



# 8th International Conference on **HIV TREATMENT AND PREVENTION ADHERENCE**

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# A Computer-Delivered Health Literacy Intervention Reduces Racial Disparities in HIV Information

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# Project Goal

- Improve patients' health literacy as a way to improve their medication adherence
- How to improve health literacy?
  - *Target elements of the Information-Motivation-Behavioral Skills model*
- Availability and clinician time?
  - *An automated touch screen computer delivered tailored information program*

# Tailored Information & Interactivity

- Tailoring
  - Personalized computer responses
  - Individualized feedback
  - Enhanced perceived relevance
- Interaction via teaching and questions
  - Testing ongoing learning with questions
  - Program reviews material when not understood
  - Elicitation of user information preferences



# Development

- Initial content creation
  - Patient information, popular books
- Multidisciplinary team
  - Medicine, Psychology, Pharmacy, Nursing, Social Work
- Usability and content testing
  - Multiple groups of potential users

# The intervention

## HERE'S AN OVERVIEW OF THE PROGRAM:

### The Basics

- Red and white blood cells
- The immune system

### HIV

- The virus and how it affects your body
- What happens when you get HIV?

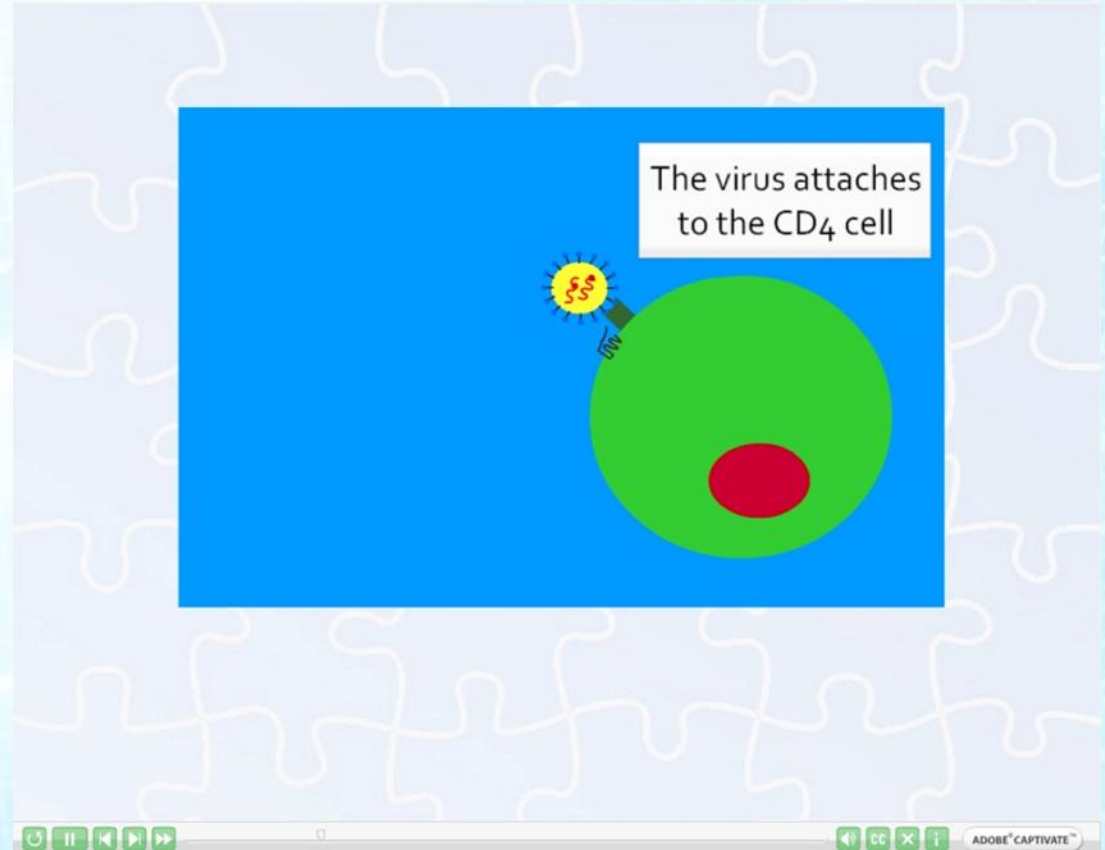
### Medicines

- How medicines work
- Ways to remember to take your medicines

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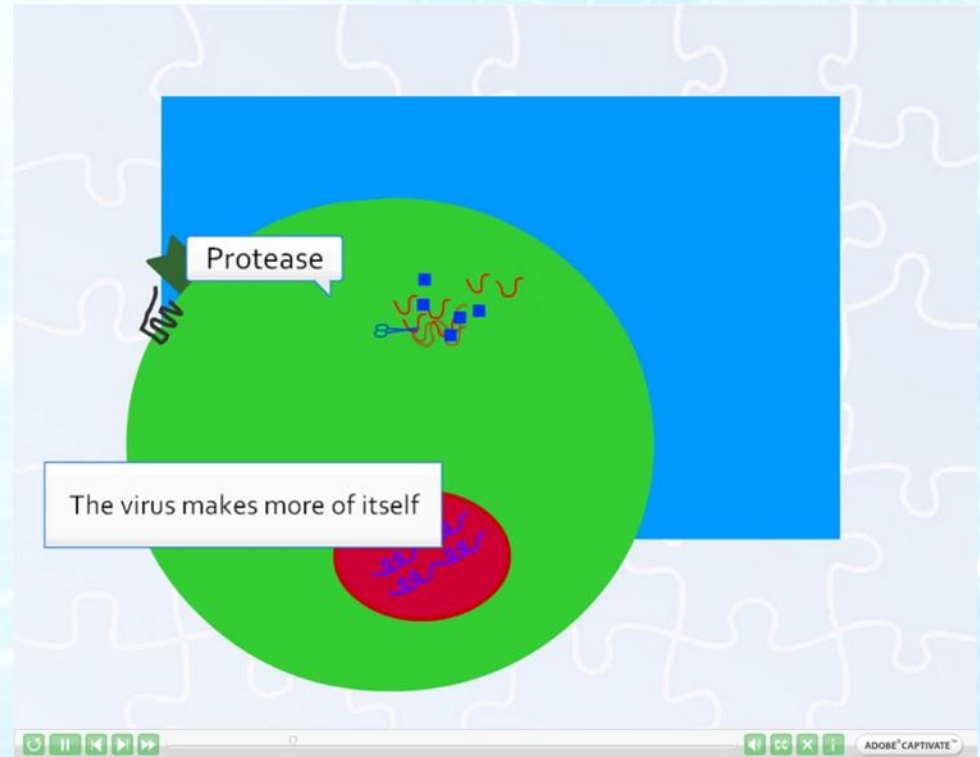
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- An animation provides a preliminary overview of the virus life cycle





- The animation emphasizes specific stages in the viral life cycle
- These stages are later reviewed in discussion of how medications work

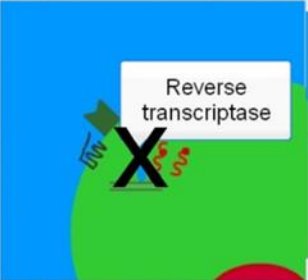


- A key aspect of the intervention is interactivity
- Participant learning is assessed with questions
- If needed, program content is automatically retaught

Medicines that block the virus from making new copies of its RNA are:

- A) Co-receptor blockers
- B) Integrase inhibitors
- C) Protease inhibitors
- D) Reverse transcriptase inhibitors

Question 9 of 18



The diagram shows a green and red virus particle with a black 'X' over its RNA. A white box labeled 'Reverse transcriptase' is positioned above the virus, indicating the target of the medication.

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The key to staying well if you have HIV is to get the treatment you need.

The doctor can tell you what medicines you need by finding out two things:

*(1) The doctor needs to know how many CD4 or T cells you have.*

*(2) He or she needs to know how much virus is in your blood.*

You need a blood test to find out these things.

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## How You Feel

Sometimes people feel very bad about having HIV. They think that they got it because they were bad. They feel guilty. If you feel this way, it may make you feel like you shouldn't get treatment.

If you feel this way, talk to someone. Someone at the clinic, or a friend may help you feel better. ***Talking about how you feel can help you feel better.***



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You have to be very good at taking your medicine if you want to stay healthy.

Studies show that people who take their medicine almost all of the time are more likely to have undetectable viral loads.

***When the viral load is very low, most people feel good and can get on with their lives.***



You can only miss one or two doses, just like on this calendar.



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# Design

- Three visits, each one month apart:
  - 1: Baseline; 2: Intervention, 3: Post intervention
  - Adherence monitored via MEMS
- Enrolled = 124; completed = 118
- 29% women and 71% men
- 64% black and 36% white
- 37% 11<sup>th</sup> grade education or less
- 36% High school or GED



# Sample (n = 124)

	Mean	SD
Age in Years	47.10	8.69
CD4	501.03	289.29
HIV Meds Doses/Day	2.83	1.50
Other Meds Doses/Day	2.60	2.54
All Meds Doses/Day	5.43	3.32
Years Since Diagnosis	15.64	7.92
Years of Treatment	11.70	7.24



