Impact of Addiction on Diseases and Services

Jack B. Stein, MSW, Ph.D.
Director
Division of Services Improvement
Center for Substance Abuse Treatment
Substance Abuse and Mental Health Services Administration

4 TC Collaboration Meeting
New Orleans, LA
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Today’s Agenda

- Addiction as a Public Health Problem
- National Trends in Substance Use
- Science of Addiction
- Principles of Addiction Treatment
- Toward a Recovery Paradigm
- Cross-System Collaborations
Addiction as a Public Health Problem
The economic cost to society from alcohol and drug abuse was an estimated $246 billion in 1995.

Alcohol abuse and alcoholism cost = $166.5 billion.

Drug abuse and dependence cost = $109.8 billion.

Costs incurred on:
- Health Care
- Premature Death
- Impaired Productivity
- Motor Vehicle Crashes
- Crime
- Social Welfare
Greater Burden on Public Sector

1986 All SA = $9.3B
Public = $4.6 B
Private = $4.6 B

2003 All SA = $20.7 B
Public = $16.0 B
Private = $4.7 B

Source: Health Affairs, July-August 2007
Greater Burden on General Medical Care System

• Medical conditions were found to be more common among substance abuse patients compared to non-substance abuse patients (Mertens et al., 2003).

• Substance dependent persons without primary medical care have a substantial burden of medical illness compared to age/gender matched US population controls (De Alba et al., 2004).
Health Consequences of Substance Use

HIV/AIDS
Cardiovascular
Respiratory
Gastro-Intestinal
Kidney
Liver
Musculoskeletal
Prenatal
<table>
<thead>
<tr>
<th>Substance</th>
<th>HIV</th>
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<th>Resp</th>
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</table>
Drugs and HIV: Dangerous Liaisons

- Approximately 13% of the reported new AIDS cases were related to injection drug use (2006).
- 19% of males and 32% of females living with AIDS were exposed through injection drug use.
- Cocaine may foster development of HIV-associated dementia by increasing viral expression in the brain (Gekker, et al., 2004).
- Methamphetamine and HIV infection in combination are associated with deleterious cognitive effects (Rippeth, et al., 2004).
Prenatal marijuana exposure is associated with lower academic achievement at age 10 (Goldschmidt et al., 2004).

4 year old children exposed to cocaine in utero scored significantly lower on intelligence tests, although childrearing environments may be able to counter these deficits (Singer et al., 2004).

Maternal cocaine use during pregnancy is associated with decreased birth weight and head size (Shankaran et al., 2004).
National Trends in Substance Use
Past Month Alcohol Use - 2006

- **Any Use:** 51% (125 million)
- **Binge Use:** 23% (57 million)
- **Heavy Use:** 7% (17 million)

(Current, Binge, and Heavy Use estimates are similar to those in 2002, 2003, 2004, and 2005)

Source: NSDUH 2006
Alcohol Dependence or Abuse in Past Year Among Persons Aged 12 or Older

Source: Annual Averages Based on 2005-2006 NSDUHs
Drug Use Among the General Population by Age (2006)

Non-Medical use of Pain Relievers in Past Year Among Persons aged 12 or Older

Source: Annual Averages Based on 2005-2006 NSDUH
The Science of Addiction
this is your brain on drugs.
The Brain on Drugs

YELLOW shows places in brain where cocaine goes (Striatum)
For Example…

We Know That Despite Their Many Differences, Virtually All Abused Substances Enhance the Dopamine Pleasure Pathway
Natural Rewards Elevate Dopamine Levels

**FOOD**

- NAc shell
- Time (min)
- % of Basal DA Output
- Empty Box Feeding

Source: Di Chiara et al.

**SEX**

- DA Concentration (% Baseline)
- Copulation Frequency
- Sample Number
- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
- Sex Female 1 Present Female 2 Present

Source: Fiorino and Phillips
Effects of Drugs on Dopamine Levels

**AMPHETAMINE**

- DA
- DOPAC
- HVA

% of Basal Release

Time After Amphetamine

**COCAINE**

- DA
- DOPAC
- HVA

% of Basal Release

Time After Cocaine

**NICOTINE**

- Accumbens
- Caudate

% of Basal Release

Time After Nicotine

**ETHANOL**

- 0.25 g/kg ip
- 0.5 g/kg ip
- 1 g/kg ip
- 2.5 g/kg ip

% of Basal Release

Time After Ethanol

Source: Di Chiara and Imperato
Activation of the reward pathway by addictive drugs

- Alcohol
- Cocaine
- Heroin
- Nicotine
Vulnerability

Why do some people become addicted while others do not?
Biological and Environmental Interaction

