efforts at one of three levels: 1) continuous improvement—enhancing and adding to the efforts they have made over a number of years to "chip away" at making the event safer; 2) comprehensive changes and redesign across the key elements of the diamond framework to radically overhaul the event; or, 3) a decision to discontinue or cancel an event because of the repeated assault it is making to the health and safety of the campus community.

Illustrative efforts from the Bucknell, Northwestern, Washington University-St. Louis, and Wellesley teams are summarized in **Table 6** below.

Table 6. Illustrative Special Event Harm Reduction Efforts

Institution/ Special Event	Changes Tested	Results (Compared to Prior Year)
Bucknell University House Party Weekend	▪ Concerns about increasingly harmful and dangerous drinking behaviors prompted President Bravman, with the full support of the Board of Trustees, to discontinue House Party Weekend	▪ TBD – March 2014 will represent first year without House Party Weekend ▪ March 2013 – 15 medical transports with BACs > .239; 11 arrests
Northwestern University Homecoming Parade	▪ Collaborated with the Greeks, Alumni, and student leaders – discussed HRD, underage drinking, and harm reduction strategies together for the first time in 6 years ▪ Increased security presence at the event ▪ Instituted use of wristbands to track of-age drinkers	▪ Decrease in alcohol incidents from 4 to 0 ▪ Decrease in student safety concerns form 10 to 0 ▪ Event no longer viewed as scary or embarrassing
Wellesley College Dyke Ball (Big event during Spring Week)	▪ Students and staff worked together to create change ▪ Students' desire to "take back event" prompted tighter restrictions on attendance ▪ Dining halls open late hours with favorite foods ▪ Communication and messaging informed students of changes ▪ Implemented new database -- found no displacement of transports from Dyke Ball to other events later in the week	▪ Decrease in medical transports from 16 to 0
Washington University, St. Louis WILD Event	▪ Banned students from bringing in alcohol of their own ▪ Of-age students were served a maximum of 3 beers	▪ Medical transports decreased to lowest in past several years

Off-Campus Initiatives

Toomey et al's recent study on college alcohol systems found that large colleges were more likely than small colleges to offer more strategies aimed at reducing student alcohol use and associated harms.[37] Anecdotally, within the NCHIP collaborative, a significant disparity appeared to exist between the experience levels and knowledge base of the large public institutions (i.e. Minnesota, Nebraska, Purdue) as compared to the smaller public and private institutions relative to commercial and off-campus initiatives. For some smaller institutions, assessments of their commercial and off-campus settings revealed less of a threat from alcohol density, availability, and pricing and marketing concerns than did drinking in the residence halls and nearby fraternity parties (which one could argue are in

fact density issues). For others, the initial focus of environmental change was to gain comfort in engaging in change efforts on campus and to achieve some modicum of success before tackling off-campus issues.

Many of the commercial and community-level initiatives of the larger public institutions were refinements of their existing efforts. For example, the Purdue team performed a "bar walk" during its midnight bar coalition meeting to observe and assess the off-campus bar district environment, and to generate new ideas for making it safer. Also notable was the University of Nebraska-Lincoln (UNL) team's success in achieving its multi-year effort of passing a seller-server permit ordinance, requiring mandatory seller-server training for individuals employed in the local hospitality industry. The UNL team has been steeped in its community partnering and prevention work for a number of years, and continues to stay at the forefront of the latest efforts in reducing risks in and around the community. Further evidence of the school's community prominence was the invitation to team members to participate in policy discussions related to a new entertainment district planned in the city of Lincoln.

Several other teams (Acadia, Colgate, Princeton, University of Maryland, Baltimore County, and Wyoming) reported participating and working closely with community organizations, such as coalitions, citizen groups, and neighborhood task forces, to discuss ways to collaborate on town-gown initiatives.

Smaller schools with less off-campus experience made strides in forging relationships with key community stakeholders, particularly local law enforcement. For many, initial conversations revolved around obtaining timely law enforcement encounter rates for monthly tracking. Once a system was in place to receive timely data, some teams populated the data in a geographic information system (GIS). The GIS mapping of their campus communities illuminated the hot spots—where calls for help, noise complaints, and/or arrests were happening. Moving beyond the analysis phase proved more difficult for some; however, several teams were able to take action, an example of which is highlighted below.

CASE EXAMPLE – GIS MAPPING AND COMMUNITY PARTNERING TO REDUCE OFF-CAMPUS RISKS

Frostburg State University collaborated with local law enforcement to obtain joint jurisdiction in communities immediately adjacent to campus. GIS mapping enabled the team to track incidents and to increase patrols by university police and/or city police in those high-risk areas. Further, campus police officers embraced the community policing model of conducting "knock & talk" visits at student houses as parties were beginning to form in order to facilitate conversations about community responsibilities. Lastly, the team broadened its community outreach through establishing a coalition with law enforcement, property managers, bar managers, and city officials at the table.

The Frostburg team closely monitored the effect of their efforts by tracking off-campus alcohol violations, as well as student awareness and perceptions of the frequency of nightly patrols. In Fall 2010, 43 off-campus incidents involving alcohol occurred. Following these changes, 68 incidents were reported in Fall 2011 and 66 in Fall 2012. The uptick in incidents is not surprising given the increase in enforcement efforts during that time. However, given the coordinated community approach and frequent monitoring of data, the Frostburg team is poised to put preventive measures in place to realize a reduction in off-campus alcohol harms and consequences.

STRATEGIES TO PROMOTE HEALTHY CAMPUS CULTURES

Colleges and universities are encouraged to promote healthy campus climates as part of a comprehensive alcohol harm reduction and prevention system. Initiatives such as alcohol-free social and housing options, social norm campaigns, and bystander intervention programs all fall into this category. These initiatives are examples of Tier 3 strategies identified by the NIAAA (**Table 1**), as "logical and theoretically promising,"[50] but require more research and evaluation to determine viability. NCHIP teams reported 75 initiatives

aimed at systematically testing and documenting these promising strategies to move the field forward in understanding their potential impact on reducing risky drinking behaviors.

Alcohol-Free Social and Housing Options

NCHIP teams reported 28 initiatives focused on expanding their offerings of alcohol-free social events and housing options. Because of the uncertainty in effectiveness, teams were generally more vigilant about collecting data and information to monitor and understand if these initiatives were working as planned and having the impact as hoped.

CASE EXAMPLE – CONFIRMING STUDENT PERCEPTIONS OF HAVING FUN WITHOUT ALCOHOL

Stanford University's *Cardinal Nights* program stands out because of the broad-based effort by the Stanford team to shift student perceptions away from a focus on alcohol to have fun on campus. Since inception two years ago, the program has hosted 135 events with 40,000 student contacts—exceptional for a school with an undergraduate and total student population of 7,000 and 18,000 students, respectively. Furthermore, assessment results were highly favorable:

- 20% of students who attended a *Cardinal Nights* program indicated that they would have been "very likely-to-likely" consuming alcohol if they had not attended
- 94.3% of students responded that they "strongly agree-to-agree" with the statement that they "can have fun without alcohol"
- 95.3% of students would recommend the events to a friend

Social Norms and Marketing Campaigns

The social norms issue around college drinking is well documented. College students typically overestimate how much their peers drink and therefore consume more themselves in an effort to conform to these perceived norms. One significant reason for this misconception stems from the fact that inebriated students are often more visible and vocal than sober students, thus garnering more attention.[51]

NCHIP teams reported 11 social norms campaigns directed at challenging misperceptions regarding alcohol use on their campuses (one team's example is highlighted below). Ten teams implemented social marketing campaigns with eye-catching slogans (e.g. *The Other Hangover*, *Work Hard-Party Smart*, *DePauw Gets Graphic*, *E=mc²*, *Stay Classy*) to increase awareness about HRD and its associated risks. Teams used both of these strategies as complementary components of their overarching systems approach in addressing HRD.

CASE EXAMPLE – USING TECHNOLOGY TO SHAPE SOCIAL NORMS

Stony Brook University's *Think Again* social norms campaign tapped into graduate students in public health as an added resource for assisting with the campaign. The Stony Brook team created a novel way both to market the campaign and for students to access it. Large posters with photos of Stony Brook students were strategically placed around campus. Each poster contained a Quick Response (QR) code that students could scan with their smart phones to access a webpage with norms data and awareness and knowledge-building information.

Improving upon a one-size-fits-all campaign, the Stony Brook team used multiple QR codes to customize the information for sub-sets of the student population. For example, the QR code on a poster placed inside the school's gymnasium guided students to a specific webpage containing data and information about the effects of alcohol on athletic performance. Additionally, through the use of *Google Analytics*, the Stony Brook team was able to monitor how many students accessed the sites—both new and returning, as well as how many unique views and average time students spent on a particular page.

