Implementation and Sustainability of SBIRT in SAMHSA Grantees: Shaping the Cross-site Evaluation of SAMHSA’s Third Cohort of Grantees

Jeremy Bray, PhD
RTI International
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  - Erin Mallonee
  - Georgia Karuntzos
  - Alex Cowell
  - Carolina Barbosa
  - Martijn van Hasselt
  - Amy Hernandez
  - Dave Kaiser
  - Vince Keyes
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CSAT’s SBIRT Programs

- **12 campus-based programs at colleges and universities**
  - Combat underage drinking and promote innovative SBIRT practices in the context of student health care

- **17 medical residency cooperative agreements**
  - Promote the adoption of SBIRT among primary care and specialty medical residents

- **24 state/territory/tribal organization grantees**
  - 4 cohorts of grantees
  - Expand grantees’ continuum of substance abuse care to medical and other community settings
SBIRT Cross-site Evaluation

- Previous cross-site evaluated the first cohort of CSAT state/tribal SBIRT grantees
- Current cross-site is evaluating the third cohort of state/tribal SBIRT grantees
- Examine the implementation of various SBIRT models, the outcomes of patients who receive SBIRT services, the economic impact and costs associated with SBIRT implementation, and the public health and systems of care impacts of the SBIRT initiative
- Comprehensive multimethod approach
Cross-site Evaluation Logic Model
Logic Model: Process Evaluation

Grantee Antecedent Variables (3, 4)
Provider Antecedent Variables (8, 9)
Patient Antecedent Variables (11)
Intervening Variables (11, 12)
Program Theory/Goals (1)
Program Elements/Components (1)
Delivery Sites (5, 6, 7)
Program Outputs & Performance Site Outcomes (2, 10)
Proximal Patient Outcomes
Distal Patient Outcomes
Proximal Grantee Outcomes
Distal Grantee Outcomes
System and Public Health Impacts

Target Population (10)
Resources Utilized
Cost-Effectiveness/Net Social Benefit

Program Elements/Components (1)
Logic Model: Outcome Evaluation

- Grantee Antecedent Variables
- Provider Antecedent Variables
- Patient Antecedent Variables
- Program Elements/Components
- Delivery Sites (28)
- Program Outputs & Performance Site Outcomes (14)
- Proximal Grantee Outcomes (13)
- Proximal Patient Outcomes (15, 16)
- Distal Grantee Outcomes
- Distal Patient Outcomes
- Intervening Variables (27)
- Proximal Patient Outcomes (15, 16)
- Distal Patient Outcomes
- System and Public Health Impacts (28)
- Target Population
- Resources Utilized
- Cost-Effectiveness/Net Social Benefit
- Program Theory/Goals

RTI International
Logic Model: Economic Evaluation

- Program Theory/Goals
  - Target Population
  - Program Elements/Components
- Delivery Sites
- Program Outputs & Performance Site Outcomes (20)
- Proximal Grantee Outcomes
- Distal Grantee Outcomes (18, 20)
- Proximal Patient Outcomes
- Distal Patient Outcomes (21)
- Intervening Variables (27)
- Cost-Effectiveness/Net Social Benefit (26, 27)
- System and Public Health Impacts

- Grantee Antecedent Variables
- Provider Antecedent Variables
- Patient Antecedent Variables
- Resources Utilized (17, 19)
Challenges Facing the Cross-site Evaluation

- Implications of SBIRT model migration for conceptualizing and investigating sustainability
  - What implementation models “work”?  
  - How does screening for multiple risk factors affect the operation of SBIRT programs focused on substance use?  
  - How is model migration best examined and understood?

- Developing an observational methodology for assessing evidence-based practices (EBP) in real-world medical settings
  - What are the challenges for evaluating adherence to EBP in real-world settings? How might these challenges be overcome?  
  - What are the most efficient methods for measuring fidelity or adherence to evidence-based guidelines in medical settings?
Challenges Facing the Cross-site Evaluation

- Implications of integrating mental health (MH) into SBIRT service delivery
  - How do MH variables (and other psychosocial factors) influence with SBIRT implementation and service delivery?
  - What are the implications of MH and substance abuse co-morbidity on SBIRT efficacy?
  - How do MH variables relate to health and other psychosocial outcomes?