Biology/Genes → Biology/Environment Interaction → Environment → DRUG → Abuse and Addiction
Drug Abuse

Risk and Protective Factors
Drug Abuse

Drug/Alcohol Related Traffic Accidents

Sexually Transmitted Diseases (Including HIV/AIDS)

Suicidal Behavior

Unwanted Pregnancies

Running Away From Home

Delinquency

Academic Failure and Dropping Out of School

Juvenile Depression

Risk and Protective Factors
What Happens After Persistent or Repeated Drug Use?
Principles of Addiction Treatment
Drug Abuse Treatment Outcome Studies

DATOS

1991-93
11 Cities
96 Programs
~10,000 Patients
All treatment types
Follow-up: 1 & 5 Yrs
Is Treatment Effective?

- Reduces drug use by 40-60%
- Reduces crime by 40-60%
- Increases employment prospects by 40%
Treatment Effectiveness

Outpatient Drug-Free Treatment Programs

- Cocaine (Weekly)*: 42% Pre, 18% Post
- Marijuana (Weekly)*: 25% Pre, 9% Post
- Heavy Alcohol*: 31% Pre, 15% Post
- Illegal Activity*: 22% Pre, 14% Post
- No FT Work*: 82% Pre, 76% Post
- Suicidal Ideation*: 19% Pre, 11% Post

% of DATOS Sample (N=764)

Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997

*p<.001
Legal Pressure and 90-Day Retention Rates

Three Programs (with % of Caseload CJ Supervised)

- Program A (42%)
- Program B (69%)
- Program C (88%)

% Retained 90 Days

Low Pressure
Moderate-to-High Pressure

Source: Hiller, et al., Legal Pressure and Treatment Retention in DATOS (ASC Meeting, San Diego, Nov 1997)
Amount of Services Matters
The Delaware Therapeutic Continuum Assessment

(18 month follow-up)

Drug Use*

Arrests**

* Used drugs one or more times during the last 18 months
** One or more new arrests and/or probation violations during the last 18 months

Length of Stay Matters

Long Term Residential Setting

- Cocaine (Any Use)*: 55% in < 90 Days, 28% in 90+ Days
- UA+ (Any Drug)*: 53% in < 90 Days, 19% in 90+ Days
- Alcohol (Daily Use)*: 15% in < 90 Days, 9% in 90+ Days
- Any Jail*: 54% in < 90 Days, 24% in 90+ Days

% of Sample

N=342; Simpson, Joe, & Brown, 1997, PAB

*p<.001
We Have A Variety Of Effective Treatment Options In The Clinical Toolbox

Behavioral and Pharmacological Therapies
Behavioral Approaches to Drug Treatment

• Behavioral therapy continues to constitute bulk of U.S. treatment
• Behavioral therapy remains the sole available treatment for most classes of drug addiction
• No pharmacotherapies exist for cocaine, marijuana, hallucinogens, amphetamines, inhalants, and sedatives
Evidence-Based Behavioral Treatments

- Behavioral Treatments for MJ Abuse
- Behavioral Treatments for Smoking Cessation
- Cognitive-Behavioral Treatment*
- Combined Pharmacotherapies and Behavioral Therapies
- Complementary and Alternative Treatments
- Multisystemic Therapy
- Contingency Management Treatments*
- Dialectical Behavioral Therapy
- Drug Counseling
- Family Treatments
- Group Behavior Therapy
- HIV Risk Reduction
- Motivational Interviewing/Enhancement*
- Seeking Safety (PTSD)
- Work Therapy
Drug Courts: An Innovative Approach

- Reduced re-arrest rates of up to 14% compared to non-participants (Guydish, et al, 2001).

- Odds of staying in treatment for 6 months or more were nearly 3 times greater for clients referred from the most coercive drug court programs (Young & Belenko, 2002).
Pharmacotherapy

Alcohol:
- Naltrexone
- Disulfiram (antabuse)
- Acamprosate (newly approved)

Opiates:
- Methadone (agonist)
- Naltrexone (antagonist)
- Clonidine (non-opioid agonist)
- Buprenorphine
Toward a Recovery Paradigm:

Implications for Service Delivery
What Do We Mean by “Recovery”?

Recovery from alcohol and drug problems is a **process of change** through which an individual achieves abstinence and improved health, wellness, and quality of life.

