Technology-Based Models for Substance Abuse Treatment Delivery: Lessons Learned

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Dissemination of Evidence-based Psychosocial Treatment for Substance Use Disorders

- Technology-based therapeutic tools offer great promise for enabling the widespread dissemination of evidence-based treatment interventions targeting substance use disorders and other behavioral health issues.

- Technology-based (e.g., computer-delivered, mobile-technology delivered) interventions allow complex interventions to be delivered with fidelity at a low cost, without increasing demands on staff time or training needs, thus having high potential for widespread dissemination.

Potential Benefits of Technology-Delivered Interventions

Low Cost
Accessible in a wide array of settings
Easily exportable
Fidelity/Replicability is assured
May be less threatening when addressing sensitive topics
Requires active responding
Can be readily modified
Permits temporal flexibility
Permits more rapid diffusion
May increase adoption of science-based interventions
Tailoring/Customization Readily Accomplished
Permits expansion of treatment

Our Research Focused on Promoting Widespread Reach of Evidence-based Substance Abuse Treatment

- We have developed and evaluated (in clinical trials research) technology-based interventions for substance abuse treatment among adults and adolescents.

- Our results from this line of research have demonstrated that technology-based interventions can be *as efficacious as* science-based interventions delivered by highly trained therapists, cost-effective, and highly acceptable to a wide variety of target populations

Overview of our Web-based Substance Abuse Treatment Programs

- **Therapeutic Education System (TES),** an interactive, psychosocial intervention for substance use disorders, grounded in the Community Reinforcement Approach (CRA) + Contingency Management Behavior Therapy *(Bickel, Marsch et al., 2008)*

- **TES has been shown to be efficacious with opioid-dependent individuals and is being evaluated with poly-substance users in community-based substance abuse treatment (NIDA's multi-site, Clinical Trials Network (CTN) platform**

- **TES for cannabis use disorders (currently developing/evaluating with Alan Budney, Ph.D.), integration of motivational enhancement therapy, CBT and contingency management**

- **Web-Based CRA for Adolescents (primarily those with cannabis use disorders)**

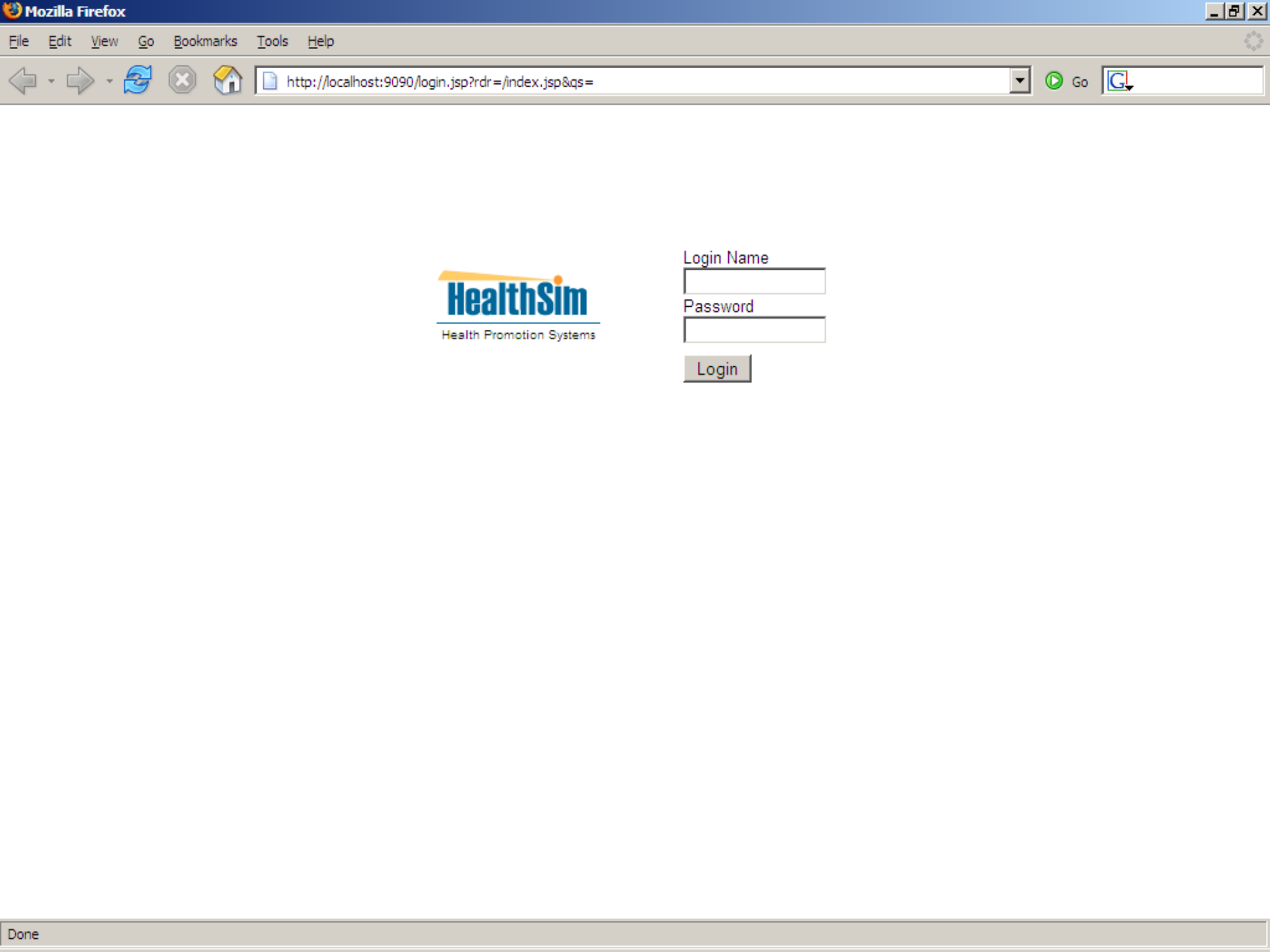
Overview of Lessons Learned in Developing Effective Technology-based Interventions