Bystander Intervention Programs

Following the lead established by Stony Brook University's formation of its bystander intervention program in 2009—*Red Watch Band*—over half the collaborative teams either created a bystander program of their own (*Red and Blue Crew, Maroon Team, Green Team, Cayuga Watchers, The Fog, and Wellativity* to name a few), or engaged students in bystander training. These efforts were aimed at increasing student knowledge and skills necessary to effectively intervene with their peers in potentially harmful drinking

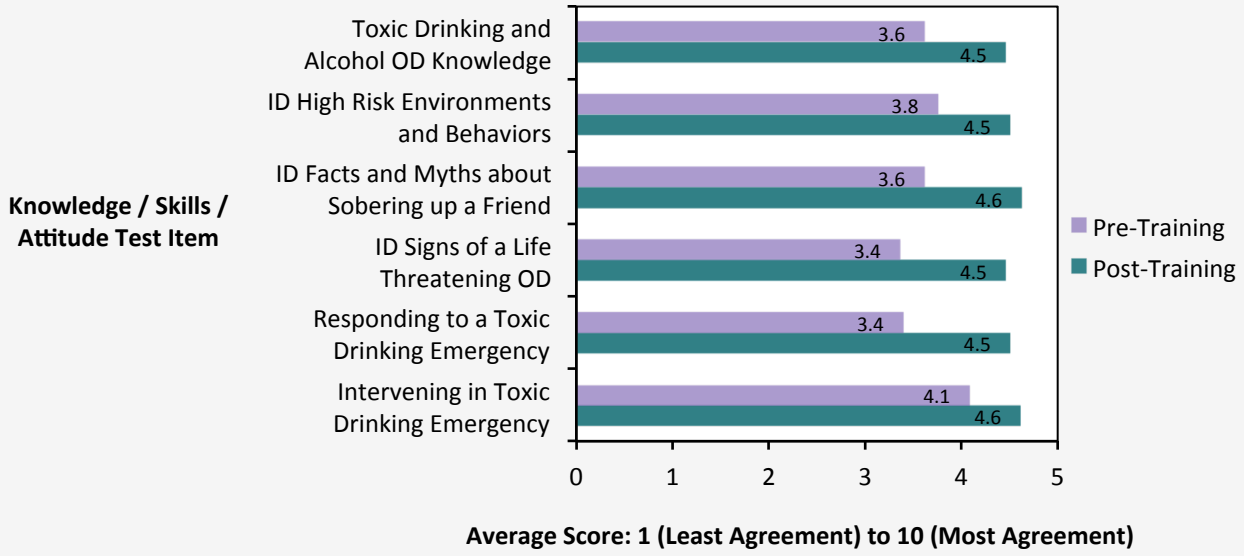
situations. Additionally, two teams (DePauw and Minnesota) created Greek party monitor programs to encourage safer chapter events.

Quantitative process measures reported by teams included number of students trained; training pre/post knowledge, skills, and attitudes; and, number of parties attended. Data on the number of times and in what situations students actually intervened were more difficult to capture. Some schools obtained this information qualitatively via focus groups and de-brief sessions.

CASE EXAMPLE – MEASURING THE IMPACT OF A BYSTANDER INTERVENTION PROGRAM

Stony Brook University offers its Red Watch Band program nationwide to interested institutions, and has actively measured and monitored the impact the program has on knowledge, skills, and attitudes (**Figure 17**).

Figure 17. Pre- and Post-Training Results for Red Watch Band Program at Stony Brook University



STRATEGIC COMMUNICATION AND MESSAGING

> *We have a different attitude when talking about alcohol use (and abuse) on our campus. In our conversations we now focus less on "discipline" and much more on "health and safety"—stakeholders are much more receptive to conversations about 'health and safety'.*
> - Alexander Bruce, Team Leader, Sewanee, The University of the South

Communication and messaging, while included in the 'promoting healthy campus cultures' cluster above, truly warrants its own section primarily because it pervaded all aspects of this work—across multiple initiatives and levels, and across all campuses.

At the start of the collaborative in June 2011, teams arrived at the first learning session unsure of how much they wanted to communicate about and openly share the alcohol issues on their campuses. In a time of funding cuts and budget woes, the competition for students can be fierce. Despite the fact that college student drinking is a well-known phenomenon, many teams were fearful about going public with their alcohol issues—even amongst peers who had signed up to collaborate on how to address this issue.

In addition to recruiting concerns, another significant reason for the reticence in communicating about alcohol issues was the ambiguity institutions faced regarding their "relationship" with alcohol. Part of the work of the collaborative was to assist teams in reframing the issue of college student drinking and to encourage schools to develop a strategic communication plan that would make it easier and more compelling to articulate the philosophy and importance of working on this issue.

NCHIP faculty member, Thomas Workman, was a communication resource for many teams throughout the collaborative period, presenting at learning sessions and on all-collaborative calls, and assisting teams directly with a myriad of communication needs and issues (e.g. conducting communication audits, hosting community forums, announcing policy and enforcement changes, responding to student concerns and backlash, etc.). Many of these efforts were components of new initiatives or interventions and not necessarily documented as a separate communication and messaging PDSA or initiative.

CASE EXAMPLE – COMMUNICATION AUDIT: ALCOHOL AND THE ENVIRONMENT[52]

At LS2, NCHIP faculty member Thomas Workman discussed the role of strategic communication in support of HRD efforts. He also encouraged teams to perform a communication audit to better understand their current communication environment and how messaging (via a variety of media) can impact student high-risk drinking behaviors.

[52] The Purdue University team engaged in an audit of their communication environment to help guide their decision-making around its communication practices regarding alcohol policy, initiatives, and community expectations. The team was interested in gathering information to better understand the answers to the following questions.

- What are students' knowledge, perceptions, attitudes, and beliefs about HRD, alcohol poisoning, and medical amnesty?
- How are students talking about these issues? How is the media framing these issues?
- What messages related to HRD are students receiving in their campus and online environments?
- Where do students get their Purdue-related information? Where do Purdue students get their information related to social events/partying? How have students heard about the medical amnesty policy?

The team used a variety of methods to gather data and information related to the above questions, including the following means.

- Focus groups
- Informal student inquiries with student organizations, including one fraternity and one sorority
- Student polling
- Content analysis of Twitter searches
- Review of alcohol-related articles in the student newspaper
- Photo documentation of alcohol-related postings or messages across campus
- Review of Purdue communication to the community about alcohol and alcohol initiative

CASE EXAMPLE – COMMUNICATION AUDIT: ALCOHOL AND THE ENVIRONMENT (CONT'D)

The Purdue team summarized their findings and next steps, and shared them with community partners at their annual Alcohol Summit. Highlights included the following.

- Creation of a one-sentence shared description of how Purdue is addressing HRD, which partners were encouraged to use in talking with students, or to the media—*We are working together to create a safe and healthy environment for our students by reducing the harmful effects of alcohol*;

- Increase the use of social marketing campaigns, bulletin board kits, and student newspaper coverage of alcohol-related initiatives to counter the prevalence of alcohol promotions;
- Place emphasis on student activities and achievements so that HRD does not dominate the conversation;
- Increase use of media channels that students are tuned into, such as social media and the student newspaper;
- Improve communications around the medical amnesty policy and alcohol poisoning education; and,
- Continue to explore strategies for reducing the gap between Purdue's communications about addressing HRD and the reality of student HRD behaviors.

MEASUREMENT AND GAINING INSIGHT

I do think just the people involved have become more data driven…I don't remember [Dean of Students Office/Student Affairs] talking that much about data in the past and it feels like it's become like a mantra at times, so it feels like they see the importance more and more of measuring things, and so that's been positive.

- NCHIP Realist Evaluation Main Report, August 2013, Page 27

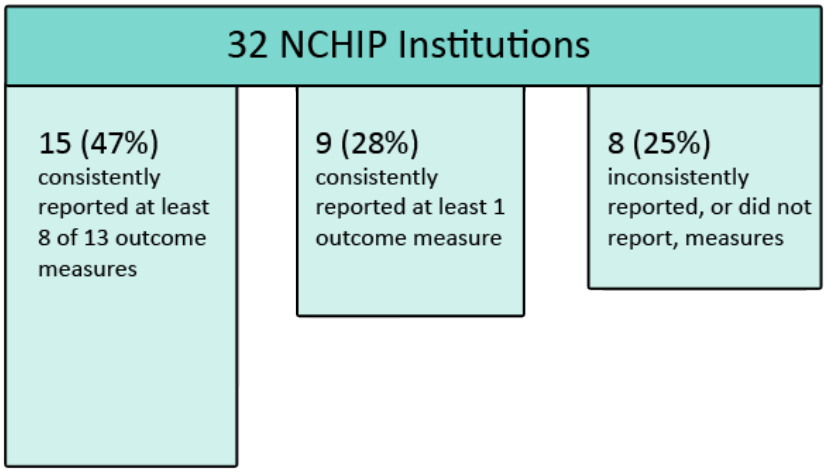
The need to measure in order to determine whether the changes that are being made are leading to an improvement was indeed an NCHIP mantra just as the quote above suggests. NCHIP teams were encouraged to collect monthly outcome measures (HRD, alcohol harms, medical care, and law enforcement encounter rates), as well as process measures related to their specific initiatives.

The use of monthly outcome measures was a major change for most participating institutions. Some teams faced challenges that either prevented them from collecting various outcome measures, or delayed their start in collecting them. Barriers encountered by teams included the following.

- Lack of timely engagement and response from IRB during the approval-seeking process
- Concern that students were already over-burdened with surveys and a reluctance by teams to add to the burden
- Presence of multiple emergency departments (particularly for schools in urban settings), making it difficult to capture complete medical transport data
- Absence of student release-of-information agreement or institution establishment as student primary care provider, both of which would allow for sharing of medical transport data between hospital and school officials
- Inconsistent communication and data sharing between local police department, making it difficult to capture timely and accurate law enforcement encounter rates

Figure 18 summarizes the frequency of outcome measure reporting by teams across the two-year collaborative period.