Source: CSAT National Summit on Recovery, 2005
Recovery-Based Service Systems

Services that attend to long-term recovery shift the question from "How do we get the client into treatment?" to "How do we support the process of recovery within the person’s environment?"
Benefits of a Recovery-Based Approach

• Most clients undergo 3 to 4 episodes of care before reaching a stable state of abstinence.¹

• Chronic care approaches, including self-management, family supports, and integrated services, improve recovery outcomes.²

• Integrated and collaborative care has been shown to optimize recovery outcomes and improve cost-effectiveness.³

¹ Dennis, Scott & Funk, 2003
² Lorig et al, 2001; Jason, Davis, Ferrari, & Bishop; 2001; Weisner et al, 2001; Friedmann et al, 2001
³ Smith, Meyers, & Miller, 2001; Humphreys & Moos, 2001)
A Traditional Course of Treatment for a Substance Use Disorder

Time

Symptoms

Person’s Entry into treatment

Severe

Remission

Discharge

Resource: Tom Kirk, Ph.D
A Traditional Service Response

Severe

Symptoms

Remission

Acute symptoms
Discontinuous treatment
Crisis management

Resource: Tom Kirk, Ph.D
A Recovery-Oriented Response

Severe

Continuous treatment response

Promote Self Care, Rehabilitation

Resource: Tom Kirk, Ph.D
Helping People Move Into A Recovery Zone

Symptoms

Severe

Remission

Improved client outcomes

Time

Recovery Zone

Resource: Tom Kirk, Ph.D
Components of a Recovery-Based Care System
Recovery-Based Care System: 
*Person-centered and self-directed*
Recovery-Based Care System:
Comprehensive menu of services and supports recovery

- Family/Child Care
- Education
- Housing/Transportation
- Spiritual
- Financial
- Legal
- Alcohol/Drug Services
- Vocational
- PTSD & Mental Health
- Physical Health Care
- HIV Services
- VSO & Peer Support
- Case Mgt

Recovery

Services & Supports

Wellness

Health
Recovery-Based Care System:
Interface of multiple systems

Systems of Care

Services & Supports

Individual Family Community

Recovery

Wellness

Health

Addiction Services System

Mental Health System

Primary Care System

Vocational Services

Indian Health Services

Faith Community

Housing System

Social Services

Child Welfare and Family Services

Family/Child Care

Educational

Housing/Transportation

Spiritual

Financial

Legal

VSO & Peer Support

Case Mgt

HIV Services

Health Care

PTSD & Mental Health

Vocational

DoD & Veterans Affairs

Health Insurance

Criminal Justice System

Faith Community Health Wellness Services & Supports

Spiritual Addiction Services System

Mental Health System

Primary Care System

Vocational Services

Indian Health Services

Faith Community

Housing System

Social Services

Child Welfare and Family Services

Family/Child Care

Educational

Housing/Transportation

Spiritual

Financial

Legal

VSO & Peer Support

Case Mgt

HIV Services

Health Care

PTSD & Mental Health

Vocational
Recovery-Based Care System: Outcomes-driven approaches to care
Recovery-Based Care System:
Ongoing process of systems improvement
The Treatment Gap: Most People in Need of Treatment Do Not Receive It

21.1 Million Needing But Not Receiving Treatment for Illicit Drug or Alcohol Use

- Did Not Feel They Needed Treatment (20,114,000) 95.5%
- Felt They Needed Treatment and Did Not Make an Effort (625,000) 3.0%
- Felt They Needed Treatment and Did Make an Effort (314,000) 1.5%
In 2005 there were nearly 400,000 ED visits that involved alcohol in combination with another drug.

Alcohol was most frequently combined with cocaine, marijuana, and/or heroin.

Opiate Reports in Emergency Department Visits Related to Drug Misuse/Abuse

Unweighted reports from 243-445 U.S. hospitals

* Includes single- and multi-ingredient products

Source: U.S. SAMHSA; DAWN Live! Oct 2, 2007
Traditional Substance Abuse Intervention

40% Abstainers
35% Low Risk Drinkers
20% At-Risk Drinkers
5% Alcoholics

Screening, Brief Intervention & Referral to Treatment (SBIRT)

• Embeds screening, brief intervention & treatment of substance abuse problems within primary care settings (e.g., ED, CHC, Trauma Centers).
• Identifies patients who don’t perceive a need for treatment.
• Offers a solid strategy to reduce or eliminate substance abuse.
• Helps move them into appropriate services.
SBIRT Takes Advantage of the “Teachable Moment”

A moment of educational opportunity – a time at which a person is likely to be particularly disposed to learn something or particularly responsive to being taught or made aware of something.

SPIRT Effectiveness: Alcohol Use

- A meta-analysis suggests an overall reduction of 56% in number of drinks.
- The effect size for motivational intervention of all types ranged from 0.25 to 0.57, with participants followed from 3 to 24 months.