- **Evidence-Based Content is Critical – Ensure all content reflects empirically-based interventions**

  Our web-based Therapeutic Education System is grounded in the efficacious Community Reinforcement Approach (CRA) to behavior therapy.

List of Module Topics in Therapeutic Education System (TES)

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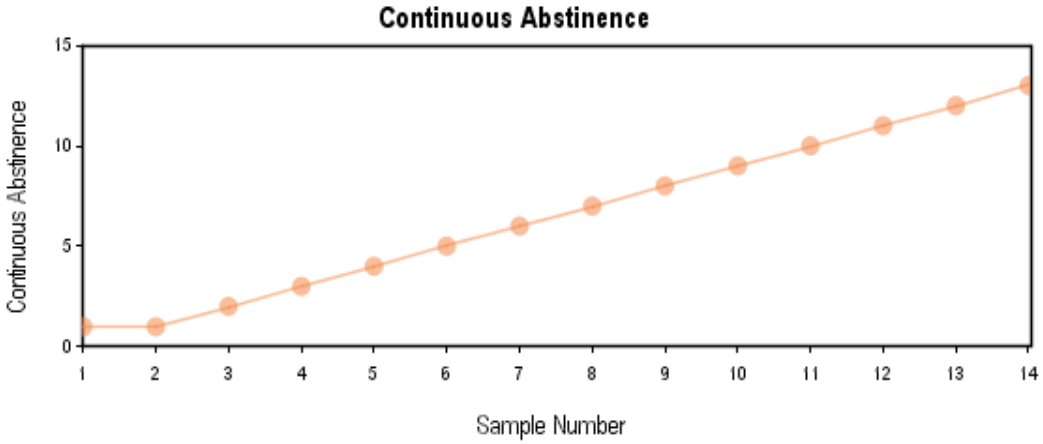
Login
Done

Congratulations!