- Economic considerations relevant to SBIRT sustainability
  - In thinking about cost-effectiveness, in which health care setting is SBIRT likely to be most effective and why?
  - In which health care setting is SBIRT likely to be the least costly and why?
  - What is the likely impact of U.S. health care reform on SBIRT sustainability?
Implications of SBIRT Model Migration for Conceptualizing and Investigating Sustainability

Frances K. Del Boca, PhD, Janice Vendetti, MPH, Bonnie McRee, PhD
University of Connecticut School of Medicine & Health Care
Manu Singh, PhD, JBS International
Conceptualizing SAMHSA Cohort 1 Programs: The Model Matrix

- Service Delivery
- Screening
- Brief Intervention
- Brief Treatment
- Referral to Treatment
- Hospital
- Emergency/Trauma
- Primary Care/Community Health Center

- Implementation Model
- In-house Generalist
- Contracted Specialist

- Settings

* Alcohol Use
* Drug Use
* Tobacco Use
* ATOD Use
* ATOD Use +
SAMHSA SBIRT Implementation Challenges

• Start-up phase is short for grant recipients
• Funding is contingent on achieving service delivery targets
• Generalist staff resist providing SBIRT services
• Specialist substance abuse services are needed for high-risk participants
• Relationships with specialty treatment programs are generally not well established
Migration of SAMHSA Cohort 1 Programs: Precursors to Cohort 3

**Migration from early service delivery models**

- Full-length screening assessments → Shorter prescreen assessments
- “Traditional” SA treatment delivery → On-site delivery especially for BT
- Alcohol and drug risk factors → Tobacco, co-morbid psychiatric disorders, other health risk factors

**Migration from initial settings**

- Clinic settings → Hospital/ER settings

**Migration from early implementation models**

- “In-house generalist” models → “Contracted” service provision
Re-conceptualizing the Model Matrix

- The continuum of services has expanded
- Screening involves a broader range of risk factors
- BI and BT
  - Are variable across grantee programs
  - Have become blurred in some programs
  - Tend to serve multiple functions
- Implementation models have become more complicated:
  - Service delivery approaches may vary within grantee programs
  - Screen-positive SBIRT participants receive multiple service components, often from different providers and in different settings
  - “Generalist” and “Specialist” categories each comprise different practitioner types that may affect service delivery and patient outcomes
- Service delivery venues are typically structured hierarchically and vary in terms of multiple attributes (e.g., size, location, patient flow, patient population characteristics)
Evaluating Cohort 3 Implementation Models

- Increased assessment at performance site and SBIRT practitioner levels of analysis
- Multiple methods
  - Interviews (increased number and type of respondents)
  - Practitioner Survey (expanded)
  - Performance Site Checklist (new)
  - Structured observations of service delivery (e.g., adherence)
  - Attention to documenting program evolution over time
- Model matrix components as predictors of program performance and moderators of patient outcomes
New Implementation Challenges

• Prescreening
  - Evidence-based practice?
  - Quality assurance issues
  - Sensitivity and specificity concerns, especially false negatives

• Implementation models
  - Hybrid models: Who does what?
  - Communication and coordination across providers and facilities
  - Service integration, continuity of care, and efficiency of delivery
  - Patient tracking
New Implementation Challenges

• Multiple risk factors
  - Defining the continuum of risk
  - Evidence-based service components?
  - Brief (?) intervention
  - Intervention/Treatment issues
    • What (e.g., behavior change vs. treatment of underlying “condition”)
    • Where?
    • When (e.g., sequential vs. simultaneous)?
    • How? (e.g., behavioral therapies, pharmacological treatments)
New Program Evaluation Challenges

- Guiding conceptual frameworks
- Program dismantling vs. aggregation
- Metrics for evaluating program performance
- Capturing model migration over time
- Linking implementation barriers to programmatic decision making and change
- Criteria for defining sustainability
  - Program components
  - Economic viability
  - Networks of care
Discussion Questions

• Which implementation models “work”?
  - What combinations of services and providers are optimal for SBIRT delivery?
  - How sustainable are various implementation models?
  - Do some implementation models work better in some settings than in others?

• How does screening for multiple risk factors affect the operation of SBIRT programs focused on substance use?