Figure 18. Outcome Measurement Reporting Frequency



Seventeen of the 42 reported initiatives on measurement and gaining insight related to getting monthly surveys up and running and to establishing an infrastructure for identifying and collecting timely medical care and law enforcement encounter rates. Other survey initiatives focused on augmenting monthly surveys to capture student perceptions and data on pre-gaming, acceptable vs. unacceptable behaviors on campus, and attitudes towards alcohol.

Of particular note was the Brown University team's survey of its entire undergraduate population in academic year 2011-2012. Questions covered drinking behaviors (including pre-gaming), consequences of drinking, perceptions of access to alcohol, perceptions of policy, and participation in alcohol-free events. The in-depth survey of undergraduates yielded some surprising results and helped the Brown team create an evidence-based context for developing new initiatives on their campus. The survey process also highlighted the need for additional on-going assessment of student behaviors.[53]

Seven teams reported initiatives related to environmental or GIS mapping of high-risk areas in and around the campus community to assist in targeting harm reduction strategies. The Frostburg team further used this data to aid parents and students in identifying more reputable and safer places to live in the community.

Results—Institutional-Level Outcomes

Outcome measures were assessed over time to evaluate whether individual schools made a favorable difference or achieved a successful impact during their collaborative experience. However, this evaluation was limited with less than half of the schools reporting on eight of the thirteen outcome measures, and with only twelve schools reporting consistent monthly HRD rates.

Also complicating matters was the very nature of this work, which involved making multi-pronged change within a complex set of systems. As previously defined, a *comprehensive alcohol harm reduction and prevention system* is an *integrated* network of policies, programs, and processes, with feedback loops that continually analyze the *interdependencies* of these elements and how they are implemented and sustained. This system in turn operates within the larger system of the campus environment, resulting in many contextual factors at play as changes are tested and implemented. Understanding the

causal linkages between the combination of initiatives implemented and overall outcomes achieved was beyond the scope of the collaborative.

Challenges notwithstanding, three illustrative examples of institutions that realized measurable improvement in one or more outcome-level measure are highlighted below. Several common denominators were in place across all three institutions that likely contributed to their success: 1) an early engagement and adoption of the collaborative improvement model; 2) a commitment to testing and implementing evidenced-based strategies across multiple levels of the socio-ecological system; and, 3) the strong presence of the four contributing factors to system-level change—leadership, systems to collaborate and share data, student engagement and consistent messaging, and enforcement—as outlined in the Realist Evaluation (**Appendix L**).

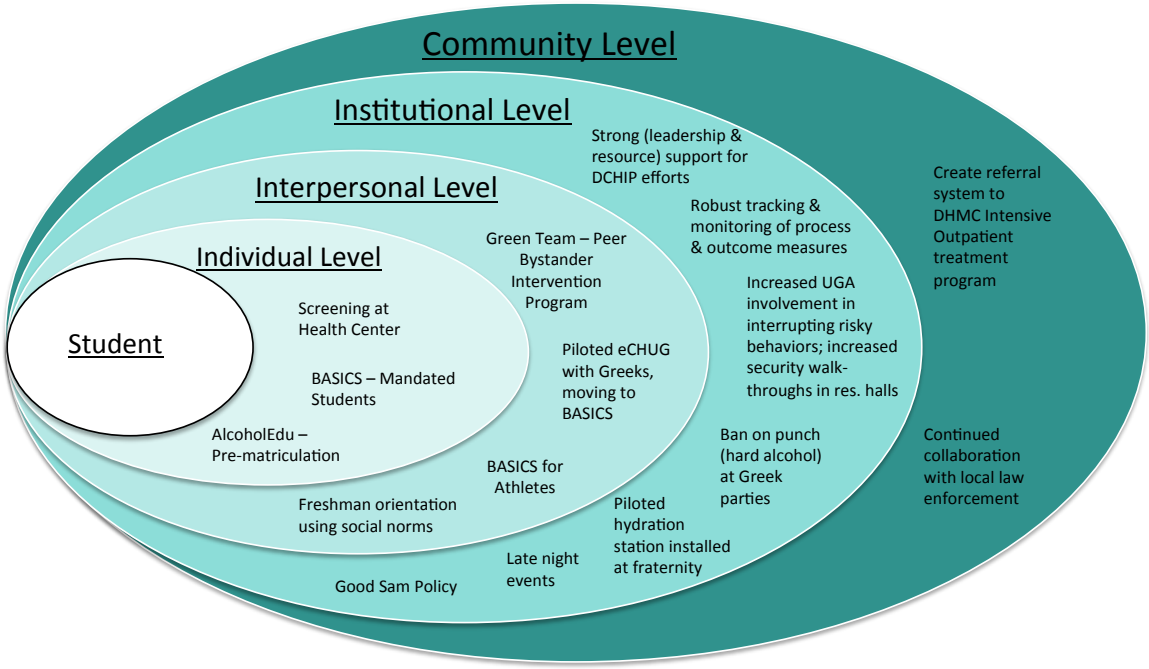
DARTMOUTH COLLEGE

Dartmouth College experienced a significant reduction in the number of students medically transported with blood alcohol concentrations (BACs) greater than a .25 g/dL between 2011 and 2013. High BACs for transported students decreased from 80 in academic year 2011 to 63 in 2012 and 31 in 2013. [54]

At a BAC of .25 g/dL or higher, drinkers display a near total loss of motor functions, can lose consciousness, and may suffer from impaired respiration. BACs of .30 g/dL are extremely life threatening and death may occur.[55,56]As is true with prevention work, it is difficult to determine how many lives are saved or injuries are avoided because of efforts made; however, the Dartmouth team did make unequivocal inroads in reducing harms on its campus during the collaborative period.

Figure 19 graphically depicts the combination of strategies the Dartmouth team tested and implemented over the course of the collaborative.

Figure 19. Socio-Ecological System Diagram for Dartmouth College



Cornell University

> *The harm caused by heavy drinking undermines the learning mission of the university, so prevention is critical. There's no single solution, but the combination of strategies aimed at individual drinkers and the environment on and off campus is making a difference.*
> - Tim Marchell, Team Member, Cornell University

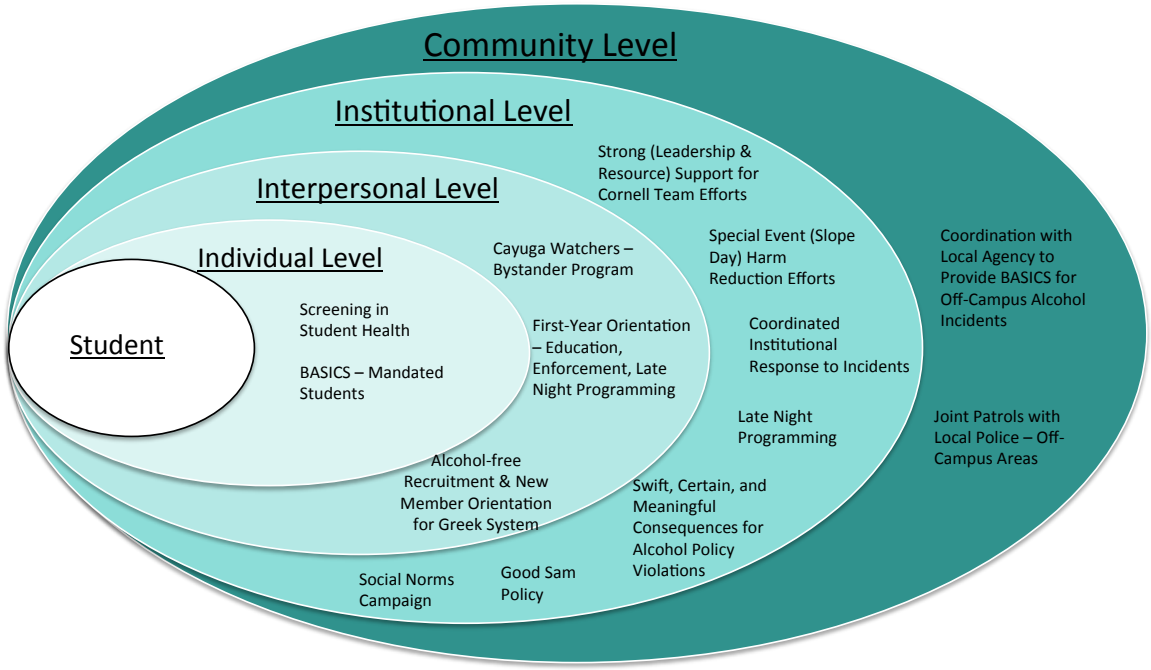
The Cornell University team also took a comprehensive approach to reducing alcohol problems among its students. Following an initial increase in HRD during the first semester of the NCHIP collaborative, the school experienced a steady decrease over the following semesters. By Spring 2013, Cornell achieved slightly more than an 8% relative reduction in HRD from a pre-NCHIP baseline in Spring 2011 (**Table 7**). **Figure 20** graphically depicts the combination of strategies implemented at Cornell.