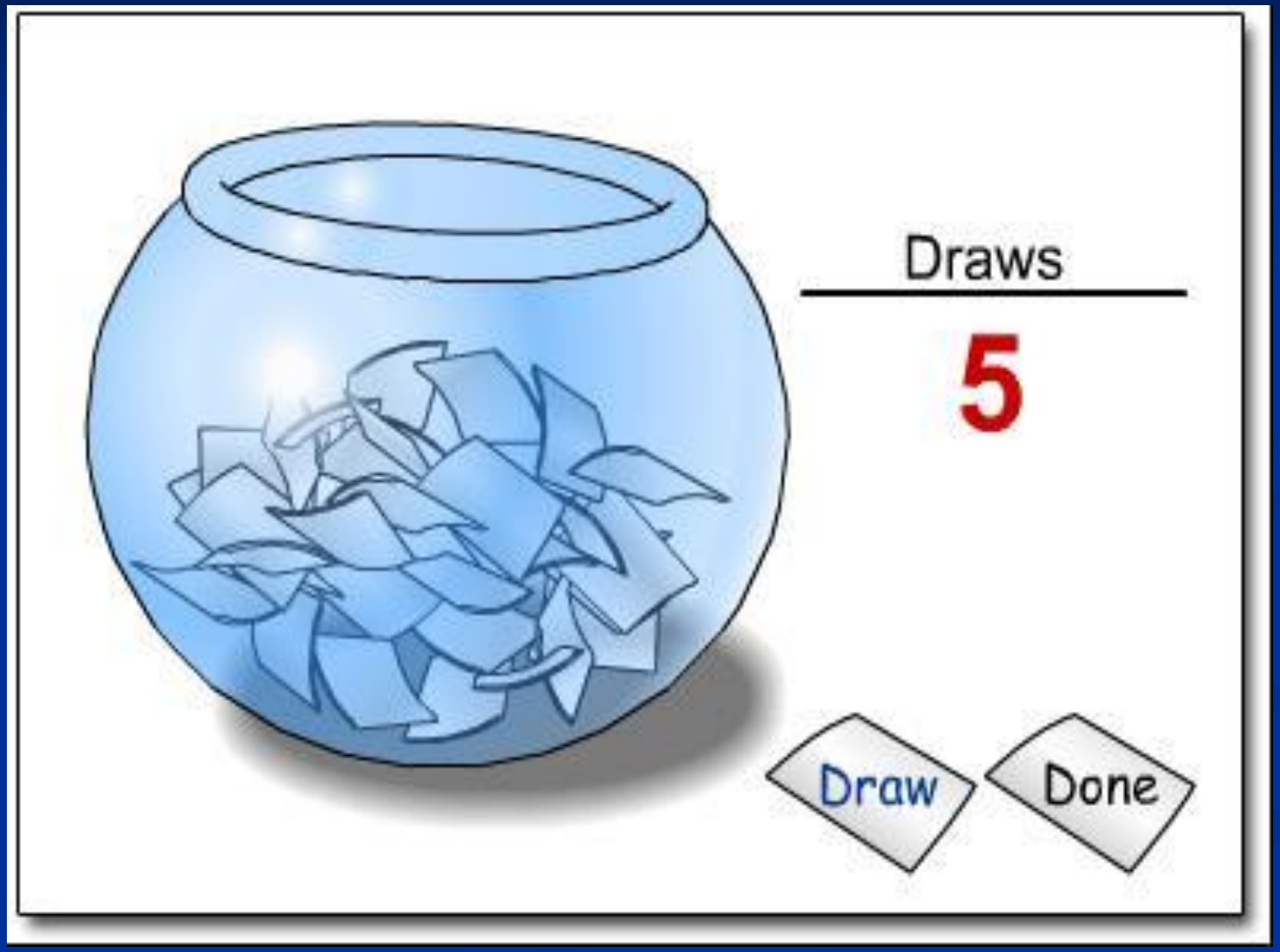
Click the (>>) button to continue >>

Congratulations for staying abstinent from opiates.