Burke et. al., 2003
SBIRT Effectiveness: Drug Use

- Research is promising.
- Bernstein, et al. 2005: Randomized Controlled Trial (RCT)
- WHO study, 2008: Randomized Controlled Trial (RCT) in Multiple Sites Internationally
- SAMHSA SBIRT program: Program outcome data
Brief Motivational Intervention at a Clinic Reduces Cocaine and Heroin Use

6 Month Abstinence Among Those Screening Positive for At Baseline

Bernstein et al. *Drug and Alcohol Dependence* 2005
Total Illicit Substance Involvement Scores – BI and Control at Baseline and Follow-up (N=628)

WHO ASSIST Phase III Technical Report, 2008: Pooled data

(F(1,624) = 7.6, p<0.01, observed power = 78.4%, alpha=0.05)
**Cannabis Specific Substance Involvement Scores – BI and Control at Baseline and Follow-up (N=328)**

WHO ASSIST Phase III Technical Report, 2008: Pooled data

\[
F(1,326) = 4.2, \ p<0.05, \text{ observed power 53\%, alpha=0.05}
\]
Stimulant Specific Substance Involvement Scores – BI and Control at Baseline and Follow-up (N=229)

F(1,227) = 9.4, p<0.005, observed power 86%, alpha=0.05
Opioid Specific Substance Involvement Scores – BI and Control at Baseline and Follow-up (N=73)

WHO ASSIST Phase III Technical Report, 2008: Pooled data

F(1,71) = 3.4, p=0.07, observed power 45%, alpha=0.05
Program Data, Six SAMHSA SBIRT Sites, Baseline and F/U Substance Use

Among Those Screening Positive for Drugs At Baseline (N = 6,262)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Baseline</th>
<th>Follow Up</th>
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<tbody>
<tr>
<td>Alc</td>
<td>54.5</td>
<td>27.8</td>
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<tr>
<td>MJ</td>
<td>64.6</td>
<td>20.6</td>
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<tr>
<td>Coc</td>
<td>36.8</td>
<td>6.4</td>
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<tr>
<td>Meth</td>
<td>12</td>
<td>2.5</td>
</tr>
<tr>
<td>Her</td>
<td>10.1</td>
<td>2.9</td>
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<tr>
<td>Oth</td>
<td>17.7</td>
<td>4.6</td>
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P < 0.001

SAMHSA/CSAT SBIRT GPRA Data, August 2007
**SBIRT: Core Clinical Components**

- **Screening:** Very brief screening that identifies substance related problems
- **Brief Intervention:** Raises awareness of risks and motivation of client toward acknowledgement of problem
- **Brief Treatment:** Cognitive behavioral work with clients who acknowledge risks and are seeking help
- **Referral:** Referral of those with more serious addictions
Screening Brief Intervention Referral to Treatment (SBIRT) Core Components

**Screen**
Identification of substance related problems

**Brief Intervention**
Raises awareness of risks and motivates client toward acknowledgement

**Brief Treatment**
Cognitive behavioral work with clients who acknowledge risks and are seeking help

**Referral to Tx**
Referral of those with more serious addictions
SBIRT: Screening

• Quick method to identify individuals who may be at risk for developing problems

• Screening plus immediate feedback

• Screening is performed using a brief questionnaire (e.g., AUDIT, DAST, ASSIST) about the context, frequency, and amount of alcohol or other drugs used by an individual.
SBIRT: Brief Intervention

- Healthcare provider uses the results of a screening questionnaire to motivate an individual to begin to do something about his/her substance use behavior
  - Typically 1-3 sessions, not more than 5 sessions

- Low-cost, effective treatment alternative for alcohol and other drug problems
Components of Brief Interventions

1. Feedback about screening results, impairment, and risks while clarifying the findings
2. Inform patient about hazardous consumption limits and offer advice about change
3. Assess the patient's readiness to change
4. Negotiate goals and strategies for change
5. Arrange for follow-up treatment
SBIRT: Brief Treatment

- Based on moderate to high risk screening scores
- Involves motivational discussion and client empowerment
- Similar to brief intervention, but more comprehensive
- Includes assessment, education, problem solving, and building a supportive social environment
- Examples include:
  - Brief cognitive-behavioral therapy
  - Brief psychodynamic therapy
  - Brief family therapy
SBIRT: Referral to Treatment

- Use results of a screening questionnaire to refer an individual to a specialized treatment setting.