Table 7. High-Risk Drinking Rates at Cornell University

SURVEY PERIOD	HRD RATE*
Spring 2011	44.1%
Fall 2011	48.8%
Spring 2012	47.9%
Fall 2012	43.1%
Spring 2013	40.5%

* Cornell HRD definition: 5 or more drinks in a sitting for males and 4 or more drinks for females

Figure 20. Socio-Ecological System Diagram for Cornell University

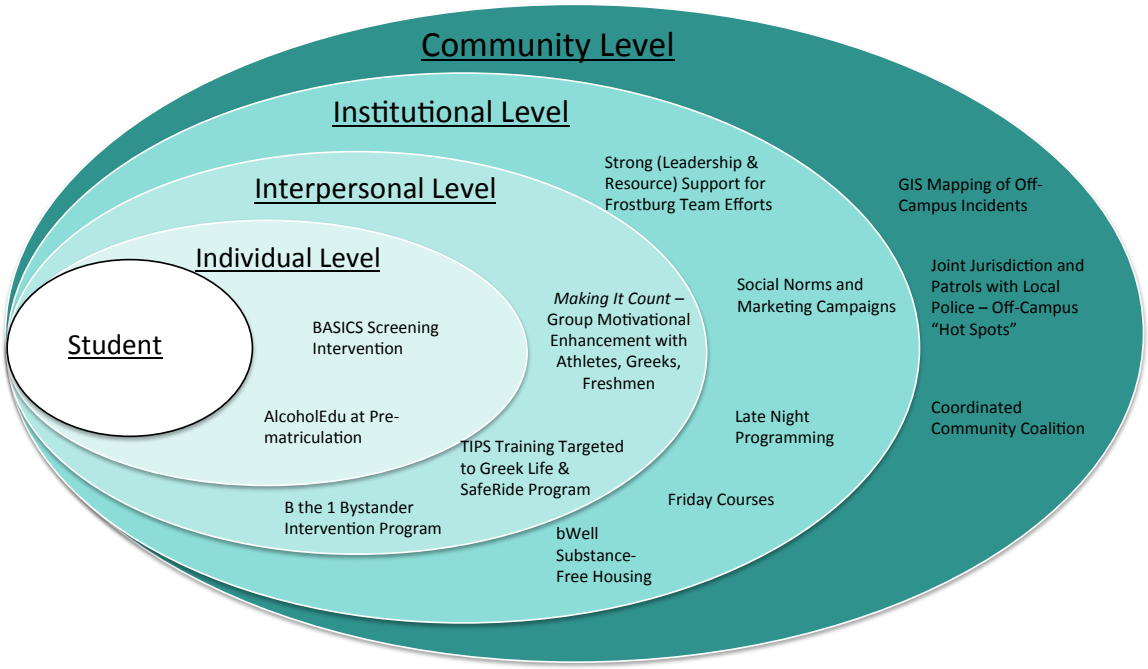


FROSTBURG STATE UNIVERSITY

> *This concept [intentional rapid cycling] has allowed us to develop and implement research-informed strategies to reduce high-risk drinking without a long-term financial or time commitment to evaluate efficacy. We have been much more intentional about committing to strategies that are assessed as effective within the unique environmental framework of our institution. Our efforts are well-planned, aggressive, and designed for outcomes.*
> - Jeff Graham, Team Leader, Frostburg State University

Frostburg State University reported a 5% relative reduction in its HRD rate from 43% in 2009 to 41% in 2012. **Figure 21** below illustrates the multi-level strategies targeted by the Frostburg team during the collaborative period.

Figure 21. Socio-Ecological System Diagram for Frostburg State University



Results—Collaborative-Wide Aim

The aim set forth at the beginning of the collaborative was to effect *measurable change in reducing the rates of HRD and associated harms at participant institutions.* Twelve of the 32 schools consistently shared HRD rates with NCHIP during the two-year period. These rates were aggregated and evaluated in order to detect the occurrence of significant changes over time using a statistical process control chart, as depicted in **Figure 22** below. The chart below reveals an average HRD rate of 48%. The data remained in statistical control over time; thus, no significant increase or decrease was observed for these 12 schools combined. De-identified HRD charts for each of the 12 schools are contained in **Appendix N**.

Figure 22. Aggregate HRD Rates for 12 NCHIP Teams With Consistent Data Reporting

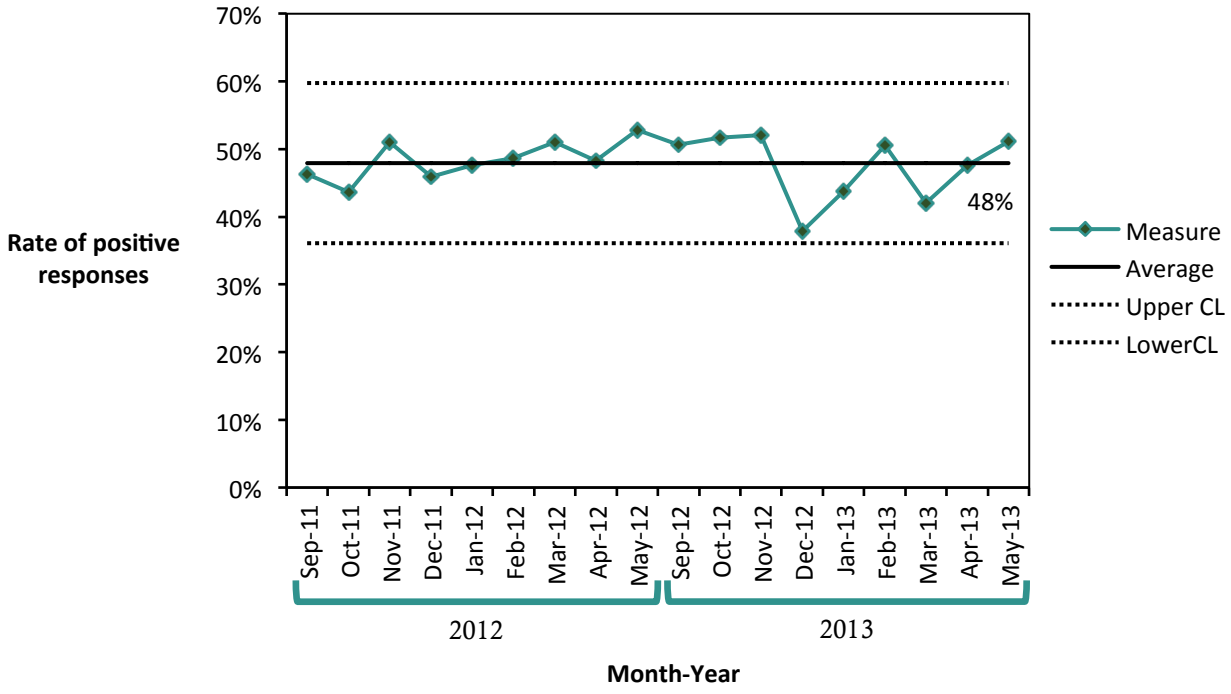


Figure 23 represents the statistical process control chart for aggregated medical care encounter rates for ten of the 32 teams that consistently reported the measure to NCHIP. The chart reveals an average rate of 1.2 medical care encounters per 1,000 students per

month. As with the HRD rate, these data remained in statistical process control over time; thus, no significant increase or decrease was observed for these ten schools combined. De-identified medical care encounter charts for each of the ten schools are contained in **Appendix O**.

Figure 23. Aggregate Medical Care Encounter Rates for 10 NCHIP Teams with Consistent Data Reporting

