Online Delivery of MET, CBT, & CM to Treat Cannabis Use Disorder

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Plan for Today

Describe our work on computer-assisted treatment for Cannabis Use Disorders to illustrate how using technology-based interventions can promote access to science-based, efficacious interventions.
Status of Psychosocial Treatments for Cannabis Use Disorders

1) Effective behavioral treatments have been developed
   - Motivational Enhancement Therapy (MET/ MI)
   - Cognitive Behavior Therapy (CBT)
   - Abstinence-based Contingency Management (CM)

2) Limited access to the most potent interventions
   - integrity/fidelity of treatment delivery
   - cost (e.g., evidence-based therapies, incentive programs)
   - resistance to seeking treatment
Marijuana Treatment Project (2004)
Reduction in Days of MJ Use

Days of Use (past 90)

Baseline  4 Months  9 Months  15 Months

- DTC
- 2-session MET
- 9-session MET/CBT
% of Participants Abstinent (90 days)
MET/CBT/CM for Cannabis Use
Gold Standard?

Budney et al. (2006)
Potential of Computer-Delivered Therapies

- Facilitate easier access to treatment
- Reduce cost of treatment delivery
- Shift costs to other aspects of treatment programs
- Allocate therapist time to issues requiring specific skills
- Ease the burden associated with therapist training
- Ensure integrity and fidelity of treatment delivery
- Expedite dissemination/adoption of evidence-based treatments
- Enhance learning/practice of therapeutic information and skills via use of active learning technologies
- Increase access to materials; between visits and post-tx
- Facilitate monitoring of target behavior for CM
- Increase access to social support through social media
- More readily address sensitive, embarrassing issues of addiction and other related topics such as HIV status
Adaptations of Evidence-Based Treatments

(1) Cognitive Behavioral Therapy (CBT)
   - Learning-based technologies to teach general and substance specific coping skills, psycho-education, promote lifestyle change, risk behavior reduction
     (Acosta et al., 2012; Bickel et al., 2008; Carroll et al., 2008, 2009; Marsch et al., 2004, 2011; Budney et al., 2011; Kay-Lambkin et al., 2009, 2011).

(2) Motivational Interviewing (MI/MET)
   - MI/MET programs with/without skills based training
     (Ondersma et al., 2005, 2007; Hester et al., 2005, 2012; Budney et al., 2011; Kay-Lambkin et al., 2009, 2011)

(3) Contingency Management (CM)
   - monitoring, feedback, reinforcement delivery
Computer-assisted Delivery of MET/CBT/CM for Cannabis Use Disorder

• MET/CBT/CM = “gold standard” outpt treatment
• However, not readily available
• Incentives for CM considered too costly by some
• Training therapists to provide high fidelity
• MET/CBT is very difficult and costly

• If computer can deliver MET/CBT, cost saving related to therapists (training, monitoring, salary) would fund CM incentives and facilitate dissemination/implementation
Methods

• Developed a computer-assisted version of MET/CBT/CM in collaboration with Healthsim, the group that developed the TES system

• Modifications / Innovations
  – Cannabis specific MET/CBT modules (Steinberg et al., 2004)
  – MET new to TES, but earlier TDIs had used successfully
  – Lifestyle Goal Setting Module
  – Post-treatment Relapse Prevention Module
  – Web access
Two MET Modules (Sessions 1 and 2)

- Computer modules 1 and 2 deliver MET
  - an interactive review of a personalized feedback report
  - goal-setting exercises, including setting a quit date
Goals Assessment

We are interested in the things that you typically are trying to do or would like to accomplish in the future. In other words, the goals you have in different areas of your life.

Here are some examples of goals:

- Trying to get along with others
- Trying to develop my spirituality
- Trying to help others in need of help
- Trying to seek new and exciting experiences
- Trying to avoid feeling inferior to others
- Trying to develop and maintain close relationships
- Trying to avoid conflict with my spouse or partner
- Trying to advance in my career
Now, rate how you think your **CURRENT USE** of marijuana would affect each of your goals by clicking on the appropriate number. *Note: If you have recently stopped smoking or reduced your marijuana use, then indicate how this changed smoking pattern, either reduced use or non-use, has affected each of your goals.*

<table>
<thead>
<tr>
<th></th>
<th>Very Positively</th>
<th>Positively</th>
<th>No Effect</th>
<th>Negatively</th>
<th>Very Negatively</th>
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</thead>
<tbody>
<tr>
<td>Get a job</td>
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<tr>
<td>Be a good dad</td>
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<tr>
<td>Buy a new car</td>
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</table>
Amount of Money Spent on Marijuana

You said that you spent approximately $\underline{300}$ on marijuana in the past month.