- Proactive process facilitates access to specialty treatment for individuals requiring more extensive resources than can be provided in a primary care setting.
Reimbursing for SBI in Health Care Settings

- **HCPCS Codes (Medicaid)**
  - H0049: Alcohol &/or Drug Screening ($24)
  - H0050: Brief Intervention: 15 mins. ($48)

- **CMS G-Codes (Medicare)**
  - G0396: 15-30 mins ($29.42)
  - G0397: > 30 mins ($57.69)

- **CPT Codes (Commercial Health Plans)**
  - 99408: 15-30 mins ($33.41)
  - 99409: > 30 mins ($65.51)
To date, over 600,000 patients screened
CSAT SBIRT Website

http://sbirt.samhsa.gov

- Information regarding the SBIRT Initiative, core clinical components, and screening instruments, and how to establish an SBIRT program.

- Online resources (e.g., training guides) links to curricula, organizations, publications, and references.

- SAMHSA/CSAT specific information, such as SBIRT Cooperative Agreements, grantee profiles, key CSAT SBIRT staff, meetings, training opportunities, and news.

http://sbirt.samhsa.gov
Cross-System Collaborative Opportunities
Access to Recovery (ATR)

• Presidential Initiative designed to promote client choice through:
  – the expansion of treatment capacity;
  – the implementation of a voucher system;
  – the inclusion of non-traditional substance abuse treatment providers, such as faith- and community based organizations.
2007 CSAT TCE/HIV Grantees

States with 2007 Grantees

[Map showing states with 2007 CSAT TCE/HIV Grantees]
## HIV/AIDS Outreach – TCE/HIV

### Evidences of Success

<table>
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<tr>
<th>National Outcome Measures (NOMs)</th>
<th>% at Intake</th>
<th>6-Month Follow-up (%)</th>
<th>Difference</th>
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</thead>
<tbody>
<tr>
<td>Clients reporting no substance use</td>
<td>31.9%</td>
<td>56.1%</td>
<td>Increased 75.9%</td>
</tr>
<tr>
<td>Clients reporting being employed</td>
<td>25.0%</td>
<td>37.6%</td>
<td>Increased 50.7%</td>
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<tr>
<td>Clients reporting being housed</td>
<td>33.5%</td>
<td>39.8%</td>
<td>Increased 18.8%</td>
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<tr>
<td>Clients reporting no arrests</td>
<td>84.9%</td>
<td>87.3%</td>
<td>Increased 2.9%</td>
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<tr>
<td>Clients reporting being socially connected</td>
<td>68.9%</td>
<td>73.0%</td>
<td>Increased 6.0%</td>
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## TCE/HIV and HIV Outreach Changes in Risk Behaviors

<table>
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<tr>
<th>Risk Behavior</th>
<th>% at Intake</th>
<th>6-Month Follow-up (%)</th>
<th>Difference</th>
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<tbody>
<tr>
<td>Clients reporting injection drug use</td>
<td>11.6%</td>
<td>4.4%</td>
<td><strong>Decreased 62.3%</strong></td>
</tr>
<tr>
<td>Clients reporting having unprotected sex</td>
<td>68.9%</td>
<td>61.7%</td>
<td><strong>Decreased 10.4%</strong></td>
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<tr>
<td>Clients reporting having unprotected sex with an HIV+ individual</td>
<td>5.2%</td>
<td>4.6%</td>
<td><strong>Decreased 10.1%</strong></td>
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<tr>
<td>Clients reporting having unprotected sex with an IDU</td>
<td>8.9%</td>
<td>5.8%</td>
<td><strong>Decreased 34.2%</strong></td>
</tr>
<tr>
<td>Clients reporting having unprotected sex with an individual high on some substance</td>
<td>33.6%</td>
<td>20.8%</td>
<td><strong>Decreased 38.1%</strong></td>
</tr>
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Source: SAIS data FY 2004 through 3/21/08
Incorporating SBIRT into HIV Primary Care Settings

- 1223 adult participants from 10 HIV care clinics in 3 large US cities.
- Self-reported rates of discussion of alcohol use with provider.
- 35% reported discussing alcohol use.
- Only 52% of problems drinkers reported such a discussion.

Metch et al., Drug and Alcohol Dependence, 95, 37-44
Residential Treatment for Pregnant and Postpartum Women (PPW)

- Gender and culturally specific residential treatment program for pregnant and postpartum women.
- Comprehensive services to women during pregnancy significantly improves the lives of women, children, and their families.
- Post birth services since alcohol and drug use continue to have negative consequences for women, their children, and the entire family.
Addiction can lead to significant individual and public health consequences (e.g., HIV, STDs, and other infectious diseases).

Proper attention to these consequences requires cross-system collaboration.

Workforce development programs can benefit from enhanced collaborations.