The Role of Research in Global Drug Policy

Nora D. Volkow, M.D.
Director, National Institute on Drug Abuse
National Institutes of Health
ADDICTION IS A DEVELOPMENTAL DISEASE
starts in adolescence and childhood

Age at tobacco, at alcohol and at cannabis dependence as per DSM IV

ADDICTION INVOLVES MULTIPLE FACTORS

Biology/Genes → DRUG → Addiction

Brain Mechanisms

Environment

Environment mechanisms
Dopamine D2 Receptors are Lower in Addiction

Volkow et al., 2002.


Effects of a Social Stressor on Brain DA D2 Receptors and Propensity to Administer Drugs

Individually Housed

Becomes Dominant
No longer stressed

Group Housed

Becomes Subordinate
Stress remains

Isolation Can Change Neurobiology


Social Support Is Correlated with D2/3 Receptor Binding

Changes in Attitude Lead to Changes inMarihuana Use (12th Graders)

Source: The Monitoring the Future study, the University of Michigan
Prevention Programs Work

Partial Recovery of Brain Dopamine Transporters in Methamphetamine (METH) Abuser After Protracted Abstinence

Effects of Buprenorphine Maintenance Dose on $\mu$-Opioid Receptor Availability

Opioid Urine Results for Buprenorphine and Methadone


Source: Adapted from Johnson, et al., 2000.
Future Research

Long-Acting Injectable Medications (i.e., Depot Naltrexone)

XR-NTX: Positive Phase 3 Results
Opioid Dependence

<table>
<thead>
<tr>
<th>Primary Endpoint</th>
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<tr>
<td>Rates of opioid-free urine tests</td>
<td>P=0.0002</td>
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- Placebo: N=124
- XR-NTX: N=126

Median Percent Opioid-Negative Urines

- IM Injection every 4 weeks for 24 weeks

Secondary Endpoints: XR-NTX vs. Placebo

| Improved study retention during 6-month study period | P=0.004 |
| Lower opioid craving scores | P<0.001 |
| Less incidence of relapse to physiologic opioid dependence | P=0.017 |
| Less self-reported opioid use | P=0.003 |

Krupitzky et al., unpublished
Future Research

Immunotherapies for Addiction Treatment (i.e., Vaccines)

Antibodies Can Reduce Brain Concentrations

Targeting the drugs, not the receptors
Screening and Brief Intervention in a Primary Care Setting

Percent of Participants Negative for Cocaine and Opiates
At 6 Month Follow-Up

Bernstein et al., J Addict Dis., 2005.
Delaware Work Release TC (Crest) + Aftercare
Drug-Free an Arrest-Free 3 Years After Release (N=448)

AFTERCARE is Indispensable

Drug-Free

Arrest-Free

* p < .05 from Comparison

Martin, Butzin, Saum, & Inciardi (1999), The Prison Journal
There Are Prevention Programs and Treatments for SUD But They Are Not Being Implemented Globally

- Education System’s for prevention
- Health Care System’s for prevention and treatment
- Criminal Justice System’s for treatment
SUBSTANCE ABUSE IS **PREVENTABLE**

Effectiveness of a Universal Drug Abuse Prevention Approach For Youth at High Risk For Substance Abuse Initiation

Drug Use Has Played A Major Role in HIV Transmission

Convergence of HIV Seroprevalence Among Injecting and Non-injecting Drug Users

Drug Treatment Program
(n=2121 2001-2004)

HIV Prevalence

Current Injectors: 13% CI 12-15%
Non-Injectors: 12% CI 9-16%

Respondent-Driven Sampling
(n=448 2004)

Current Injectors: 15% CI 11-19%
Non-Injectors: 17% CI 12-21%

Increased Mortality from Deferred HAART Therapy for HIV

**CD4+ of 351-500 cells/mm³**
- Early therapy: 137 deaths
- Deferred therapy: 238 deaths
  - RR = 1.69 (1.26 – 2.26) p < .001

**CD4+ of >500 cells/mm³**
- Early therapy: 113 deaths
- Deferred therapy: 198 deaths
  - RR = 1.94 (1.37 – 2.79) p < .001

Expanded Access to HAART: A Potentially Powerful Strategy to Curb the Growth of the HIV Epidemic

Number of Active HAART Participants & Number of New HIV+ Diagnoses per Year

- **New HIV-positive Diagnoses (All)**: $p = 0.003$
- **Active on HAART**: $p = 0.002$
- **New HIV-positive Diagnoses (ever IDU)**: $p = 0.954$
- **New HIV-positive Diagnoses (ever IDU)**: $p < 0.001$

January 2004

Montaner et al, CROI 2010
Screening & Brief Intervention Promoted Marijuana Abstinence & Reduced Consumption among Pediatric Emergency Department Patients

![Graph showing odds ratios for intervention vs control across stages of marijuana use and PTSD status.]  

We Need to Better Integrate Drug Abuse Screening, Prevention & Treatment into the Healthcare System