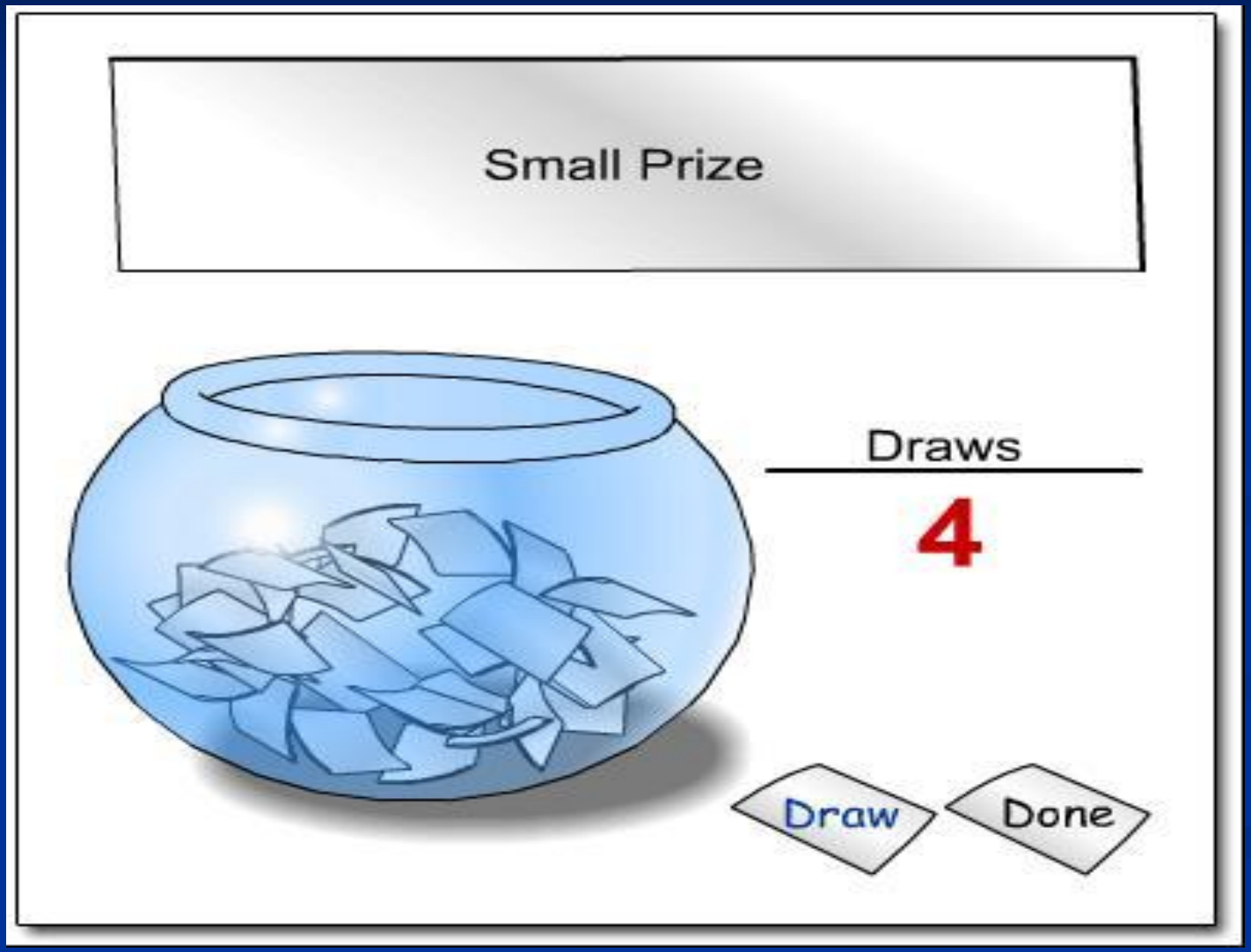
Your abstinence from opiates is shown on the graph below. A flat line for a given day indicates that you were positive for opiates for that day. An upward sloping line indicates that you were negative for that day.