# Results

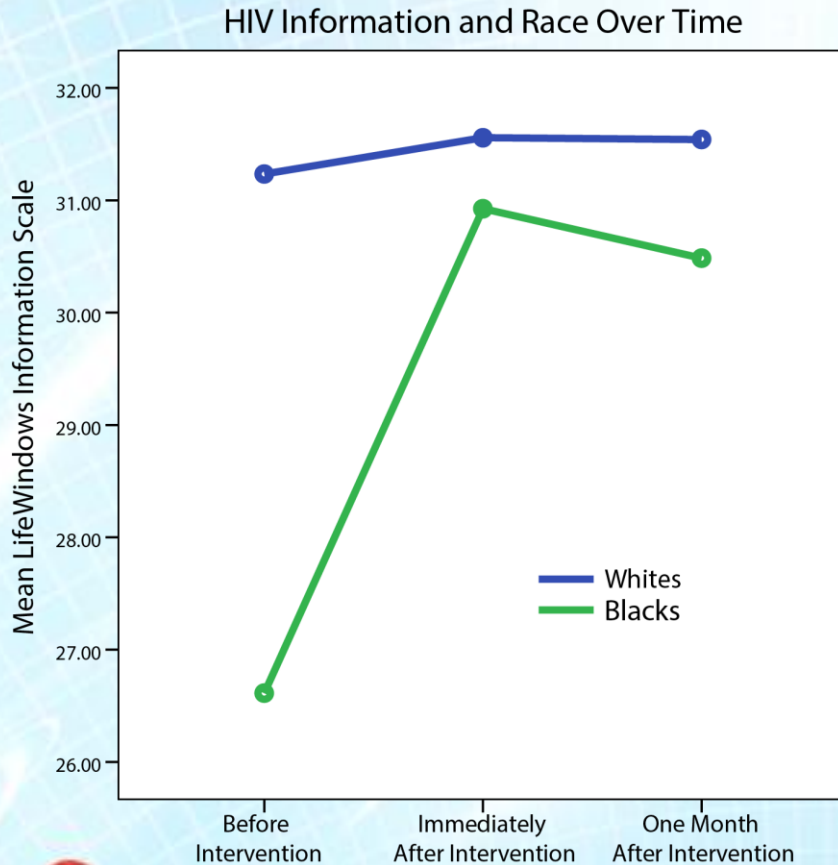
- Significantly better adherence after the intervention for those with less 95% adherence at baseline
- Improvement in adherence greater in those with lower baseline levels
- Participants' health literacy improved
- The intervention may be cost-effective

# LifeWindows IMB Scale

- Information scale assesses patient self-report of knowledge about HIV and its treatment
- Content includes how to take medicines, cope with side effects, knowing how medicines work.
- Implications of not taking medicines consistently



# LifeWindows Scale: Information



Main effect for time is significant ( $F = 4.21, p = 0.02$ )

Time	<i>df</i>	<i>t</i>	<i>p</i>
1	116	2.04	0.04
2	116	0.38	0.71
3	116	0.01	0.99

# Usability

- No age or gender differences in ratings of usability and usefulness
- Persons with less than high school education rated the application as *more* useful ( $t [111] = 2.10, p = 0.04$ ).
- Blacks rated the application as significantly *more* useful than did whites ( $t [111] = 2.20, p = 0.03$ ).

# Limitations

- No comparison group
- Small sample
- Effect sizes suggest need for multiple interventions for optimal adherence



# Discussion

- We need “downstream” interventions for disparities
  - Franks & Fascella, *J Gen Internal Medicine*, 2008
- Computer-delivered interventions be effective in addressing disparities
  - Jerant et al., *Patient Education and Counseling*, 2008

# Conclusions

- The computer-based intervention is usable, acceptable and may be effective in persons treated for HIV
  - Users say its usable, helpful, and even fun
  - Changes in information, health literacy, adherence
  - Spontaneous positive comments
    - “I never understood this before”
    - “No one ever explained this to me before”

# References

- Ownby RL, Waldrop-Valverde D, Caballero J, Jacobs RJ. (2012). Baseline medication adherence and response to an electronically delivered health literacy intervention targeting adherence. *Neurobehavioral HIV Medicine*, 4, 113-121.
- Ownby RL, Waldrop-Valverde D, Hardigan P, Jacobs RJ, Caballero J, Acevedo A. (2013). Development and validation of a brief computer-administered HIV-related health literacy scale. *AIDS and Behavior*, 17, 710-718. DOI: 10.1007/s10461-012-0301-3.
- Ownby RL, Waldrop-Valverde D, Hardigan P, Jacobs RJ, Caballero J, Acevedo A. (2013). Cost effectiveness of a computer-delivered intervention to improve HIV medication adherence. *BMC Medical Informatics and Decision Making*, 13, 29 doi:10.1186/1472-6947-13-29.



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