• How is model migration best examined and understood?
Assessing EBPs in Medical Settings: The Development of an Observational Methodology for SBIRT

Bonnie McRee, PhD, Janice Vendetti, MPH, Frances Del Boca, PhD

University of Connecticut Health Center
Department of Community Medicine and Health Care
mcree@up.uchc.edu
Screening and Brief Intervention (SBI): Decades of Research in Medical Settings

• EBP refers to the preferential use of health interventions for which systematic empirical research has provided evidence of statistically significant effectiveness as treatments for specific problems
  - Evidence that SBI is effective with at-risk drinkers in general medical settings
  - SBI is an effective component of smoking cessation initiatives
  - Accumulating evidence that SBI can be used effectively to curb illicit drug use
Methodological Challenges for Systematically Measuring Adherence to EBP in Cohort 1

- Variability in grantee protocols
- Need for observational assessment to occur in real time
- Systematic sampling observations
- Reactivity
- Ethical considerations
- Proficiency (sufficiency) vs. level of skillfulness
Measuring Adherence to SBIRT Protocols in Cohort 1

Two-stage process

• Are selected instruments and procedures “evidence-based”?
  - Assessed by evaluating SBIRT materials and protocols

• Performed direct observation of performance sites
  - Conducted by core set of experienced evaluation team members
  - Convenience sample of performance sites
  - Used tailored forms with a heavy reliance on answers to open-ended questions
  - Post hoc evaluation
Adherence Findings from Cohort 1

• Across grantees, staff reported using evidence-based screening tools and intervention approaches; however, protocol deviations were found
  - Some codified in grantee protocols
  - Others noted during observation of provider-patient interactions

• Adherence to EBPs was stronger at sites where structured training protocols, routine performance monitoring, and feedback loops were incorporated
Evaluating Cohort 3

- Developed an observational component to more systematically assess, in real time, adherence to EBPs.
- Observations to be made at each performance site within grantee.
- Will require the need for more trained evaluation staff to visit multiple sites.
- Includes the use of observation forms that are highly structured and tailored to program protocols for screening, brief intervention, brief treatment, and referral to treatment.
## Brief Intervention Adherence Form

<table>
<thead>
<tr>
<th>Brief Intervention Components</th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>NA</th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishes rapport and introduces the session</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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</tr>
<tr>
<td>Asks to show the patient the screening scores</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviews screening scores w/ the patient</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helps patient identify target substance(s)</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Describes the risk levels associated with the scores, and their meaning</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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</tr>
<tr>
<td>Reviews the risks associated with substance use: health, legal, financial, social, etc.</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Reviews standard drinking guidelines and sensible drinking limits</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<td></td>
</tr>
<tr>
<td>Promotes personal responsibility/choice</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td></td>
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</tr>
<tr>
<td>Provides advice related to limits of consumption: maintain, reduce, abstain</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Provides a menu of change options</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Reinforces low-risk drinking and/or drug use, if applicable</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Utilizes importance/readiness/confidence rulers, decisional balance, pros/cons</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Helps patient set goals/develop a plan of action</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Provides take-home/resource materials</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐</td>
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</tbody>
</table>

### Comments
Observation Protocol Training for Evaluation Staff

• Conducted a 2-day training exercise for 20 evaluation staff members
• Included didactic, role-play, video- and audio-taped activities designed to enhance the reliability and validity of collecting adherence observations
• Coding for each trainee was compared with “gold standard” codes for each item within the screening and intervention components of the observation form
• Continue with periodic recalibration training activities
Questions for Discussion

1. What are the challenges for evaluating adherence to evidence-based practice (EBP) in real-world settings? How might these challenges be overcome?

2. What are the most efficient methods for measuring fidelity or adherence to evidence-based guidelines in medical settings?
Implications of Integrating Mental Health into SBIRT Service Delivery

Manu Singh, PhD
JBS International, Inc.
Arnie Aldridge, MS
Georgia Karuntzos, PhD
RTI International, Inc.
Overview

• Background
• SBIRT cross-site Cohort 1 evaluation findings
• SBIRT Cohort 3 grantee profiles
• Discussion
## Prevalence of Risky Alcohol Use and Mental Health (MH) Problems by Health Care Use in the US (Past 12 Months)
Weighted Estimates from NSDUH 2008–2009

