Special Topics in Addictions

The Addiction Syndrome

Division on Addictions
Cambridge Health Alliance, Harvard Medical School
What is the Division on Addictions?

- Self-funded research center at the Cambridge Health Alliance
  - Harvard Medical School faculty members
- Mission: to strengthen worldwide understanding of addiction through innovative research, education, and the global exchange of information
- Research, public outreach, education, clinical
Research

- Epidemiology (local, regional, national, international)
- Randomized clinical trials
- Secondary data analysis
- Meta-analysis
- Conceptual underpinnings of addiction

- Driving under the Influence of Intoxicants
- Natural history of addictive behavior
- Treatment/Intervention Outcomes
- Behavioral addictions
  - Gambling
Public Outreach

- The Brief Addiction Science Information Source (www.basisonline.org; The BASIS)
  - The WAGER, STASH, The DRAM, ASHES, Addiction & the Humanities
  - Self-change tools (Your First Step to Change)

- Public Events
  - Museum of Science
  - National Youth Leadership Forum

- Expressions of Addiction (www.expressionsofaddiction.com)

- Nonprofit Advising
  - Massachusetts Council on Compulsive Gambling
  - About Health
Education

- Conferences
  - Treating the Addictions (CME - March)
  - Addiction Medicine (CME - October)
  - Pathological Gambling (CEU - November)

- Courses
  - Expressions of Addiction
  - Special Topics in Addiction
  - Research Methods for the Social Sciences
  - HMS distance learning (in development; CME)

- Independent Studies
  - Local and international mentoring/internships
Addiction Syndrome
How Do We Know Addiction?

- How we think about problems guides what we do about problems
  - Treatment
  - Punishment
  - Referral
  - Funding

- Different people think about addiction in different ways
  - Morality to disease
    - Deviant behavior is perceived as **bad** or **mad**
Mad or Bad?
Mad or Bad?
Contemporary “Objects” of Addiction (Popular)

- Boggle
- Chapstick/Carmex
  - “Lip Balm Anonymous”
- Credit
- Cosmetics
- Doritos
- Dance music
- McDonald’s French fries
- Mutual funds
- Video games
- Crossword puzzles
- Sudoku
- Fame
Addictive when mixed with gasoline
You might be a Blogoholic if...

- calling in sick to blog
- reading and responding to blogs more than four hours a day
- checking your blog every five minutes to see if you have another comment
- changing your template once a week
- having more than one blog
- telling your partner "I have a headache" so you can blog
- blogging while you’re at work
- skipping meals so you can blog

“Please pay no attention to the smallish blog-monkey on my back...”

“Yes, the signs are unmistakable. It’s painful to admit; intervention is often needed to finally admit you’re hooked. In my case, it started when the cable modem broke. It happened Tuesday morning. For some reason, it couldn’t be fixed. I started getting nervous. Wednesday. Nothing. Thursday. Nothing. I fell apart...”
Contemporary “Objects” of Addiction (Science)

- Alcohol & other Drugs
- Water
- Sex
- Chocolate
- Exercise
- Carrots
- Tanning
- Gambling
- Computers
The brain’s reward center
Comparable Neurochemistry

- With Psychoactive Drug Taking
  - Imposter molecules vie for receptor sites (i.e., proteins on which to bind) with naturally occurring neurotransmitters
  - These events can change subjective states

- With Gambling
  - Stimulates activity of naturally occurring molecules (i.e., neurotransmitters)
  - This can yield shifts in subjective states
Comparable Genetics

- Common molecular mechanisms for drug addiction and compulsive running
- Pathological gambling shares a common genetic vulnerability with alcohol dependence
- Twin studies show that shared genetic and environmental risk factors are largely substance non-specific
Kendler and colleagues (2003), “could not find evidence for genetic factors that increase risk for individuals to abuse substance A and not also to abuse substances B, C, and D.”
MY GENOME MADE ME DO IT!
Comparable Psychosocial History

- Psychiatric Comorbidity
  - Depression, Anxiety
- Impulsivity
- Delinquency
- Trouble with Authority
- Lack of Social Support
- SES Characteristics
Comparable Experiences

- **Sequelae**
  - Deceit
  - Shame
  - Guilt

- **Addiction hopping**

- **Neuroadaptation (e.g., tolerance and withdrawal)**
  - Increasing bet size to achieve same level of excitement
  - Adverse signs and symptoms alleviated by gambling again
Natural History of Drinking and Gambling Behavior

Aggregate Cohort = 6067
Natural History of Drinking and Gambling Behavior

Aggregate Cohort = 6067

![Graph showing the change in proportion over time for Level 2 Gambling and Level 2 Drinking.](image)

- **Level 2 Gambling**
- **Level 2 Drinking**
Natural History of Drinking and Gambling Behavior

Aggregate Cohort = 6067

Proportion

Time 1  Time 2  Time 3

Level 3 Gambling  Level 3 Drinking
Treatment Nonspecificity

- Naltrexone for gambling
- Methadone for cocaine
- Topiramate for alcohol/gambling
- Non-pharmacological
  - Cognitive Behavioral Therapy
  - Self-help (e.g., AA, NA, GA, BA, etc.)
  - Motivational Interviewing
  - Psychoanalysis
A Gradual Shift in Knowing

DID YOU FEEL THAT, ZIPPY?