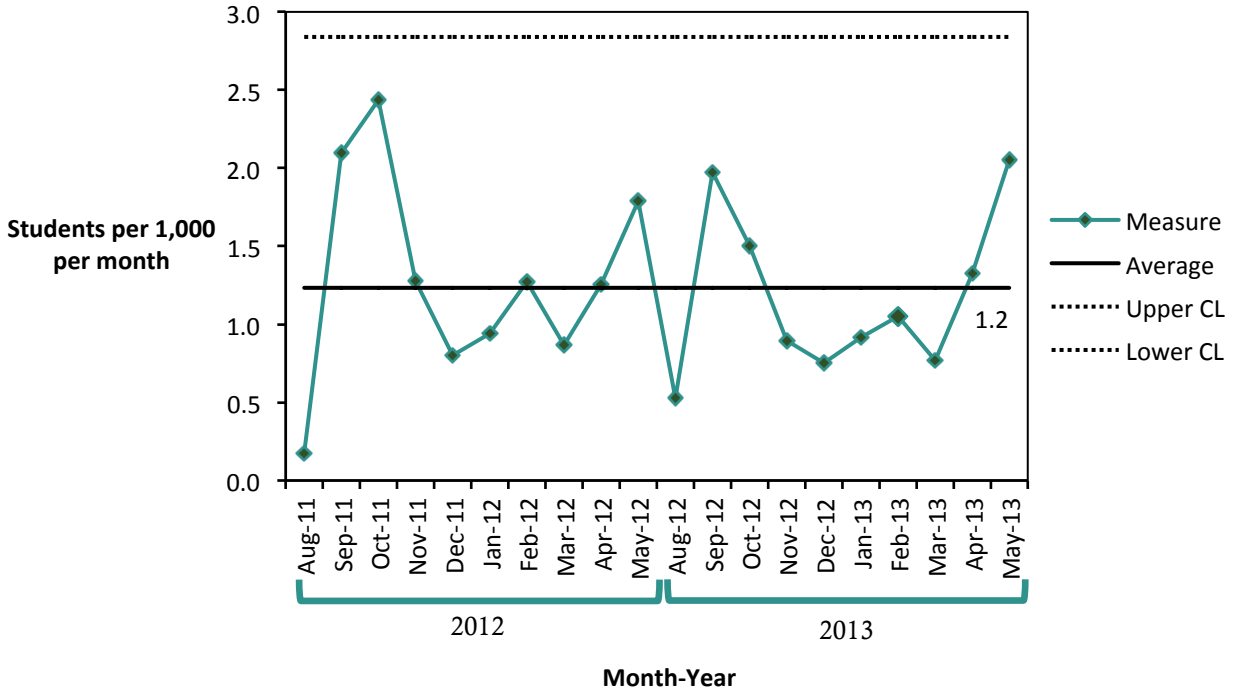
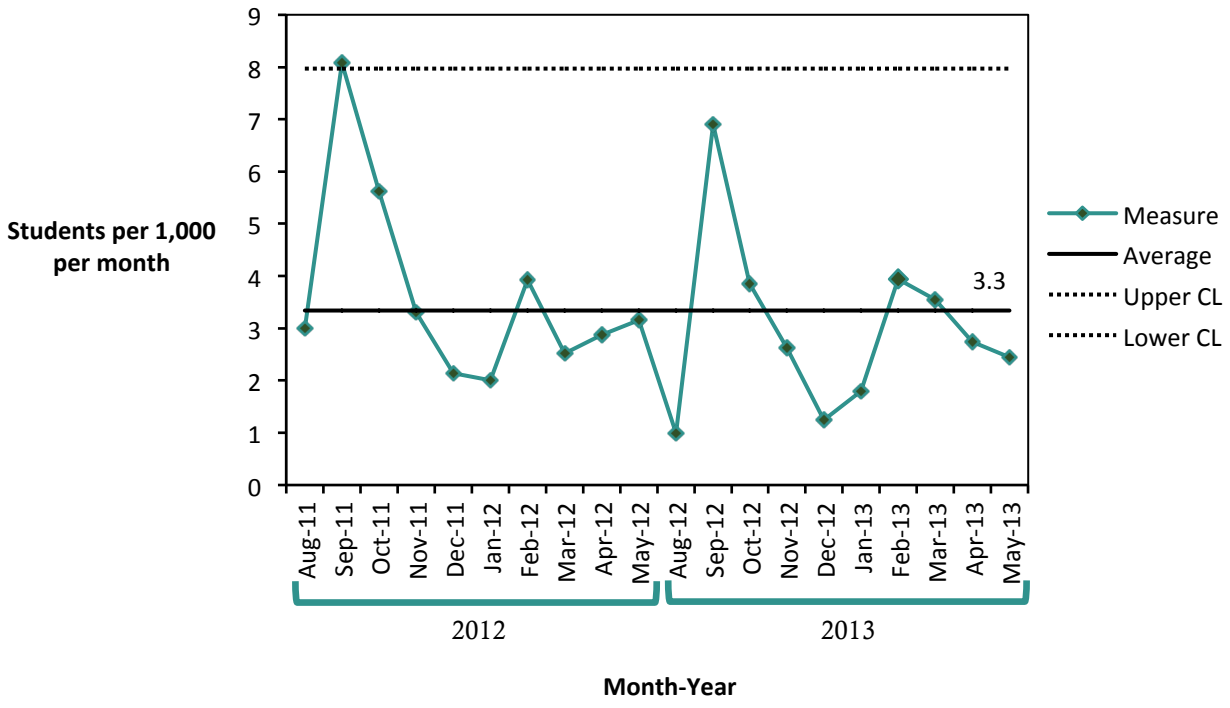


Figure 24 represents the statistical process control chart for aggregated law enforcement encounter rates for ten of the 32 teams that consistently reported the measure to NCHIP. In September 2011, a statistically significant higher rate of law enforcement encounters (point crossing the upper control limit) was observed in which twice as many encounters occurred compared to the average of 3.1 per 1,000 students per month. This special cause signal did not repeat during the following September, although this rate was the highest observed as compared to the previous 11 months. However, because this rate did not cross the upper control limit, it was within the random variation expected of this measure, and thus not statistically different. A comparison of the law enforcement rates for the two Septembers reveals an improvement in 2012, notable because September is typically a known time of increased risk with the start of the academic year. De-identified law enforcement encounter charts for each of the ten schools are contained in **Appendix O**.

Figure 24. Aggregate Law Enforcement Encounter Rates for 10 NCHIP Teams with Consistent Data Reporting



Discussion

The NCHIP collaborative offered participating institutions the opportunity to explore a new and innovative approach to implementing evidence-based strategies within a shared learning experience. As highlighted in sections above, improvements at both the initiative and outcome levels were realized by a number of the collaborative institutions. The collaborative also confirmed the challenges faced by institutions of higher education in attempting to change a deeply entrenched set of student behaviors that have been perpetuated over decades in complex environments and educational systems.

A discussion of the strengths and limitations of using the collaborative improvement approach to address HRD on college campuses should be considered in determining the future implications for this work.

STRENGTHS

Systems Approach to Change

> *Every system is perfectly designed to get the results that it gets.*[57]
> - *Paul B. Batalden, MD*

Campus teams were encouraged to consider their HRD efforts within the context and framework of a system. A major discovery of many teams was that the system they had in place was perpetuating the very issue that they were trying to improve. Examples of elements of the system working against team aims included: written policies that carried no weight because they were not actively enforced; long-standing traditions and special events allowed to continue despite escalating harms and risky drinking behaviors by students; inadequate tracking systems that allowed repeat student alcohol offenses to escape notice or be given insufficient attention; lack of screening efforts that could potentially prevent identified at-risk students from experiencing alcohol harms, etc. This discovery that their existing systems were, by default, tolerating and sustaining a culture of HRD that was deeply antithetical to their missions, was a profound and important learning outcome for many teams.

The breadth and depth at which HRD behaviors impact a campus environment necessitates a comprehensive system with broad-reaching interventions to address it. Teams were guided through the pre-assessment, testing, and implementation of the building blocks to create a comprehensive alcohol harm reduction and prevention system on their campuses. The collaborative started with a focus on individual-level initiatives, followed by broader environmental change efforts, and culminated with the integration of the two in developing a dynamic system with mechanisms in place to continually monitor and maintain itself over time.

In forming their campus improvement teams, participating institutions were encouraged to include multiple departments and disciplines that address the HRD issue, recognizing that the entire campus community must take responsibility for this issue. Historically, however, responsibility for the problem and the solution has resided very narrowly with Alcohol and Other Drug (AOD) prevention and treatment staff. As time and history have borne out, no single department can effectively tackle an issue as complex as HRD. Moreover, leaving it to one department reinforces the silo organization typically characteristic of higher education, reducing the capacity to effectively engage others in this improvement work. Overcoming this particular barrier requires broad support across campus, starting with senior leadership. Senior leaders must continually mandate the commitment, shared

responsibility, and accountability of all key stakeholders in addressing this issue and challenging the cultural elements at work to sustain it.

Leveraging the social and academic interests of faculty and students offered some schools a way to attract the participation of these key stakeholders. For example, Dartmouth College capitalized on a medical anthropology professor's willingness to devote student projects to performing ethnographies of the school's drinking culture. Acadia University's faculty team member plans to devote his upcoming sabbatical work to measurement and research in HRD.

Team Testimonials:

> *I think everybody needs to own it. I think that it's going to have to happen on the kind of on-the-ground level, but I don't think that those [frontline] folks will ever really be able to do something unless they feel that they have the Trustees' support, President's support, Provost's support, top-level support. I think it really truly needs to be integrated throughout the entire institution…*
> - NCHIP Realist Evaluation Main Report, Page 21, August 2013 (**Appendix H**)

> *Lehigh University's overarching strategy is grounded in the social ecological framework, as we fully recognize that any health-related behavior (e.g. high-risk drinking) is affected through multiple levels of influence, including intrapersonal (i.e. individual) factors, interpersonal processes, institutional factors, community factors, and public policies. Our NCHIP initiatives focus on first-year students, as this builds on earlier initiatives, offers the potential for significant impact, and is traditionally a high-risk drinking demographic on our campus. These initiatives will marshal the resources and energy of students, as well as Lehigh faculty, administrators, staff and coaches, alumni and others who have regular contact with and influence on our students.*
> - Gina Abrams, Team Member, Lehigh University

> *NCHIP has enhanced interactions across campus between staff addressing high-risk drinking and others. Faculty members are becoming more informed about the high-risk drinking problem. More are realizing this is simply not an administrative or disciplinary issue. Finally, students are being challenged to take greater ownership of the high-risk drinking problem. This began through conversations and actions initiated as part of our NCHIP membership.*
> - Cindy Babington, Team Leader, DePauw University

We want to recognize the impact that our participation in NCHIP has had on the way we communicate at Vanderbilt. Through our participation in the Collaborative, we have found a forum for enhancing campus-wide communication. At the macro level, we have been able eliminate functional silos and barriers, through engaging many key stakeholders in a shared vision for reducing high-risk drinking. While at the micro level, we are enhancing and standardizing processes for more efficient daily communication and student tracking.

- Kimberly Kraft-Moulds, Team Leader, Vanderbilt University

Our NCHIP team is a composite of different experts, which allows for an interdisciplinary approach to reaching our NCHIP goals. Each representative brings a stakeholder perspective from their respective department, which has improved interdepartmental communications.

- Jenny Hwang, Team Leader, Stony Brook University

Culture of Measurement

Frequent collection and monitoring of data radically transformed the way in which collaborative teams approached their work. Prior to the collaborative, many schools relied on annual or biennial results from their participation in the American College Health Association (ACHA) survey or the Core Alcohol and Drug Survey (CORE) to obtain their HRD and harms rates. In contrast, the collaborative measurement strategy encouraged *monthly* data collection of key measures so that teams could begin to make the link between their efforts and the results generated from those efforts. Additionally, the use of PDSA cycles to iteratively test change ideas required that teams also collect PDSA and process measures to inform their efforts.