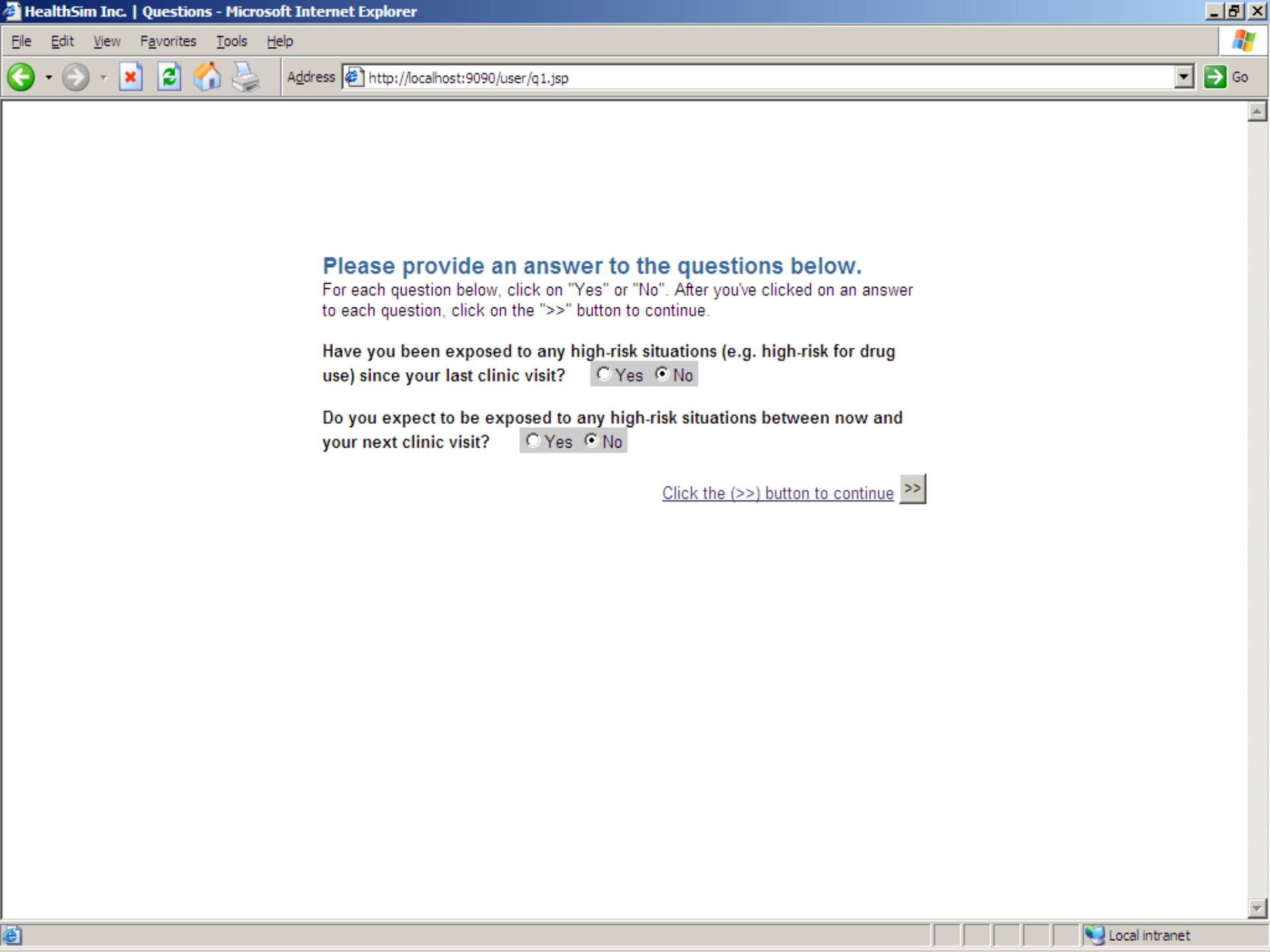


Virtual “Fishbowl” Example



Example of Prize Incentive in Virtual “Fishbowl”