If we multiply this amount by 12, we get an estimate of how much you might spend on marijuana in a year: $\underline{3600}$
Please type in the name of something you could have spent the money on in the space below and click the next button to add it to the list.

If you want to add more than one item, you can do so by answering "Yes" when asked if you can think of any more items.
The expected benefits of changing your marijuana use seem to outweigh the costs. If this is the case, then you may be getting ready to make a change or have already started making one.

**Costs**

1. Be moody
2. Not as fun
3. Lose some friends

**Benefits**

5. Others would respect me more
4. Feel more in control of things
3. My memory to improve
2. Have better relationships with others
1. Worry less about being caught
5. Have more money
4. Be a better dad
CBT Modules (Sessions 3-8)

- developing an effective social support system
- understanding use patterns
- coping with craving, managing thoughts about using
- problem solving
- refusal skills
- coping with lapses
- managing moods
- assertiveness skills
- lifestyle goal-setting exercise
- encourage revisiting of modules and remote access of the relapse prevention module in the future
Welcome back!

How have things been since your last session?

Have you used any marijuana since your last session?

- Yes
- No
Saying “no” is the first and most important part of your refusal response. There are different ways of saying no, which are appropriate in different situations. Everybody says no differently. It's important to feel comfortable, which means that you have to develop your own style. When developing your own style, remember the following important goals:

- Your primary goal is to refuse or turn down marijuana.
- Your secondary goal might be to reinforce your commitment to not use.
- A third goal might be to feel good about yourself for refusing to take marijuana.
Watch the following video and try to pick out the refusal skills.
Assertiveness refers to all of the following except

A. exercising your rights
B. respecting the rights of others
C. “giving in” to other people's requests
D. acting on your own decisions
The correct answer is:
“giving in” to other people’s requests

For Review:
Assertiveness means exercising your right to decide what you would like to do when you interact with other people without denying the rights of others. Being assertive in a situation means deciding what you want to do and then acting on your decision without being pressured into acting a certain way by other people.

Continue
CM: Cumulative Progress Graph
Drug Test Results and Amount of Incentives
Quasi-Experimental Pilot Study
(Budney et al., 2011)

Two Group Comparison Trial (N=38)
- First 16 Ss: therapist delivered tMET/CBT/CM
- Next 10 Ss: computer-assisted cMET/CBT/CM
- Next 12 were randomized

Both tMET/CBT/CM and cMET/CBT/CM
- 12 weeks, twice weekly urine testing
- CM Voucher Incentive Program (earn up to $435)

**tMET/CBT/CM (N=22)**
- 9 therapy sessions (2 MET, 7 CBT)
  - Sessions 1-8 consecutive, 3 weeks off, Session 9

**cMET/CBT/CM (N=16)**
- 3 (15min) therapy sessions (supportive/instructive)
- 9 computer sessions (2 MET, 7 CBT) at clinic
  - access from home anytime
Participant Characteristics
Seeking Treatment for Cannabis Use

**tMET/CBT/CM (n=22)**
- 54% male
- 73% white
- Mean age = 32.7 yrs
- 72 days mj use (past 90)
- 75% mj dependence

**cMET/CBT/CM (n=16)**
- 50% male
- 56% white
- Mean age = 33.1 yrs
- 73 days mj use (past 90)
- 76% mj dependence
Attendance

