

# Supplemental Information for “Screening and Brief Advice for Teen Substance Use”

## SITE AND PROVIDER CHARACTERISTICS

New England sites included a rural pediatric group practice, 2 rural family practices, an urban hospital-based pediatric practice, an urban hospital-based adolescent clinic, a hospital-based family practice, a large health maintenance organization–type group practice, and 2 school-based health centers located in high schools. These sites serve youth from diverse racial/ethnic groups and socioeconomic strata, and reflect the spectrum of practice types and locations where US adolescents receive routine health care. Baseline rates for self-reported past-90-days substance use (any) ranged across US sites from a high of 51% in a school-based health center to a low of 10% in a pediatric group practice. Prague sites were solo pediatric offices located in large apartment buildings outside the city center, and baseline past-90-days substance use rates ranged from 40% to 52% across sites. Of the 156 providers in the New England study, 68% were women, 42% were staff physicians, 50% were residents, and 8% were nurse practitioners or physician assistants. In the Prague study, 9 of the 10 pediatricians were women. All analyses adjusted for the site cluster-sampling design, and controlled for provider gender and type.

## PROVIDER BRIEF ADVICE PROMPTS

For low-risk patients (no substance use), we prompted providers to give praise and encouragement for nonuse,

advice not to start using alcohol and/or drugs, and to briefly address the health effects of substance use. For moderate-risk adolescents (substance use or positive CAR question, but CRAFFT score  $<2$ ), we prompted providers to advise them to stop using alcohol/drugs, and to briefly address substance-related health risks. For high-risk adolescents (CRAFFT  $\geq 2$ ), we prompted providers to further assess the patient's substance use, advise patients to stop using completely, briefly address health risks, and arrange a follow-up visit.

## MISSING AND LATE RESPONSES

In the New England sample, those with missing data at the 3-month follow-up visit (no assessment or late assessment) tended to be older than those retained (mean age 15.8 vs 15.6,  $F$ -statistic = 10.4,  $P < .01$ ), and were less likely to be white non-Hispanic (54% vs 68%,  $\chi^2$  [df = 1] = 41.9,  $P < .01$ ) or having a well visit (85% vs 89%,  $\chi^2$  [df = 1] = 8.8,  $P < .01$ ), and more likely to come from a single-parent household (38% vs 28%,  $\chi^2$  [df = 1] = 181,  $P < .01$ ), to have ever used alcohol (42% vs 36%,  $\chi^2$  [df = 1] = 5.5,  $P < .01$ ) or cannabis (28% vs 20%,  $\chi^2$  [df = 1] = 19.4,  $P < .01$ ), and to report having a substance-using parent (19% vs 14%;  $\chi^2$  [df = 1] = 7.4,  $P < .01$ ). These same differences between New England completers and noncompleters were found at the 12-month follow-up visit, with the addition of higher rates of sibling substance use among those missing data compared with those retained at 12 months (24% vs

17%,  $\chi^2$  [df = 1] = 14.5,  $P < .01$ ). The TAU and cSBA group attrition rates, and the profiles of noncompleters, did not differ at either follow-up. A demographic comparison of those with assessments at follow-up in the TAU and cSBA groups found differences similar to those found at baseline (see Table 1).

In Prague, retention at 3 months was lower in the TAU group compared with cSBA (83% vs 93%,  $\chi^2$  [df = 1] = 14.4,  $P < .01$ ), but was similar between groups at 12 months (90% vs 91%). Those with missing data at 3 months had a lower rate of any lifetime alcohol use compared with those retained (53% vs 66%,  $\chi^2$  [df = 1] = 5.0,  $P = .03$ ), whereas those with missing data at 12 months had a higher rate of lifetime cannabis use (39% vs 20%,  $\chi^2$  [df = 1] = 11.2,  $P < .001$ ). No differences were found between study groups in the profiles of noncompleters or completers.

## MISSING DATA IMPUTATION METHOD

For the New England study, 85.2% of the 1779 3-month assessments were obtained within the a priori time limit of 5 months, and 90.9% of the 1699 1-year assessments were within the 18-month limit. Analyses using these additional late data resulted in the same or larger adjusted effect size for all primary outcomes in Table 3. We developed predictive logistic multivariable regression models for all of our primary substance use outcome variables using as predictors all available baseline

demographic and substance use characteristics, including age, gender, race/ethnicity, parent education, number of parents in the home, past-12-month substance use, peer/sibling/family substance use, and so forth.

We determined optimal probability cut points for the predictive models using receiver operating characteristic curves. We imputed these model-based predicted responses for all missing data while retaining late responses where

available. The aRRRs generated from these imputed analyses were the same or larger for all primary outcomes, so we chose to report the more conservative nonimputed effects and CIs.