Data on risky drinking behaviors and negative consequences (high BACs or medical transports, for instance) were compelling to teams and their senior leaders, providing a galvanizing force for action and broad-based support for the work. One campus senior leader reflected, “we are building a culture of measurement” with this work, where the norm is increasingly about the data—either to track results or to provide rationale for continuing with an initiative or intervention, particularly in times of scarce resources. Teams reported that the focus and rigor of identifying and tracking data brought intentionality to their work.

Team Testimonials:

The 2011-2012 academic year was the first time Yale collected data on the drinking patterns of the undergraduate population. The collection of this data is one of the major ways our participation in NCHIP allowed work on AOD issues to advance. The data was shared with the President's Office, the Yale College Dean's Office, the Residential College Deans, and the Office of the Secretary. Through the sharing of this data, faculty and staff gained a new appreciation of how Yale students interact with alcohol and administrators are more enthusiastic than before to take action.
- Hannah Peck, Team Leader, Yale University

We are surveying our students monthly (not just annually) about their use of alcohol. This 'time-lapse photo' has given us a better understanding of the scope of our challenge and has helped us target different times of the year in different ways.
- Alexander Bruce, Team Leader, Sewanee—The University of the South

We are collecting better and more relevant data and as a result have a better understanding of data related to high-risk drinking and harms associated with drinking.
- Jon Porter, Team Leader, University of Vermont

Rapid Cycle Testing

The PDSA method profoundly impacted the ability of teams to create change on their campuses. Over 330 new initiatives—that were not happening prior to the collaborative—were reported. Many were evidenced-based approaches implemented as part of a comprehensive system framework.

The use of PDSA cycles offered teams a viable way to try new ideas and approaches and to implement rapid change. Historically, it has been difficult in higher education to bring about swift change because of the lengthy consensus building and planning cycles typically required. Indeed, the ingredients of a successful PDSA run counter to this by starting as small in scope as possible, enlisting volunteers (no buy-in or consensus needed), conducting the test over a very short period of time, and iteratively ramping up based on test data and findings.

The PDSA method gained in popularity on NCHIP campuses, spreading across multiple departments and staff, and becoming engrained as a verb in the higher education lexicon, as in "let's just PDSA it."

Team Testimonials:

The PDSA process has allowed us to: take risks with pilots that may not work, start with small interventions, stay accountable to each other by documenting our efforts; and, stay accountable to the work by collecting data to evaluate the intervention.
- Tim Marchell, Team Member, Cornell University

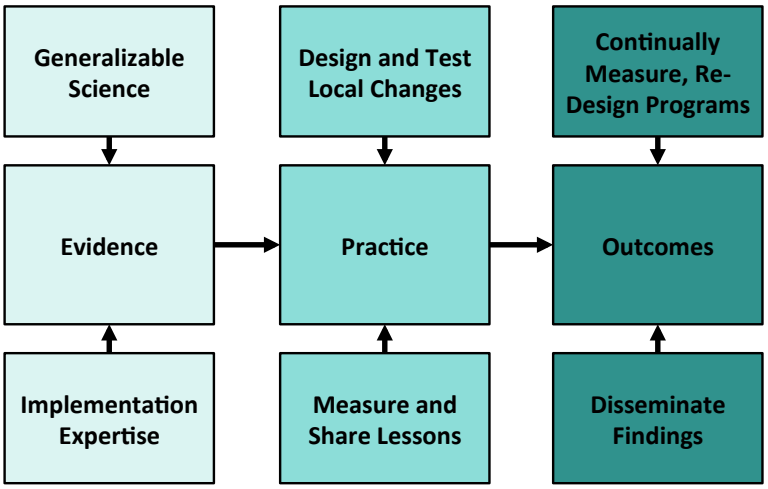
The PDSA cycle has assisted our team in building capacity into developing initiatives, discerning initial value, and determining necessity thereafter. We have been able to prioritize initiatives and focus on what is an appropriate environmental fit for the needs of our organization. Probably most significantly is that we have become data driven in how we go about our important work, collecting data that allows us to better target efforts.
- Jeff Graham, Team Leader, Frostburg State University

Working with NCHIP has improved accountability, created a mechanism for learning and change via QI tools and PDSA efforts, and served as a catalyst for change to revitalize efforts to address HRD.
- NCHIP Realist Evaluation Main Report (page 27)

Emphasis on Evidence-Based Strategies

One of the primary goals of the collaborative was to narrow the gap between 1) the existing evidence of the most effective ways to address HRD, and 2) what was being done in practice on the 32 participating college campuses (**Figure 25)**.

Figure 25. Process to Narrow the Gap Between Evidence and Practice



For example, screening initiatives increased from 53% at the start of the collaborative to 75% by the end (**Figure 11**). In a recent article, Ralph Hingson, Epidemiology Director at the NIAAA, concluded that if student health services were to implement an evidence-based intervention of routine alcohol screening and brief counseling, the potential reach that it would offer across a college community could ultimately achieve population-level benefits.[58] Other examples abound. In essence, NCHIP offered a process to more rapidly introduce and/or improve the quality of interventions with demonstrated effectiveness such that more students were reached.

Team Testimonials:

Participation in NCHIP has helped us to learn about best practices and innovations from colleagues in the collective.
- Francie Mantak, Team Leader, Brown University

NCHIP has exposed us to exceptional research information that has significantly served to inform our practices.
- Jeff Graham, Team Leader, Frostburg State University

We really appreciate the collaborative in that it has allowed us to mine the information that is out there and move forward at a much more rapid rate... we went through the collaborative PDSAs and found a huge amount of information... we could leapfrog over some of the issues they worked out and start from where they were at [most recently]... we have now moved forward.
- Melissa Garvey, Team Leader, University of New Hampshire

LIMITATIONS

Change Readiness and Resistance

The degree of readiness for change varied across the 32 participating institutions. A more formal assessment process prior to the start of the collaborative may have reduced this variation considerably. For instance, the realist evaluation of 8 teams (**Appendix L**) highlighted four common denominators (leadership, systems to collaborate and share data, student engagement and consistent messaging, and enforcement) that emerged from the study as contributors to success at the institutional level. These common denominators,

along with other validated change prerequisites, could provide a gauge of a team's ability to effectively engage in this work from the start.

Additionally, the rapid timeline at the start of the collaborative did not allow for a thorough pre-assessment of the efforts schools had already undertaken to address HRD and associated harms on their campuses. A better understanding of the depth and breadth and effectiveness of each school's HRD efforts would have allowed for a more directed approach to advising and grouping schools according to needs. Further, the collaborative may have benefitted from the identification of local team experts to advise their peers on best practice implementation strategies, particularly efforts that could be informed by strong institutional knowledge and experience.

Notably, a few teams were ambivalent from the start about their involvement in NCHIP. This translated into a resistance to embracing and implementing the collaborative methodology. Some resistance stemmed from lack of buy-in from frontline staff. While President Kim was very effective in reaching out to other presidents to encourage their institution's participation in NCHIP, in some cases this same level of commitment did not reach, or was not shared by, the frontline staff. These teams arrived at the first learning session having been directed by their President to attend, though not fully understanding what the collaborative was nor what would be expected of them.

Other issues of resistance were more nuanced. For some teams, it stemmed from being overwhelmed by the new approach and unsupported in its implementation. For other teams, conflict emerged from philosophical differences concerning student development. Some institutional cultures supported the notion that students should be able to make positive and healthy choices for themselves, particularly in college as they prepared for full independence and adulthood upon graduation. Encouragement by NCHIP faculty to consider enforcement efforts as part of a comprehensive strategy was difficult for these schools to accept, at lease initially.

Increased communication and pre-assessment efforts, as well as training activities prior to the collaborative start, may have mitigated some of these challenges.

Measurement and Causality

Given the complex interplay of the multivariate factors in addressing this public health issue, it is difficult to precisely connect the implementation of specific initiatives and interventions with outcome-level results. Additionally, further inquiry into, and study of, whether the collaborative outcome measures are the most optimal for determining the impact of this work should be considered for future efforts as well.

While the five-drink question is a commonly used measure of high-risk alcohol consumption, perhaps a more robust or time-sensitive measure exists that would reflect the impact of HRD harm reduction and prevention efforts. Indeed, several of the harms measures included in the ACHA's survey question, such as suicidal thoughts and sex without consent, were reported too infrequently to be a reliable short-term measure. Also, challenges can be (and were) experienced with medical care and law enforcement encounter rates. For instance, these rates may change in anticipated negative directions if certain initiatives initially encourage increased calls for help (e.g. a new Samaritan policy) or increased citations (e.g. alcohol policy and sanctioning changes).

Undoubtedly, consistent collection and monitoring of PDSA, process, and outcome measures by all 32 teams would have increased the ease in aggregating, synthesizing, and analyzing the results and overall impact of the collaborative. Centralization of the data collection process may have increased the number of teams collecting and reporting data to NCHIP.

Lastly, while the collaborative has highlighted the importance, as well as the challenges, of more frequent and evidence-based data collection, sophisticated assessment measures (such as a longitudinal registry) and additional applications of this methodology are needed to gain further insight into the identification of optimal measures and determinations of causality.