p = .19  p = .09
% Participants Abstinent

- Computer
- Therapist

% Abstinent

> 4 Wks

> 8 Weeks
### Participant Feedback

13 Questions on a 0-10 likert scale

<table>
<thead>
<tr>
<th>Question</th>
<th>Across Items</th>
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<tbody>
<tr>
<td>How interesting</td>
<td>8.0 (1.8)</td>
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<tr>
<td>How useful</td>
<td>8.3 (1.7)</td>
</tr>
<tr>
<td>How much new information</td>
<td>7.5 (2.5)</td>
</tr>
<tr>
<td>How well did it answer ?’s</td>
<td>7.1 (2.3)</td>
</tr>
<tr>
<td>How easy was it to understand</td>
<td>9.1 (1.3)</td>
</tr>
<tr>
<td>How relevant to own life</td>
<td>8.9 (1.2)</td>
</tr>
<tr>
<td>How important to people who want to quit</td>
<td>8.8 (1.2)</td>
</tr>
<tr>
<td>How does it compare to other programs</td>
<td>8.2 (1.6)</td>
</tr>
<tr>
<td>How useful as part of Tx program</td>
<td>8.7 (1.4)</td>
</tr>
<tr>
<td>How likely to help</td>
<td>8.3 (1.4)</td>
</tr>
<tr>
<td>How much did you like using</td>
<td>8.8 (1.5)</td>
</tr>
<tr>
<td>How much did you like teach/quizzes</td>
<td>8.3 (1.8)</td>
</tr>
</tbody>
</table>
Cost Savings? Time (is Money)

p < .01
Conclusions

• Computer-assisted and therapist-delivered MET/CBT/CM were “equivalent”

• Computerized therapy was evaluated highly by participants

• Potential large cost savings from reduced therapist time
Limitations

- Non-randomized trial
- Small sample size
- No control/comparison group
- No post-treatment follow up
  - does cMET/CBT maintain effects (Budney et al., 2006)
Study 2
Budney et al. (under review)

3 Group Randomized Trial
   1) MET (2 sessions)
   2) tMET/CBT/CM
   3) cMET/CBT/CM

End of Treatment, 3, 6, & 9 months post treatment

Comparative cost analysis (Mick Tilford, Co-I)
### Participant Characteristics Seeking Treatment for Cannabis

<table>
<thead>
<tr>
<th></th>
<th>MET (n=16)</th>
<th>tMET/CBT/CM (n=29)</th>
<th>cMET/CBT/CM (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% male</td>
<td>56%</td>
<td>59%</td>
<td>53%</td>
</tr>
<tr>
<td>% African Am</td>
<td>56%</td>
<td>52%</td>
<td>67%</td>
</tr>
<tr>
<td>Age (m, SD)</td>
<td>35.1 (89.0)</td>
<td>34.7 (11.1)</td>
<td>34.9 (11.1)</td>
</tr>
<tr>
<td>Days Cannabis Use (past 90)</td>
<td>74.8 (17.7)</td>
<td>81.2 (13.8)</td>
<td>78.0 (17.1)</td>
</tr>
<tr>
<td>Age of first use</td>
<td>14.25 (2.74)</td>
<td>15.00 (2.82)</td>
<td>15.27 (2.97)</td>
</tr>
</tbody>
</table>
Session Attendance

Mean # Sessions Attended

- MET
- tMET/CBT/CM
- cMET/CBT/CM
During Treatment Abstinence

- tMET/CBT/CM > MET (p < .05)
- cMET/CBT/CM > MET (p < 05)
- No difference: tMET/CBT/CM and cMET/CBT/CM
Post Treatment
Point Prevalence Abstinence

MET n=16

tMET/CBT/CM n=29

cMET/CBT/CM n=30

ETX 3 mo 6 mo 9 mo
Cost
Conclusions

- Computer-assisted MET/CBT/CM for cannabis use is efficacious and equivalent to therapist-delivered treatment in the initiation and maintenance of cannabis abstinence.

- The potential savings from computerized MET/CBT could offset expenses related to CM, and facilitate its dissemination.

- Computer-assisted may enhance access to MET/CBT.

- Could expedite adoption of effective cannabis and other forms of substance abuse treatments.
Limitations

• Small sample size / missing data (follow up)

• Only two therapists participated; fidelity not objectively assessed

• Trials test MET/CBT in the context of CM
  
  – However, Kay-Lambkin (2009, 2011) provides similar demonstrations without CM; and multiple others with other SUDs strongly suggest that this is an efficacious model
Treatment Development Project:
Co-Occurring CUD and Tobacco Use
(NIDA R01)

First Phase: Develop and Pilot Test an Integrated Treatment
Cannabis cMET/CBT/CM  +
Computer-assisted Behavior Therapy & NRT
Tobacco Intervention

• 5 computer modules (10-30 min each)
  – personalized assessment - Stop Tabac – (Etter, 2009);
  – using cannabis and tobacco;
  – NRT education and instruction;
  – planning for change/setting a quit date;
  – reduction strategies

• Nicotine Replacement Therapy (NRT: patch, lozenge, gum)
Personalized Feedback Report

Provides feedback and advice based upon an individual’s tobacco use and goals for quitting:

**My tobacco addiction**
- Before quitting, you had a slight tobacco addiction.
- Nicotine replacement therapy, Zyban or Champix alleviate withdrawal symptoms. They double your chances of quitting permanently.

