Outline

1. Neurobiology of Addiction
2. Psychotherapy of Addiction
3. Principles of MI
4. Practice of MI
5. Addiction Pharmacotherapy
6. Conclusions
~ 2000
The Fundamental Model

Biological
Psychological
Social

Use

Brain Switch

Addiction

Relapse

1. Stress
2. Triggers (Cues)
3. Exposure (Primers)
Natural Rewards and Dopamine Levels

Adapted from: Di Chiara et al, *Neuroscience*, 1999
Effects of Drugs on Dopamine Levels

Adapted from: Di Chiara and Imperato, *Proceedings of the National Academy of Sciences USA*, 1988; courtesy of Nora D Volkow, MD
Effects of Drugs on Dopamine Levels

Adapted from: Di Chiara and Imperato, *Proceedings of the National Academy of Sciences USA*, 1988; courtesy of Nora D Volkow, MD
Pleasure-Reward Pathways

Neural Circuitry of Addiction

Koob, Pharmacopsychiatry, 2009
1. Addiction Neurotransmitters

1. Dopamine
2. Glutamate
3. γ-Aminobutyric Acid (GABA)
4. Serotonin
5. Norepinephrine
6. Corticotropin-Releasing Factor (CRF)
7. Opioids
8. Cannabinoids
2. Motivation: More than an Amoeba

3. The Anti-Reward Pathways

Volkow ND and Baler RD, Neuropharmacology, 2013.
Reward and Antireward Systems

Gardner, *Chronic Pain and Addiction*, 2011
GAME 1

A. A sure gain of $250.
B. 25% chance to gain $1,000, 75% chance to gain nothing.

Adapted from: Tversky and Kahneman, Science, 1981
GAME 2

A. A sure loss of $750.

B. 25% chance to lose nothing, 75% chance to lose $1,000.

### MATHEMATICS

<table>
<thead>
<tr>
<th>GAME 1</th>
<th>GAME 2</th>
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<tbody>
<tr>
<td>25% + 750</td>
<td>25% + 750</td>
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<tr>
<td>25% - 250</td>
<td>25% - 250</td>
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<td>25% - 250</td>
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People avoid risks to ensure gains (even small gains).

People take risks (even big risks) to avoid definite losses.

Psychology trumps probability.
A Brief History of the Psychotherapy of Addiction
1. Psychoanalysis works for all treatable mental illness.

2. Psychoanalysis does not work for addiction.

3. Therefore, addiction cannot be treated.
The prototype, Synanon, was founded in California in 1958 to address heroin addiction.

The goal was to:
- break down defenses,
- bust through denial, and
- reshape the addict’s personality.
2nd: Therapeutic Communities

1. Shaving heads

2. Hanging humiliating signs around residents’ necks

3. Subjecting patients to “encounter groups” involving loud, free flowing attacks from staff and fellow residents
During the 1970s and 1980s, most Therapeutic Communities evolved beyond the Synanon model.

People started recognizing the limits and dangers of confrontive techniques.
3rd: Cognitive-Behavior Therapy

1. Based on Operant Conditioning
2. Functional Analysis
3. Skills Training to:
   - identify,
   - avoid, and
   - cope with thoughts & cravings

The Frying Pan Revisited

4th: The Kitchen Sink Approach

1. 12-step Facilitation
2. Relapse Prevention
3. Family Therapy
4. Primary Care
5. Mental Health Services
6. Aftercare

12-Step Facilitation
The AA Elevator Slogan

1. Spiritual Health
2. Professional and Vocational Health
3. Interpersonal and Family Health
4. Mental Health
5. Physical Health
6. Life
## Medical Student Attitudes

<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>PERCEPTION</th>
<th>PATIENTS</th>
</tr>
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<tbody>
<tr>
<td>1. Housing</td>
<td>1. Housing</td>
<td>1. Inner peace</td>
</tr>
<tr>
<td>2. Gov’t Svcs</td>
<td>2. Outpatient Svcs</td>
<td>2. God</td>
</tr>
<tr>
<td>5. Job</td>
<td>5. Trusting People</td>
<td>5. Housing</td>
</tr>
</tbody>
</table>

Psychiatric Co-Morbidities

1. **A third to two thirds** of addicted people also suffer from another mental illness—**not 10%, not 90%**.

2. **Treat both** the addiction and the co-occurring psychiatric disorder(s).

