An Adaptive Intervention for Reducing College Student Alcohol-Related Consequences: A SMART Pilot Study Proposal

Megan Patrick & Daniel Almirall
SRC, ISR, University of Michigan

Center for the Study of Health and Risk Behaviors
Univ. of Washington—March 27, 2012
The slide I don’t need at C-SHRB.

- College alcohol and associated negative consequences are clear public health problems
- Heavy drinking at age 18 has long-term impact, including symptoms of AUD in adulthood
- Scarce intervention resources must be used as wisely as possible to address college student alcohol use
Another slide I don’t need at C-SHRB.

• Brief motivational interventions are efficacious

• Our thinking is this...
  – Web-based versions of BMI, which are suitable as universal interventions, are especially resource-efficient and have shown promising effects.
  – In-person BMIs (e.g., BASICS), which due to their intensity may be more suitable as indicated interventions, have a strong evidence base.
One way to address heavy drinking while conserving resources is to

- first utilize universal interventions,
- identify students in need of additional treatment,
- and then move these students to a more intensive, indicated intervention.

This package of sequenced treatments (universal followed by indicated) is a form of adaptive intervention.
**One (Somewhat Simple) Example of an Adaptive Intervention**

**Baseline:** Week 0

- **Web-based BMI:** delivered one week prior to beginning of Fall semester

**@ Week 6**

- **Binge-drinker**
- **Non Binge-drinkers**

**> Week 6**

- **In-person BASICS**
- **Watchful Waiting**

**Binge drinking** at Week 6 is defined as 4+/5+ drinks from women/men in 2 or more settings over the past 6 weeks.

**Web-based BMI** is a 5 component (intended drinking, expected consequences, social norms, goal-directed motivations, protective behavioral strategies) personalized feedback intervention based on responses to the baseline survey.

**In-person BASICS** (2 session program) will be delivered by a University Health Services professional. BASICS is freely available at the Univ. of Michigan.
Some key issues—useful for building an optimal adaptive intervention—remain untested in the science of brief alcohol interventions.

- The optimal timing of universal BMI: Do we intervene with a web-based BMI prior to or after the beginning of Fall semester?
- Among students who continue to binge-drink despite the universal treatment, what is the added value of a BASICS over a web-based BMI Booster?
Sequential Multiple Assignment Randomized Trial (SMART) Study Design
to develop an adaptive intervention to prevent and treat college drinking

Measures and Outcomes:

@ Weekly: drinking quantity and duration on each day of the previous week, along with a checklist of consequences and their evaluations.

@ Weeks 0, 6, 12:
Intentions for drinking, perceived norms, motivations, expected and eval. of conseq., protect. behav. strategies, health service utilization, GPA

Web-based BMI Boosters includes content that is tailored using updated information.
Specific Aims of the SMART

• **Aim 1 (Timing Question):** To determine the maximally effective timeframe to deliver the universal, web-based BMI.

• **Aim 2 (Best Second Stage Treatment):** To determine whether web-based boosters versus BASICS is the best treatment among participants who exhibit binge-drinking despite the initial web-based BMI.

• **Aim 3 (Best Adaptive Intervention):** To determine which is the best of the 4 pre-specified adaptive interventions.

• **Aim 4 (Tailoring):** To determine (i) the types of individuals (on the basis of baseline measures, e.g., age, race, intentions to rush) more or less likely to benefit from early vs delayed BMI delivery, (ii) the types of binge-drinkers (on the basis of baseline measures, and outcomes to initial treatment) more or less likely to benefit from web-based boosters vs BASICS.
The 4 Embedded Adaptive Interventions Any One Participant May Be Assigned To

**Adaptive Intervention #1**

**Early BMI:** Web-based intervention delivered prior to the Fall semester

- Binge-drinkers → BASICS PROGRAM
- Non Binge-drinkers → WATCHFUL WAITING

**Adaptive Intervention #2**

**Early BMI:** Web-based intervention delivered *prior* to the Fall semester

- Binge-drinkers → BASICS PROGRAM
- Non Binge-drinkers → WEB-BASED BMI BOOSTERS

**Adaptive Intervention #3**

**Delayed BMI:** Web-based intervention delivered after Fall semester begins

- Binge-drinkers → BASICS PROGRAM
- Non Binge-drinkers → WATCHFUL WAITING

**Adaptive Intervention #4**

**Delayed BMI:** Web-based intervention delivered after Fall semester begins

- Binge-drinkers → BASICS PROGRAM
- Non Binge-drinkers → WEB-BASED BMI BOOSTERS

- Non Binge-drinkers → WATCHFUL WAITING
Specific Aims of the SMART Pilot

• **Aim 1**: To develop and refine the adaptive interventions to be evaluated in the SMART. Includes developing and refining components of the initial web-based BMI and boosters, and developing the protocol for linking students between the initial web-based BMI to the in-person BASICS program.

• **Aim 2**: To conduct a pilot SMART study to address acceptability and feasibility concerns about the SMART study design. The pilot SMART will provide (i) provide investigators with the experience to conduct a SMART, and (ii) preliminary data for an R01 to be submitted to the NIAAA to fund a larger-scale SMART.
Why do a SMART pilot first?

Aim 1: Develop and refine intervention modalities
• Focus groups before (show mock-ups) and after
• How do we link binge-drinkers to UM BASICS?

Aim 2: Feasibility and acceptability
• Can we consent and engage prior to Fall?
• How do we link binge-drinkers to UM BASICS?
• How do we classify students (for purposes of 2\textsuperscript{nd} line txt) who fail to provide Week 6 binge status?
• Get %age of students who meet binge threshold
• Infrastructure for multiple randomizations
• Can we deliver web-based BMI boosters via text?
3 questions to the group for discussion

• What else do you anticipate is important for us to think about in the Pilot study?
• Do you have points of concern/confusion about the methodology?
• Do you have points of concern/confusion about the scientific justification for this study?
The Interventions Assigned from the Participant’s Point of View.
There are 6 sequences of treatment that are possible.

**Txt Sequence A**
- **EARLY BMI:** Web-based intervention delivered prior to the Fall semester
- Binge-drinkers → **BASICS PROGRAM**

**Txt Sequence D**
- **DELAYED BMI:** Web-based intervention delivered after Fall semester begins
- Binge-drinkers → **BASICS PROGRAM**

**Txt Sequence B**
- **EARLY BMI:** Web-based intervention delivered prior to the Fall semester
- Binge-drinkers → **WEB-BASED BMI BOOSTERS**

**Txt Sequence E**
- **DELAYED BMI:** Web-based intervention delivered after Fall semester begins
- Binge-drinkers → **WEB-BASED BMI BOOSTERS**

**Txt Sequence C**
- **EARLY BMI:** Web-based intervention delivered prior to the Fall semester
- Non Binge-drinkers → **WATCHFUL WAITING**

**Txt Sequence F**
- **DELAYED BMI:** Web-based intervention delivered after Fall semester begins
- Non Binge-drinkers → **WATCHFUL WAITING**