**My withdrawal symptoms**

After quitting, many smokers have withdrawal symptoms in the form of mood swings. These symptoms are unpleasant, but begin to diminish noticeably after only a few days. Important! Withdrawal symptoms are also a sign that the body is recuperating.

Do whatever you like to help with the unpleasant sensations, but do not light a cigarette.

**When you feel an overwhelming craving for a cigarette**
- hang on in there (3-5 minutes)
- do something else
- do some breathing exercises
- do some relaxation exercises
- have a drink of water
- keep your mouth busy: chew some gum, eat fruit, candy (mind the calories!)
- keep your hands busy
- use a nicotine substitute
Email Coach Messages

Intended to motivate and provide specific instructions based upon responses to the personalized questionnaire.

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Coach

Behavioral therapy

Hello

Already two weeks without smoking. Bravo!

We would like to tell you briefly about cognitive behavioral therapy, because several studies have shown that they are effective in helping people to quit smoking.

These sessions seek to combine the cognitive approach - what we think about cigarettes, our cigarette smoking, of our ability to quit smoking - with a more down-to-earth approach related to behavior. For example, you can learn to detach yourself emotionally from cigarettes ("cigarettes are no longer my friends"), while getting rid of ashtrays and lighters from your apartment. Moreover, the fact of seeing a therapist regularly means that the issue of medication (nicotine replacement therapy, bupropion, varenicline) can be addressed without bias.

Sessions of cognitive behavioral therapy are prepared by the therapist and client. The client can either participate in a group or receive individual therapy. It is important that the therapist can be contacted by telephone when needed to advise a client if they are in a critical situation. The number of sessions totals around six in the first three months. The therapy ends with two consultations, e.g. one after the 8th and another after 12th months.

Ask your health insurance if the sessions are reimbursed; ask them for a list of therapists too.

Talk to you the day after tomorrow

Coach

The Coach suggests reading

- Cognitive Behavioral Therapy

I would like to
- Go to my Personal Page
- Personal report
- Change my profile [release, medication or unsubscribe, etc.]
Welcome back! We are glad that you are interested in learning about Nicotine Replacement Therapy (NRT) and that you might be interested in using NRT to help you stop tobacco smoking.

Please note that this section of the program is written as if you had decided to try NRT. If you have not decided this, we think it will be useful for you to go through this section so you can be informed about NRT in case you do decide to try it now or in the future.

However, if you feel that you really are not ready to quit and do not want to go through all information about NRT, please click below to go back to the menu and start the Considering Reduction Module.

Click here to return to main menu.
Below you can review a Table that describes the withdrawal symptoms from tobacco and marijuana. You also have received pamphlets that describe these in more detail.

<table>
<thead>
<tr>
<th></th>
<th>Marijuana</th>
<th>Tobacco</th>
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</thead>
<tbody>
<tr>
<td>Anger / Irritability</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Anxiety / nervousness</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Appetite / Weight</td>
<td>Decreases</td>
<td>Increases</td>
</tr>
<tr>
<td>Depressed Mood</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sleep Difficulty</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Physical Complaints</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Reduced Concentration</td>
<td>Yes</td>
<td>??</td>
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</tbody>
</table>
OK, we have now gone through a number of strategies for reducing the number of cigarettes you smoke. Basically there are both nicotine medications and specific strategies that can help you if you want to reduce your use.

Some people choose to reduce 25%, 50%, or 75%, but remember, you can commit to whatever amount of reduction you want. We suggest you select an initial goal that you think you are very likely to be able to meet. You can always try a more ambitious goal later.

Are you interested in trying to reduce your smoking level?