<table>
<thead>
<tr>
<th>Alcohol Risk Category</th>
<th>General % in Risk Category</th>
<th>General % in Risk Category w/ MH Problems</th>
<th>Inpatient % in Risk Category</th>
<th>Inpatient % in Risk Category w/ MH Problems</th>
<th>Emergency Department % in Risk Category</th>
<th>Emergency Department % in Risk Category w/ MH Problems</th>
<th>MH Outpatient % in Risk Category</th>
<th>MH Outpatient % in Risk Category w/ MH Problems</th>
<th>MH Prescription % in Risk Category</th>
<th>MH Prescription % in Risk Category w/ MH Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Alc. Use</td>
<td>20.8</td>
<td>2.2</td>
<td>16.2</td>
<td>3.5</td>
<td>20.1</td>
<td>3.3</td>
<td>16.0</td>
<td>7.5</td>
<td>13.2</td>
<td>6.3</td>
</tr>
<tr>
<td>DSM-IV Alcohol Abuse</td>
<td>4.0</td>
<td>0.9</td>
<td>2.3</td>
<td>0.7</td>
<td>4.5</td>
<td>1.2</td>
<td>4.8</td>
<td>2.5</td>
<td>2.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Haz. Alc OR Abuse</td>
<td>24.8</td>
<td>3.1</td>
<td>18.5</td>
<td>4.2</td>
<td>24.6</td>
<td>4.5</td>
<td>20.8</td>
<td>10.0</td>
<td>15.4</td>
<td>8.5</td>
</tr>
<tr>
<td>DSM-IV Alc. Dependence</td>
<td>3.7</td>
<td>1.3</td>
<td>3.4</td>
<td>1.8</td>
<td>4.6</td>
<td>2.4</td>
<td>7.6</td>
<td>5.5</td>
<td>11.5</td>
<td>5.1</td>
</tr>
<tr>
<td>MH Problems Only</td>
<td>—</td>
<td>8.6</td>
<td>—</td>
<td>14.2</td>
<td>—</td>
<td>12.2</td>
<td>—</td>
<td>36.3</td>
<td>—</td>
<td>31.6</td>
</tr>
</tbody>
</table>
Screening and Brief Therapy for Mental Health Disorders

- U.S. Preventative Services Task Force recommendation for depression screening
- Subclinical disorders and moderate depression (Alexander, 2011; McNaughton, 2009)
- Depression relapse prevention (Howell, 2009)
- Stress and distress (Klerman, 1997)
SBIRT Cohort 1 Findings Related to MH

- Health outcomes (pre-post) associated with SBIRT included significant decreases in the severity of depression symptoms (PHQ-8).
- Moderators of SBIRT 1 treatment effectiveness included:
  - the patient having more severe depression symptoms (associated with increased effectiveness of SBIRT 1), and
  - the patient being employed (associated with decreased effectiveness of SBIRT 1)
SBIRT Cohort 1 Findings Related to MH

• During a sustainability sub-study of Cohort 1, results indicated that several grantees incorporated mental health (MH) screening and brief interventions with substance abuse to facilitate sustainability.

• Grantees reported that SBIRT providers were able to integrate SBIRT into a broader continuum of care and perceived to the medical treatment teams as adding value.
SBIRT Cohort 3 Grantee Profiles

• Georgia

Locations served
• Atlanta and Macon

Settings
• 2 large metropolitan private hospitals (emergency centers, inpatient units, family health centers, psychiatric department)

Mental Health Screens Used
• Gain SS
• Full GPRA screen sample

• West Virginia

Locations served
• Charleston, Morgantown, Beckley, Huntington, Parkersburg

Settings
• 5 hospital emergency departments, 1 Level 1 trauma center, 1 free service clinic, 22 primary care centers, 16 school-based sites, 6 MH centers, 2 behavioral health centers, 2 workforce development sites

Mental Health Screens Used
• MH question included in prescreen
• PHQ-9
• Full GPRA screen sample
SBIRT Cohort 3 Grantee Profiles

- Missouri

Locations served
- Springfield, Columbia, St. Louis

Settings
- 1 large private hospital (ED), 1 university hospital (ED, psychiatric center, family health center), 5 primary care centers

Mental Health Screens Used
- Mental Health Screening Form III (MHSF)
- Substance Abuse and Mental Illness Symptoms Screener (SAMISS)
- Full GPRA screen sample

- TCC

Locations served
- Fairbanks, Galena, and Tok (tribal villages)

Settings
- 1 Indian Health Services primary care clinic (family care and triage services), 2 village clinics