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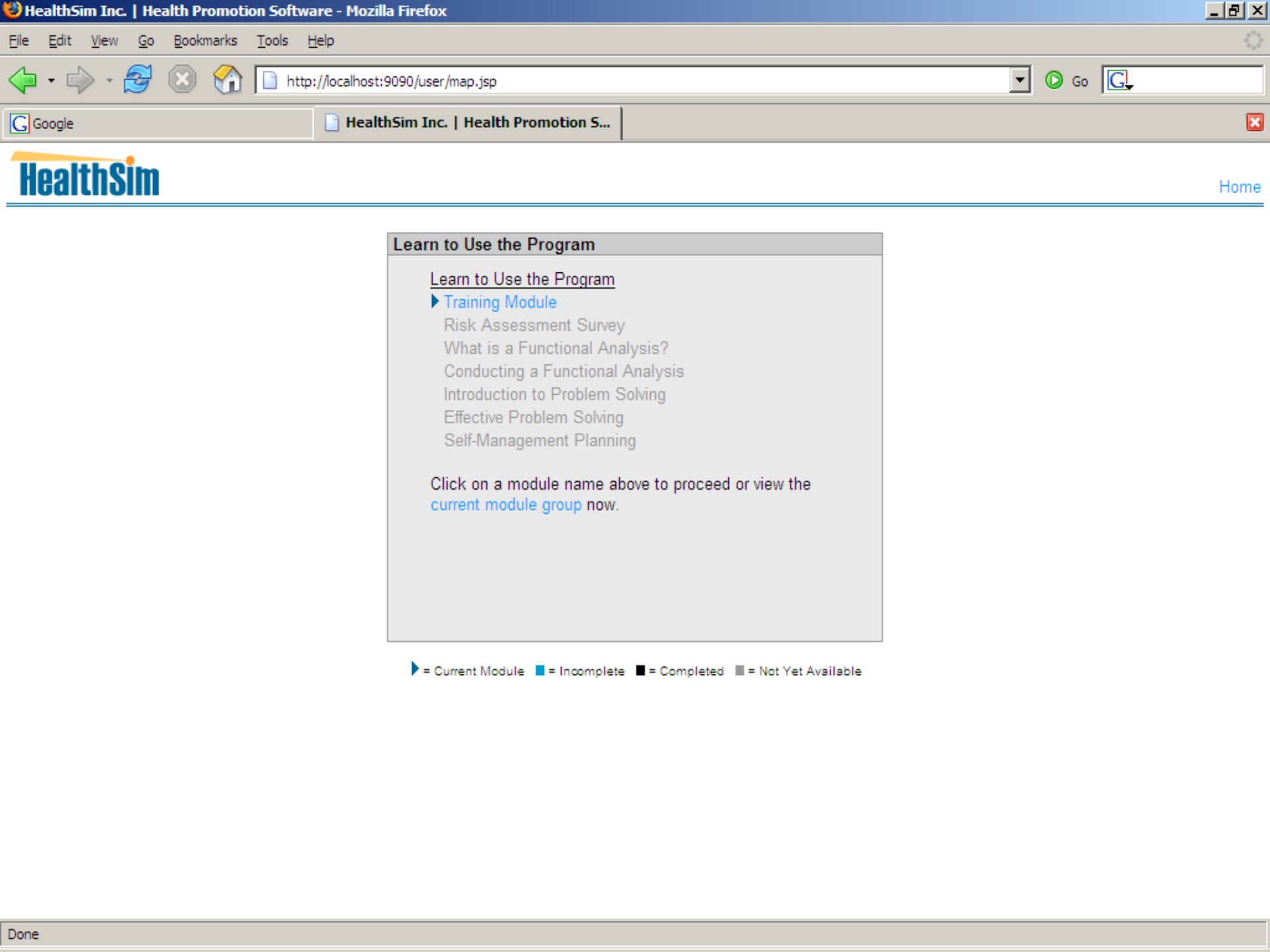
File Edit View Favorites Tools Help
Address http://localhost:9090/user/q1.jsp
Go
Please provide an answer to the questions below.
For each question below, click on "Yes" or "No". After you've clicked on an answer to each question, click on the ">>" button to continue.
Have you been exposed to any high-risk situations (e.g. high-risk for drug use) since your last clinic visit? Yes No
Do you expect to be exposed to any high-risk situations between now and your next clinic visit? Yes No
Click the (>>) button to continue >>
Local intranet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Home
Learn to Use the Program
Learn to Use the Program
Training Module
Risk Assessment Survey
What is a Functional Analysis?
Conducting a Functional Analysis
Introduction to Problem Solving
Effective Problem Solving
Self-Management Planning
Click on a module name above to proceed or view the current module group now.
= Current Module = Incomplete = Completed = Not Yet Available
Done

Go Back

Watch the following video and try to pick out the refusal skills.

Kate did a good job saying the right things, but her body language was not convincing at all, and drug abusers are generally very good at reading between the lines. Body language is important.

- Make continuous eye contact; look directly at the person when you answer.
- Your expression and tone should clearly show that you are serious. For example, smiling when you respond may suggest that you are not serious.

Watch the scene again and notice Kate's body language.

Go Back

When making decisions, it is important to think about _____.

A how you can avoid making a decision altogether

B what you have seen on TV

C making the same decision every time you are in a situation

D what is important to you and what you have decided your personal limits are

Q1 V1

Go Back

The correct answer is: what is important to you and what you have decided your personal limits are

When making decisions, it is important to think about what is important to you, what goals you have for yourself in the future, and what you have decided are your personal limits regarding sex and drug use.

Click the "Next" (>) button to continue

Go Back

After determining the situation, the second step in the SODAS strategy of decision making is to identify the options .

1 2 3 4 5 6 7 8 9 0 - + Delete
Q W E R T Y U I O P
A S D F G H J K L Enter
Z X C V B N M Space

Q1 V1

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Involving Members of Target Audience in Program Development is Critical.**

Our Iterative Development Process:

- Expert Input
- Focus Groups with members of target audience to provide input into program development
- Development of Beta version
- "Feedback Sessions" on Beta version from experts
- "Feedback Sessions" on Beta version from members of target audience
- Development of "Gold version" of program

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Evidence-Based Informational Technologies are Critical –**

  Interactivity – Responsiveness of the program to the behavior of the user and ability of the user to modify or control the presentation

  Modularity - User can access different portions of the program and move from one portion to another; user can access portions of relevance to them

Computer-Based Informational Technologies employed in our Interventions

- Fluency-Based Computer-Assisted Instruction (CAI)