Yes  No
General Conclusions about Computer-assisted Interventions for SUDs

Highly acceptable to a wide variety of target populations

Can be as effective as comparable interventions delivered by trained clinicians

More effective than and can enhance some TAUs

Enhance quality, reach, and outcomes when provided as an adjunct or substituted for parts of an intervention

Cost-effective
Reduction in cost: therapist time, training, fidelity monitoring

Increased access: more treatment slots, more flexibility

Not tested as a completely stand alone intervention
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Remote Access of Computer Program

Pilot Study
7 of 16 cMET/CBT/CM participants accessed their programs remotely: Mean = 2 episodes

Study 2
5 of 30 cMET/CBT/CM participants accessed their programs remotely: Range: 1-5 episodes
<table>
<thead>
<tr>
<th>Module Topics in Therapeutic Education System (TES)</th>
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<tbody>
<tr>
<td>1  Training Module</td>
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<tr>
<td>2  What is a Functional Analysis?</td>
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<tr>
<td>3  Conducting a Functional Analysis</td>
</tr>
<tr>
<td>4  Self-Management Planning</td>
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<tr>
<td>5  Drug Refusal Skills Training</td>
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<tr>
<td>6  Awareness of Negative Thinking</td>
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<td>7  Managing Negative Thinking</td>
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<tr>
<td>8  Managing Thoughts About Using</td>
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<tr>
<td>9  Managing Negative Moods and Depression</td>
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<tr>
<td>10 Introduction to Problem Solving</td>
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<tr>
<td>11 Effective Problem Solving</td>
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<tr>
<td>12 Progressive Muscle Relaxation Training</td>
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<tr>
<td>13 Receiving Criticism</td>
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<td>14 Seemingly Irrelevant Decisions</td>
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<td>15 Other Drug Use</td>
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<td>16 Coping with Thoughts About Using</td>
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<tr>
<td>17 Introduction to Assertiveness</td>
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<tr>
<td>18 How to Express Oneself in an Assertive Manner</td>
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<tr>
<td>19 Introduction to Anger Management</td>
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<tr>
<td>20 How to Become More Aware of the Feeling of Anger</td>
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<td>21 Coping with Anger</td>
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<td>22 Introduction to Relaxation Training</td>
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<td>23 Progressive Muscle Relaxation Generalization</td>
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<tr>
<td>24 Introduction to Giving Criticism</td>
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<tr>
<td>25 Steps for Giving Constructive Criticism</td>
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<tr>
<td>26 Receiving Criticism</td>
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<td>27 Giving and Receiving Compliments</td>
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<td>28 Sharing Feelings</td>
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<td>29 Vocational Counseling</td>
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<td>30 Naltrexone</td>
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<td>31 Limited Alcohol Use</td>
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<td>32 Financial Management</td>
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<td>33 Insomnia</td>
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<td>34 Time Management</td>
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<td>35 Relationship Counseling Part 1</td>
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<td>36 Relationship Counseling Part 2</td>
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<td>37 Relationship Counseling Part 3</td>
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<td>38 Alcohol and Disulfiram</td>
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<td>39 Communication Skills</td>
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<td>40 Nonverbal Communication</td>
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<td>41 Social Recreational Counseling</td>
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<td>42 Attentive Listening</td>
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<tr>
<td>43 HIV and AIDS</td>
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<td>44 Sexually transmitted infections (STIs)</td>
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<td>45 Hepatitis</td>
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<td>46 Sexual transmission of HIV and STIs</td>
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<td>47 The Female Condom</td>
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<td>48 Birth control use and HIV and STIs</td>
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<tr>
<td>49 Drug Use, HIV and Hepatitis</td>
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<tr>
<td>50 Alcohol use and risk for HIV, STIs and hepatitis</td>
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<td>51 Getting Tested for HIV, STIs and Hepatitis</td>
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<tr>
<td>52 Finding More HIV, STI and Hepatitis Information</td>
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<td>53 Negotiating Safer Sex</td>
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<td>54 Decision-Making Skills</td>
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<td>55 Identifying/managing triggers for risky sex</td>
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<tr>
<td>56 Identifying and Managing Triggers for Risky Drug Use</td>
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<td>57 Increasing-Self-Confidence in Decision Making</td>
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<td>58 Taking Responsibility for Choices</td>
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<td>59 Living with Hep C: Managing Treatment, Promoting Health</td>
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<td>60 Living with Hep C: Coping Skills</td>
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<td>61 Living with HIV: Coping skills and managing stigma</td>
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<td>62 Living with HIV: Comm. skills for disclosing HIV status</td>
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<tr>
<td>63 Living with HIV: Managing treatment and medications</td>
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<td>64 Living with HIV: Drug use and Immune System</td>
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<tr>
<td>65 Living with HIV: Daily routines to promote health</td>
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