Selection of Initiatives and Interventions

Teams were provided with information and ideas regarding the most evidence-based, effective, and broad-based strategies needed to bring about cultural change on their campuses, as well as the optimal use of already scarce resources. Teams selected the specific initiatives to test and implement on their campuses based on a myriad of reasons, including consideration of their previous prevention efforts and initiatives, their own perceptions of their defined systems, their comfort zones (e.g. *this is the way we have always done it*), ambivalence about what to try, and use of (or insufficient use of) assessment data to make informed or intentional decisions about initiatives to test.

The design of a future collaborative could be strengthened by providing teams with a hierarchy of strategies and focus areas, as well as a more prescribed list of potential choices based on pre-assessment data and unique campus contexts and issues. A narrowing of the change strategies would allow for similar institutions working on comparable initiatives to engage more effectively in shared learning and discovery. Additionally, identification of

specific process measures could be standardized to facilitate benchmarking and expectation setting around the timeline for realizing measurable results.

FUTURE IMPLICATIONS

> *Too often, institutions are looking for a "silver bullet" that can create change with minimal disruption to the system or culture, when in fact it is the system and culture that itself must change to enable strategies to work. Leadership, collaborative relationships across campus and the community, and a clear philosophy of policy and the enforcement of consistent community standards are in fact a foundation for the successful implementation of individual, environmental, and system-based strategies that we have known for years can reduce drinking rates and related harms among college students.*
> - Thomas Workman, NCHIP Faculty Member, Summative Congress, June 2013

The NCHIP collaborative offered participating institutions an overarching system framework and an approach to implementing the evidence-based changes on their campuses that Thomas Workman refers to in the quote above. Through their collaborative experiences, teams began to lay the foundation to bring about the cultural change required on their campuses to address the existing HRD crisis. The collaborative galvanized the efforts on campuses and aided in realizing the following outcomes.

- Early results were achieved by teams that did fully participate, measure consistently, and intervene using evidence-based strategies at multiple levels;
- An increase in the number of institutions focusing on the issue of HRD and trying a new approach to increase their effectiveness and use of evidence-based strategies to address HRD issue;
- Implementation of a comprehensive system framework to address HRD issues;
- Spread across teams in the use of improvement methods and tools to create change on their campuses;
- A proliferation of system portfolios of new initiatives and interventions being tested and implemented in concert with one another; and,
- Establishment of plans to sustain the momentum and systems approach to this work.

Since the completion of the inaugural collaborative in June 2013, twelve teams continue to work together, acknowledging that additional time is needed to bring about further change on their campuses. Nine teams from the initial collaborative (Acadia, Bucknell, Cornell, Dartmouth, DePauw, Southern Methodist, Stony Brook, Vermont, and Yale) and three new

teams (Chico State, SUNY-Albany and Notre Dame) are members of the *Leadership Network on High-Risk Drinking*, which was created to formally foster continued improvement and shared learning across multiple institutions. The Network vision and mission are described below.

- Leadership Network Vision: We are committed to safe and healthy living and learning environments for all students, beginning with our initial focus on high-risk drinking.

- Leadership Network Mission: An active partnership and collaboration of colleges and universities committed to ongoing improvement, implementation, and open sharing of the most effective ways to reduce the harms associated with high-risk drinking on college campus communities.

Other collaborations spawned by the NCHIP collaborative include Acadia University's decision to create a *Canadian Collaborative on High-Risk Drinking*. Acadia President, Ray Ivany, has invited all Canadian institutions of higher education to be a part.[54] Likewise, the State of Maryland supported and valued the HRD collaborative experiences of three of its public institutions (Frostburg State University, UMBC, and UMES), and has since launched a statewide collaborative of its own.[59]

The collaborative improvement model—while not a panacea—has proven to be a promising approach for bringing about change and improvement in addressing this seemingly intractable public health issue. Efforts can be made to capitalize on the strengths and improve upon the limitations discussed above to make the model even more compelling. However, as is true with entrenched cultural issues, additional time is needed to bring about measurable and sustained change across college campuses.

Additional funding to support both the continuation of the Leadership Network and a redesigned Wave 2 learning collaborative experience with a minimum of 24 new institutions over a two-year period would offer the following advantages.

- Further insight into what is needed to sustain this work and to bring about measurable improvement over time, particularly given that nine Leadership Network schools will have a complete turnover of their student body population by the end of the 2014-15 academic year;
- Opportunity to refine the collaborative improvement model and expand the number of institutions involved to test the predicted increase in effectiveness and measurable results of this approach with a Wave 2 cohort;
- Ability to sustain the national attention focused on this issue, which is essential to bring about cultural change across many campuses; and,

- Capacity to offer broad-based information and expertise to schools in need of assistance, as well as the continued opportunity for schools to collaborate and learn from one another.

Conclusion

Former Dartmouth College President Jim Kim's vision was realized when 32 colleges and universities joined together to try a new approach in tackling HRD and, that by the end, increased the mutual understanding of the issue and what works to address it. Tremendous strides have been made and many lessons learned. Still, the issue persists. In the words of Jonathan Gibralter, Frostburg State University President, "*We're only as good as our last weekend. I never go to bed at night thinking: 'Thank goodness. We finally solved this problem*.'"[42]

Culture change is not easy—but it is possible. As the collaborative demonstrated, change can start on a small scale and lessons learned from any new efforts can inform subsequent steps. Also, any one strategy that brings a school closer to where they aspire to be is a step in the right direction. Approaching this work as a quality improvement issue resulted in different and positive steps being taken on college campuses than had been performed in the past.

With continued leadership, persistence, full commitment, and support, we can remain steadfast to the journey and ultimately make a difference in the lives of college students and all that care about them.

Appendices

Note: Please refer to the attached file—*NCHIP White Paper Appendices*—to access contents of Appendices A through P as defined below.

A. Participating Institutions - Learning Collaborative on High-Risk Drinking
B. NCHIP Faculty Expert Bios
C. Driver Diagram—Reducing High-Risk Drinking and Associated Harms
D. Outcome Measurement Strategy
E. Process Measures Library
F. Cornell University Team Storyboard—June 2013, Summative Congress
G. Meetings, Webinars, Presentations, and Press
H. PDSA Documentation Template
I. Learning Session 2 Pre-work Package—Environmental Assessment
J. Frostburg State University System Dashboard
K. Program Evaluation Mid-Project Report
L. Realist Evaluation Main Report and Faculty Response
M. List of PDSAs/New Initiatives
N. Statistical Process Control Charts—High-Risk Drinking Rates for 12 Reporting Institutions (De-Identified)
O. Statistical Process Control Charts—Medical Care Encounter Rates for 10 Reporting Institutions (De-Identified)
P. Statistical Process Control Charts—Law Enforcement Encounter Rates for 10 Reporting Institutions (De-Identified)

References

[1] Wechsler H, Davenport A, Dowdall G, Moeykens B, Castillo S. Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *JAMA*. 1994; 272: 1672–1677.
[2] Hingson RW, Zha W, Weitzman ER. Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18–24, 1998–2005. *J Stud Alcohol Drugs Suppl.* 2009*;* 16: 12–20.
[3] National Institute of Alcohol Abuse and Alcoholism. NIAAA council approves definition of binge drinking. *NIAAA Newsletter.* 2004; 3: 3. Available at: http://pubs.niaaa.nih.gov/publications/Newsletter/winter2004/Newsletter_Number3.pdf Accessed March 27, 2014.
[4] Wechsler H, Nelson TF. Binge drinking and the American college student: What's five drinks? *Psychol Addictive Behav*. 2001; 15(4): 287-291.
[5] Centers for Disease Control. *Fact Sheet: Binge Drinking*. January 2012. Available at: http://www.cdc.gov/vitalsigns/BingeDrinking/index.html. Accessed February 17, 2014.
[6] Leavitt MO. *The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking*. Rockville, MD: U.S. Department of Health and Human Services; 2007. Available at http://www.ncbi.nlm.nih.gov/books/NBK44667/pdf/TOC.pdf. Accessed March 27, 2014.
[7] American College Health Association. *American College Health Association-National College Health Assessment II: Reference Group Data Report Spring 2013*. Hanover, MD: American College Health Association; 2013.
[8] American College Health Association. *National College Health Assessment: Reference Group Report Spring 2003*. Baltimore, MD: American College Health Association; 2003.
[9] Core Institute. *The Core Alcohol and Drug Survey: Annual Reference Group 2011*. Carbondale, IL: Core Institute, Southern Illinois University; 2011.
[10] Core Institute. *The Core Alcohol and Drug Survey: 2007 Annual Data*. Carbondale, IL: Core Institute, Southern Illinois University; 2007.
[11] Johnston, LD, O'Malley PM, Bachman JG, Schulenberg JE. *Monitoring the Future National Survey Results on Drug Use, 1975-2012. Volume II: College students and adults ages 19-50.* Ann Arbor, MI: Institute for Social Research, The University of Michigan; 2013.
[12] Institute for Healthcare Improvement. *The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement*. IHI Innovation Series white paper. Boston: Institute for Healthcare Improvement; 2003. Available at: http://www.ihi.org/resources/Pages/IHIWhitePapers/TheBreakthroughSeriesIHIsCollaborativeModelforAchievingBreakthroughImprovement.aspx. Accessed March 27, 2014.
[13] Langley GJ, Moen R, Nolan K, Nolan T, Norman C, Provost L. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. San Francisco, CA: Jossey-Bass Publishers; 2009.