  A learning technology that involves testing, providing immediate feedback, & requiring participants to demonstrate mastery of the information & skills being learned

  - Selectively presents information
  - Requires active, overt responding by the user to multiple choice and fill-in-the-blank questions
  - Evaluates and provides immediate feedback on user's responses
  - "Read & Response timing parameters" are manipulated in promoting fluency

- Interactive Video-based Computer Simulation
  - Simulates real-world experiences and enables "what if" scenarios & behavioral modeling
  - Enables exploration of various behavioral choices in "experiential learning" paradigm

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Multimedia Approaches may be useful to appeal to different types of learners:**

  Audio to accompany text for those with reading challenges and to enhance learning

  G*raphics/animation/videos* to illustrate key concepts and model target behaviors

  Interactive exercises to enhance learning and personalize content (e.g., functional analysis/self-management planning; setting and tracking progress toward individual treatment goals)

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Consider what technology can enable that may not be possible via traditional methods, and similarly consider what technology can not optimally provide in the same manner as traditional approaches:**

  e.g., Having a therapist communicate directly with patients online does not optimize cost-savings and reach as much as a self-directed computerized program.

  Role playing in therapy sessions may not be presented in the same way when addressed via technology-based interventions.

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Web-based interventions have distinct advantages over CD-ROM based interventions:**

  Enables widespread deployment from a central site

  Updates can be readily and centrally deployed, as needed

  Centrally tracks patient activity (using unique username and password) so patients can resume their use of the program where they left off

  Allows for information about all user activity to be aggregated

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Well-designed, Back-end Administrator Functions are Important:**

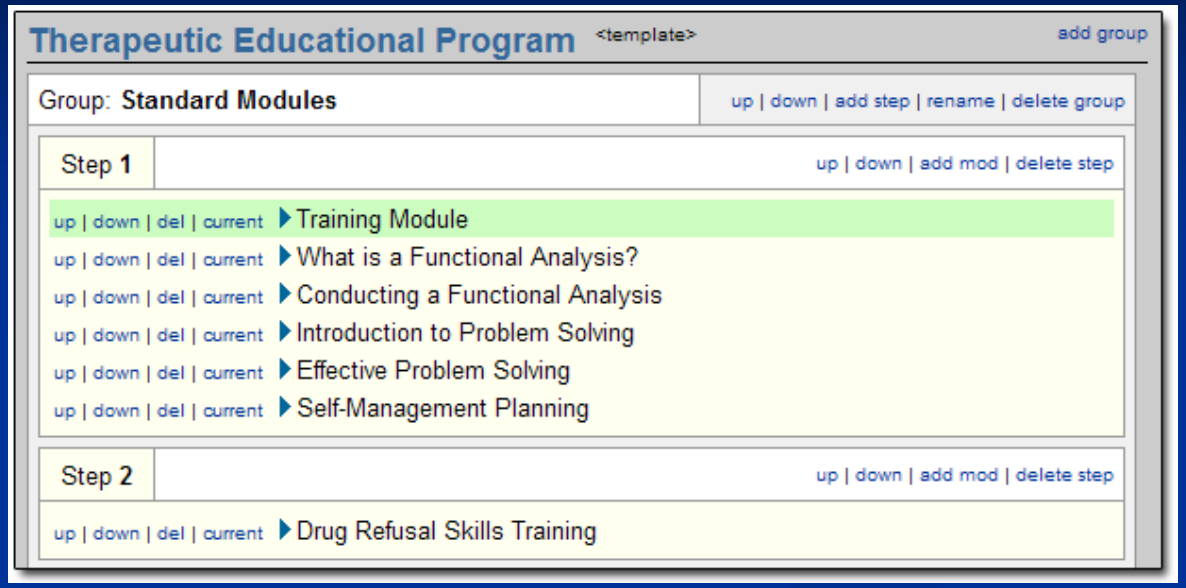
  To track patient progress ("dose" of intervention)