YEH... BUT JUST BARELY.

IT WAS EVER SO SUBTLE.

HARDLY NOTICEABLE.

WHAT WAS IT?

A PARADIGM SHIFT.
Out with the Old...
A New Way of Looking at Addiction

- Things do not cause addiction
- The development of addiction depends on:
  - Our bodies
  - Our minds
  - Our experiences
 Syndromes

- Human Immunodeficiency Virus (HIV)
  - Common etiology with multiple manifestations

- Acquired Immunodeficiency Syndrome (AIDS)
(e.g., Genetic Risk, Neurobiological)
The Emergence of the Addiction Syndrome -- Antecedents

1) Individuals must have distal risk factors for addiction.
   - Neurobiological Elements (e.g., genetic risks, neurobiological system risks)
   - Psychosocial Elements (e.g., psychological and social risk factors)
   - Underlying Vulnerability

2) Individuals must have exposure and interaction.
   - Exposure to Object or Activity X, Y, or Z
   - Immediate Neurobiological Consequences Resulting in Desirable Subjective Shift
   - Object Interaction
The Emergence of the Addiction Syndrome -- Premorbid

3) The neurobiological or social consequences of these object interactions must continue to produce a desirable subjective shift that is reliable and robust.

During this stage of the syndrome, people teeter on a delicate balance that can shift them toward either more or less healthy behavior.
Addiction Syndrome – Expressions, Manifestations, & Sequelae

4) When one expression accompanies the premorbid characteristics, the addiction syndrome emerges

<table>
<thead>
<tr>
<th>Expression</th>
<th>Drinking</th>
<th>Gambling</th>
<th>Smoking</th>
<th>IV Drug Using</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>e.g., Liver Cirrhosis</td>
<td>e.g., Gambling Debt</td>
<td>e.g., Pulmonary Carcinoma</td>
<td>e.g., Sepsis</td>
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<table>
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<tr>
<th>Biological Cluster</th>
<th>Natural History</th>
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<tbody>
<tr>
<td>(e.g., tolerance, withdrawal)</td>
<td>(e.g., exposure, relapse)</td>
</tr>
<tr>
<td>Psychological Cluster</td>
<td>Treatment Nonspecificity</td>
</tr>
<tr>
<td>(e.g., psychopathology comorbidity)</td>
<td>(e.g., CBT, pharmacotherapy)</td>
</tr>
<tr>
<td>Social Cluster</td>
<td>Object Substitution</td>
</tr>
<tr>
<td>(e.g., delinquency, social drift)</td>
<td>(e.g.,↑ in sedative use during↓ in opioid use)</td>
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</tbody>
</table>
Addiction as Syndrome: Illustration

Element Domains

Biogenetic Elements
- Neurophysical Reward Systems
- Neurochemical Action
- Genetics

Psychological Elements
- Symptom Clusters & Sequences
- Sign Clusters & Sequences
- Psychological Conditions (e.g., cognitive deficiencies)

Experiential Elements
- Lifestyle Similarities
- Risky Behaviors
- Exposure/Setting (e.g., macro to micro)
- Natural History
Disordered Gambling

Unique Consequences

Alcohol Use Disorder

Unique Consequences

No Addiction

Common Adverse Consequences

Predictors

Underlying
Implications

- For Prevention?
- For Diagnosis?
- For Assessment?
- For Treatment?
- For Understanding?
Diagnosis and Assessment

- Revise diagnostic tools to specifically incorporate universal aspects of addiction
- Comprehensive assessment to get the full picture
  - Psychopathology
  - Life events
  - Recent experiences
Treatment & Prevention

- Addiction will not respond favorably to a single treatment modality
- Addiction will not respond favorably to treatment that ignores the underlying problem
- A “cocktail” approach is likely to be most effective
  - CBT, pharmacotherapy, financial counseling, family therapy, support groups
- Prevention cannot focus solely on exposure or vulnerability
Tertiary Prevention

Secondary Prevention

Primary Prevention

Harvard Review of Psychiatry, 2004

Neurobiological Elements
Albert Bandura, 1999

“Our theories grossly overpredict psychopathology and the inability to overcome substance abuse. This is because they favor a reactive risk model rather than a proactive mastery model.”
Beyond Risk: Resiliency and its Rewards

- Spend less time looking for risk factors for failure
- Spend more time looking for proactive factors for success
  - Different people likely have different starting points
- Help people to capitalize on their resiliency factors, as much as avoiding their risk factors