3. **Avoid benzodiazepines** and use antidepressants as first line treatments for anxiety disorders.
The Four-Quadrant Model

Severity of substance use disorder

Severity of psychiatric disorder

I

II

III

IV
3
Principles of Motivational Interviewing
1. “People are unmotivated” vs. “People are always motivated for something.”

2. “Why isn’t the person motivated?” vs. “For what is the person motivated?”
1. Ambivalence is normal; needs to be explored, not confronted.

2. Ambivalence is a reasonable place to visit, but you wouldn’t want to live there.

Principles

REDS

1. Roll with Resistance
2. Express Empathy
3. Develop Discrepancy
4. Support Self-Efficacy

MI Today

Beyond REDS

Engaging

Focusing

Evoking

Planning

Practice of Motivational Interviewing
PHASE 1:
Building Motivation for Change

PHASE 2:
Strengthening Commitment to Change and Developing a Plan.
The Stages of Change

1. Precontemplation
2. Contemplation
3. Preparation
4. Action
5. Maintenance
6. Relapse

The Stages of Change Cycle

- **Precontemplation**: Awareness of need to change
- **Contemplation**: Increasing the pros for change and decreasing the cons
- **Preparation**: Commitment and planning
- **Action**: Implementing and revising the plan
- **Maintenance**: Integrating change into lifestyle
- **Termination**:
1. Identify the Stage of Change.

2. Help the person move a little bit forward.

3. Don’t rush her or him.
Precontemplation

1. Plant the seed of ambivalence.

2. Techniques:
   ✓ Ask for a description of a typical day.
   ✓ Hunt for the smallest discrepancy between where people are and where they would like to be.
The Readiness Ruler

1. Open up to explosive decision analysis.

2. Techniques:
   - Brainstorm widely.
   - Explore both positive and negative prospects of life with and without the proposed changes.
The Decisional Balance

1. Develop a realistic action plan.

2. Techniques:
   - Anticipate problems and identify solutions.
   - Unforeseen complications and frustrating obstacles may require revisiting “contemplation stage” techniques.
1. Based on principles of learning, replace maladaptive patterns of behaving and thinking.

2. Techniques:
   - Essentially use a CBT model.
   - Provide ample positive feedback, encouragement, and support.
1. Back to the “kitchen sink” approach.

2. Techniques:
   - Recruit motivational, cognitive-behavioral, regulatory, disciplinary, and social approaches to sustain the desired change.
   - Explore disappointments, temptations, and doubts.
Relapse

1. Remember Confucius: “Our greatest glory is not in never falling but in rising every time we fall.”

2. Techniques:
   
   ✓ Accept relapse as an opportunity to reengage, rethink, and reemerge stronger than before.
   
   ✓ Reengage quickly, even if it is to the expense of deeper rethinking.
Technique: Reflective Listening

- Make a guess as to what the patient means. Skillful listening moves past what the person exactly said, without jumping too far.

- Like interpretations in dynamic therapy, if the patient becomes defensive, you know that you jumped too far, too fast.

Technique: Elicit Change Talk

- As a person argues on behalf of one position, she or he becomes more committed to it; we literally talk ourselves into (or out of) things.

- This may explain why the more “resistance” is evoked during a counseling session, the more likely it is that a person will continue to use.
Practical Suggestions

1. Listen > Ask > Give advice
2. Talk less than the patient.
3. Do not ask more than 3 consecutive questions.
4. Avoid wordiness.
5. Avoid interrupting.
6. Cooperate, do not force knowledge.
7. Relax.
An Even Briefer History of Addiction Pharmacotherapy
Two Main Strategies

1. Agonists
   - Nicotine Replacement Therapies
   - Methadone for Opioids

2. Antagonists
   - Naltrexone for Opioids
The New Strategy

Partial Agonists

- Varenicline for Nicotine
- Buprenorphine for Opioids
The Ceiling Effect

% Efficacy

Log Dose of Opioid

Full Agonist (Methadone)

Partial Agonist (Buprenorphine)

Antagonist (Naloxone)
Conclusions
1. Addiction hijacks both the pleasure/reward and anti-reward pathways of the brain.

2. Antireward pathways are likely responsible for the sustaining addiction.

3. Motivation has replaced confrontation as the primary focus of addiction treatment.

4. Motivational Interviewing is based on exploring and resolving ambivalence.
Thank you