Mental Health Screens Used
- Kessler 6
- Full GPRA screen sample
SBIRT Cohort 3 MH Screening

• Data collected during Jan ’09–August ’11
• 45.5% of patients who receive a full substance use screen also received an MH screen (N = 146,033)
• 16.9% of patients recommended to BI, BT, or RT also screen positive for MH risk (N = 26,562)
• Patients using cocaine, meth, or >1 illicit drug in the past 30 days were less likely to receive an MH screen but were more likely to screen positive
• Binge drinking and opiate use (past 30 days) were not associated with receiving an MH screen but were significantly associated with screening positive
Discussion

- How do MH variables (and other psychosocial factors) influence SBIRT implementation and service delivery?
  - What are the implications of MH and substance abuse co-morbidity on SBIRT efficacy?
  - How do MH variables relate to health and other psychosocial outcomes?
SBIRT Economic Evaluation

Carolina Barbosa, PhD
Bill Dowd, BS
Alex Cowell, PhD
SBIRT Cost-Effectiveness Analysis

Cohort 1 cross-site evaluation and literature

What do we know?

- SBIRT social costs
- Cost of SBIRT
- SBIRT impact on patient outcomes
- SBI is potentially cost-effective in the primary care setting
- High uncertainty of cost-effectiveness for hospital and emergency care setting (Latimer et al., 2009)

What do we not know?

- The trade-off between costs and outcomes
- Long-run implications of social costs and patient outcomes
- How SBIRT compares with SBI
- How SBIRT varies by setting
Cost-Effectiveness Analysis (CEA)

- **Research questions**
  - What is the short-term and long-term cost-effectiveness of SBIRT by setting?
  - How does SBIRT compare with other SBI interventions?

- **Short-term analysis**
  - Compares costs and outcomes over 6 months
  - Conducts comparative effectiveness and cost-effectiveness of SBIRT by setting
  - Uses decision tree approach

- **Long-term analysis**
  - Extends analysis to lifetime perspective
  - Compares SBIRT cost-effectiveness with that of other SBI
  - Uses Markov approach
Short-Term CEA of SBIRT Using Decision Tree Model
Long-Term CEA of SBIRT Using Markov Model

States utilities variables: $uA1$, utility of Abstinent 1; $uA2$, utility of Abstinent 2; $uS1$, utility of Safe 1; $uS2$, utility of Safe 2; $uH$, utility of Hazardous/ Harmful

States costs variables: $cA1$, cost of Abstinent 1; $cA2$, cost of Abstinent 2; $cS1$, cost of Safe 1; $cS2$, cost of Safe 2; $cH$, cost of Hazardous/ Harmful

States represented by the ovals and transitions between the states represented by the arrows
SBIRT Financial Sustainability Simulation

Cohort 1 cross-site evaluation and literature

What do we know?
- Costs and revenues for the average patient
- Patient capacity per practitioner
- For 7 sites, SBIRT program can be sustained using fee-for-service funding under certain circumstances

What do we not know?
- Whether previous results translate to new model matrix and other sites
- How previous results would be affected by
  - variations in patient flow over time, and
  - variation in duration of service delivery
Financial Sustainability Simulation

- Research questions
  - Under what circumstances can SBIRT be sustained with the prevailing system of insurance?

- Approach: discrete event simulation model
  - Similar to—but not the same as—Markov model presented above

- Features of SBIRT to be included
  - Window for patient interaction is inconsistent and limited
  - Engaged patients may return at a later time for additional services
  - Practitioners may balance SBIRT service delivery and other responsibilities
Model Outputs

- Number of each service (S, BI, BT, RT) that is
  - Screened or assessed as being needed
  - Delivered
  - Missed opportunities and slack
    - difference between number delivered and needed
  - Revenue and costs
- How practitioners spend time on SBIRT vs. other activities
- Hypothetical example of result
  - Outpatient clinic with 3 generalists and 1 specialist is financially sustainable
    - serving 10,000 patients per year
    - providing an average of 90% of SBIRT services to those patients needing them
Discussion

- For the CEA, which setting do you think would be
  - the most effective and why?
  - the least costly and why?

- Health care reform and the financing simulation
  - Expands third-party coverage
  - But there are still provider budget constraints!
  - What do you think will be the impact on SBIRT sustainability in the United States?