[14] Larimer M and Cronce J. Identification, prevention and treatment: A review of individual-focused strategies to reduce problematic alcohol consumption by college students. *J Stud Alcohol Drugs Suppl.* 2002; 148-163.
[15] Saltz RF. Preventing alcohol-related problems on college campuses – Summary of the final report of the NIAAA task force on college drinking. National institute on Alcohol Abuse and Alcoholism; 2004/2005. Available at: http://pubs.niaaa.nih.gov/publications/arh284/249-251.htm. Accessed March 27, 2014.
[16] Office of the Surgeon General (US). *The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking.* National Institute on Alcohol Abuse and Alcoholism; Substance Abuse and Mental Health Services Administration. Rockville, MD: 2007.
[17] Hingson R and White A. New research findings since the 2007 Surgeon General's Call to Action to Prevent and Reduce Underage Drinking: A review. *J Stud Alcohol Drugs*. 2014; 75(1): 158-169.
[18] U.S. Preventive Services Task Force. *Screening and Behavioral Counseling Interventions in Primary Care to Reduce Alcohol Misuse*, Topic Page. Available at: http://www.uspreventiveservicestaskforce.org/uspstf/uspsdrin.htm. Accessed March 27, 2014.
[19] Cronce JM, Larimer ME. Individual-focused approaches to the prevention of college student drinking. *Alcohol Res Health*. 2011; 34: 210-221.
[20] Paschall MJ, Antin T, Ringwalt CL, Saltz RF. Evaluation of an internet-based alcohol misuse prevention course for college freshmen: Findings of a randomized multi-campus trial. *Am J Prev Med.* 2011; 41: 300-308.
[21] Paschall MJ, Antin T, Ringwalt CL, Saltz RF. Effects of AlcoholEdu for college on alcohol-related problems among freshmen: A randomized multicampus trial. *J Stud on Alcohol Drugs.* 2011; 72: 642-650.
[22] Doumas DM, Turrisi R, Ray AE, Esp SM, Curstis-Schaeffer AK. A randomized trial evaluating a parent based intervention to reduce college drinking. *J Subst Abuse Treat.* 2013; 45: 31-37.
[23] Turrisi R, Larimer ME, Mallett KA, Kilmer JR, Ray AE, Mastroleo, NR, et al. A randomized clinical trial evaluating a combined alcohol intervention for high-risk college students. *J Stud Alcohol Drugs.* 2009; 70: 555-567.
[24] Saltz RF, Paschall MJ, McGaffigan RP, Nygaard PMO. Alcohol risk management in college settings: The safer California universities randomized trial. *Am J Prev Med.* 2010; 39: 491-499.
[25] Wolfson M, Champion H, McCoy TP, Rhodes SD, Ip, EH, et al. Impact of a randomized campus/community trial to prevent high-risk drinking among college students. *Alcohol Clin Exp Res.* 2012; 36: 1767-1778.
[26] Institute for Healthcare Improvement. *90-Day Research and Development Process*, 2010. http://www.ihi.org/about/Documents/IHI90DayResearchandDevelopmentProcessAug10.pdf
[27] Institute for Healthcare Improvement. *Science of Improvement: Establishing Measures* 2013. Available at: http://www.ihi.org/knowledge/Pages/HowtoImprove/ScienceofImprovementEstablishingMeasures.aspx. Accessed March 27, 2014.

[28] Perla RJ, Provost LP, Murray SK. The run chart: a simple analytical tool for learning from variation in healthcare processes. *BMJ Qual & Saf.* 2011; 20: 46-51.
[29] Cornell University NCHIP Storyboard, Gannett Health Services Website. Available at: https://www.gannett.cornell.edu/campus/drugs/NCHIP.cfm. Accessed March 28, 2014.
[30] Kilmer J. *Overview of the Change Strategy: Individual Drinker*. Presentation at NCHIP Learning Session 1. June 2011; Fairlee, VT.
[31] Novick LF, Morrow CB, Mays GP. *Public Health Administration: Principles for Population-Based Management*. Sudbury, MA: Jones & Bartlett Publishers; 2008.
[32] Electronic Code of Federal Regulations, Title 34, Part 86 – Drug and Alcohol Abuse Prevention. Available at: http://www.ecfr.gov/cgi-bin/text-idx?SID=393301a7cdccca1ea71f18aae51824e7&node=34:1.1.1.1.30&rgn=div5#34:1.1.1.1.30.1.134.1. Accessed March 27, 2014.
[33] Nelson TF, Winters KC. *Preventing Binge Drinking on College Campuses: A Guide to Best Practices*. Center City, Minnesota, MN: Hazelden; 2012.
[34] Toomey T. *Developing Effective Policies*, Presentation at NCHIP Learning Session. January 2012; Austin, TX.
[35] Workman T. *Communication Strategies for Environmental Change*, Presentation at NCHIP Learning Session 2. January 2012; Austin, TX.
[36] Park S, Hironaka S, Carver S, Nordstrum L. *Continuous Improvement in Education* white paper, Carnegie Foundation for the Advancement of Teaching, 2013. Available at: http://www.carnegiefoundation.org/sites/default/files/carnegie-foundation_continuous-improvement_2013.05.pdf. Accessed March 27, 2014.
[37] Toomey TL, Nelson TF, Winters KC, Miazga MJ, Lenk KM, Erickson DJ. Characterizing college systems for addressing student alcohol use: Latent class analysis of U.S. four-year colleges. *J Stud Alcohol Drugs.* 2013; 74: 777-786.
[38] University of Minnesota, Alcohol Epidemiology Program, *College Alcohol Systems Model*. Available at: http://www.epi.umn.edu/acollaborativeohol/conceptmod/index.shtm. Accessed March 28, 2014.
[39] Kaplan RS, Norton DP. The balanced scorecard – measures that drive performance. *Harv Bus Rev.* 1992; 70: 71-79.
[40] Hingson RW. College drinking problems, deaths on the rise. Press Release - *J Stud Alcohol Drugs.* June 15, 2009. Available at: http://www.eurekalert.org/pub_releases/2009-06/joso-cdp061009.php. Accessed March 25, 2014.
[41] Saitz R, Cheng DM, Allensworth-Davies D, Winter MR, Smith PC. The ability of single screening questions for unhealthy alcohol and other drug use to identify substance dependence in primary care. *J Stud Alcohol Drugs*. 2014; 75: 153-157.
[42] Johnson, J. Schools try new strategies to battle college drinking. *The Washington Post Magazine*, August 29, 2013.
[43] National Institute on Alcohol Abuse and Alcoholism. NIAAA Alcohol Alert: Young Adult Drinking, Number 68. April 2006. Available at: http://pubs.niaaa.nih.gov/publications/aa68/aa68.htm. Accessed March 28, 2014.
[44] National Institute on Alcohol Abuse and Alcoholism. College Fact Sheet. Available at: http://pubs.niaaa.nih.gov/publications/CollegeFactSheet/CollegeFactSheet.pdf. Accessed March 28, 2014.

[45] Brister HA, Sher KJ, Fromme K. 21st birthday drinking and associated physical consequences and behavioral risks. *Psychol Addict Beh.* 2011; 25: 573-582.
[46] Excerpted from Lehigh University's Learning Session 3 Storyboard. July 2012; Washington, DC.
[47] Pedersen ER, LaBrie J. Partying before the party: Examining prepartying behavior among college students. *J Am Coll Health.* 2007; 56: 237-245.
[48] LaBrie, JW, Pedersen ER. Prepartying promotes heightened risk in the college environment: An event-level report. *Addict Beh.* 2008; 33: 955-959.
[49] Neighbors C, Atkins DC, Lewis MA, Lee CM, Kaysen D, Mittmann A, et al. Event-specific prevention: Addressing college student drinking during known windows of risk. *Addict Beh*. 2007; 32: 2667-2680.
[50] National Institute on Alcohol Abuse and Alcoholism. College Drinking – Changing the Culture Website. Available at: http://www.collegedrinkingprevention.gov/niaaacollegematerials/taskforce/CallToAction_02.aspx. Accessed March 28, 2014.
[51] Wilson, TD. *Redirect: the surprising new science of psychological change*. New York, NY: Little, Brown and Company; 2011.
[52] Excerpted from Purdue University's PDSA Documentation #10a – Communication Audit. May 27, 2012.
[53] Excerpted from Brown University's Storyboard, Summative Congress. June 2013; Boston, MA.
[54] Platt B. Dartmouth-Led High-Risk Drinking Collaborative Notes Progress. Dartmouth Now, June 25, 2013. Available at: http://now.dartmouth.edu/2013/06/dartmouth-led-high-risk-drinking-collaborative-notes-progress/. Accessed March 28, 2014.
[55] White AM, Hingson RW. The burden of alcohol use: Excessive alcohol consumption and related consequences among college students. *Alcohol Research: Current Reviews*. 2014; 35: 1-15.
[56] White AM, Hingson RW. Prevalence and consequences of college student alcohol use. In: Correia CJ, Murphy JG, Barnett NP, eds. College Student Alcohol Use: A Guide to Assessment, Intervention, and Prevention. New York, NY: Wiley & Sons, Inc. 2012: 3-24.
[57] Carr S. A quotation with a life of its own. *Patient Safety & Quality Healthcare Newsletter*. July/August 2008. Available at: http://www.psqh.com/julaug08/editor.html. Accessed March 27, 2014.
[58] Hingson RW, Heeren T, Edwards EM, Saitz R. Young adults at risk for excess alcohol consumption are often not asked or counseled about drinking alcohol. *J Gen Intern Med.* 2012; 27: 179-184.
[59] The Maryland Collaborative: To Reduce College Drinking and Related Problems Website. Available at: http://marylandcollaborative.org/. Accessed March 28, 2014.