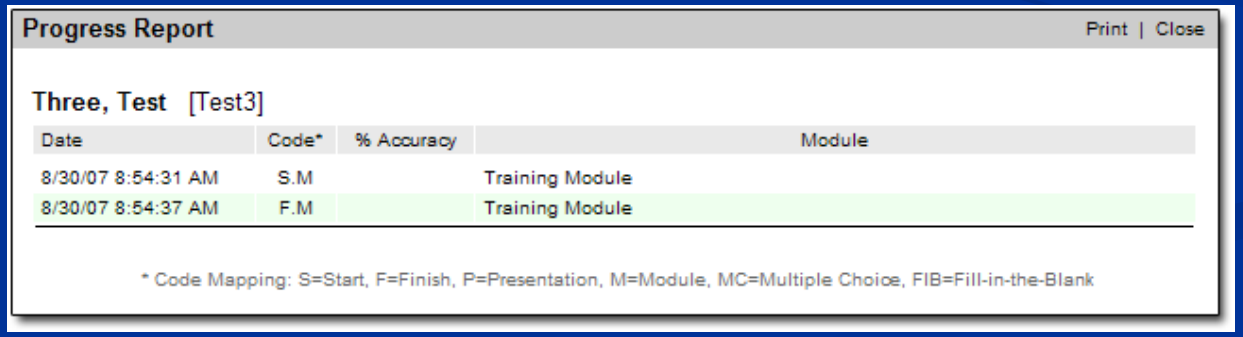
  To view detailed reports of patient activity

  To view aggregated patient data

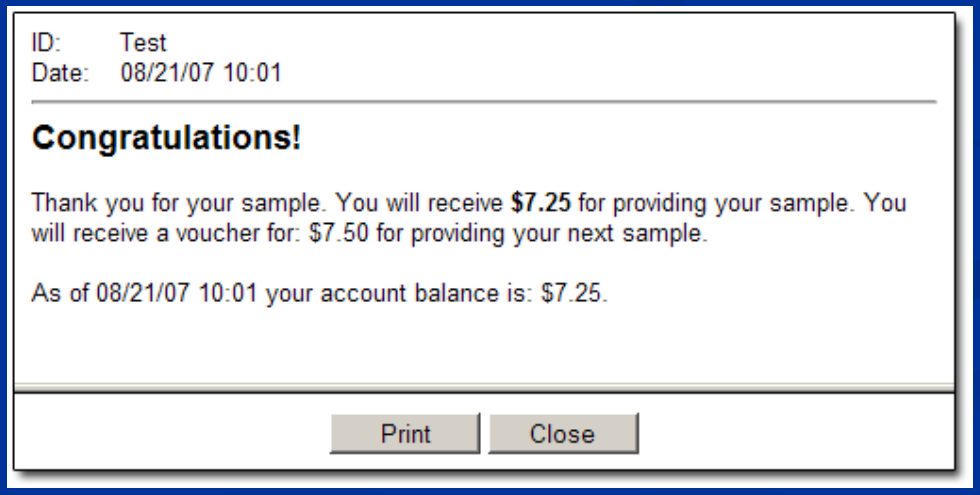
  To track patient earnings and expenditures in contingency management interventions

Examples of Administrative Features





Examples of Administrative Features



Examples of Administrative Features

Voucher History

Treatment 1

	Date	Result	Reset	Prediction	Points	Bonus	Amount
[view]	08/21/07 10:01	Pass	—	7.50	7.25	0.00	$7.25
[view]	08/21/07 10:04	Pass	—	17.75	7.50	0.00	$7.50
[view]	08/21/07 10:04	Pass	—	8.00	7.75	10.00	$17.75
[view]	08/21/07 10:04	Pass	—	8.25	8.00	0.00	$8.00
[view]	08/21/07 10:04	Pass	—	18.50	8.25	0.00	$8.25

Account History

Treatment 1

Date	Description	Amount
08/21/07 10:01	Voucher Deposit	7.25
08/21/07 10:04	Voucher Deposit	7.50
08/21/07 10:04	Voucher Deposit	17.75
08/21/07 10:04	Voucher Deposit	8.00
08/21/07 10:04	Voucher Deposit	8.25
08/21/07 10:06	Bus Pass	-5.00

BALANCE: 43.75

Credit/Debit Amt **Reason for Credit/Debit** Post

Overview of Lessons Learned in Developing Effective Technology-based Interventions (Continued)

- **Well-designed, Security Features are Critical to Protect Confidentiality:**

  Appropriate password protection

  Encrypted Internet connection via 128-bit Secure Sockets Layer (the e-commerce industry standard for securing communications on the World Wide Web)

Concluding Comments

- A technology-based approach to intervention delivery creates new opportunities and outlets for intervention efforts and may greatly increase the availability of science-based interventions.

- It is critical to carefully consider program development and design when creating technology-based interventions to produce optimal learning and desired clinical outcomes.

For More Information

http://preventionsciencemedia.com

www.ndri.org/ctrs/cth.html