

# Future Considerations and Lessons Learned from Internet-based Interventions for HIV/STI Prevention

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# Need for Widespread Dissemination of Evidence-based HIV/STI Prevention Interventions

- Although effective HIV/STI prevention interventions exist, their delivery is often challenging.
- Many interventions that have been shown to effectively reduce risk behavior in research settings are not routinely available in real-world settings.
- Evidence-based interventions can be expensive to implement, often requiring financial and staffing resources not typically available in many community-based systems (e.g., substance abuse treatment programs, criminal justice settings).
- Additionally, many at-risk individuals may not be involved in formal systems of care where they can receive access to HIV/STI prevention interventions (e.g., only 10% of substance users in treatment).

# **Need for Widespread Dissemination of Evidence-based HIV/STI Prevention Interventions (Continued)**

- Even if evidence-based programs are initiated in community-based programs, it is often difficult to ensure the fidelity of intervention delivery (e.g., given staff turnover, patient caseloads, limited time).
- Many prevention programs offered in substance abuse treatment programs are often “homegrown” and of unknown effectiveness (Collins et al., 2006).
- Innovative approaches to bridging the gap between clinical research and practice are needed, thus allowing findings from clinical research to have a markedly increased public health impact.

# **Promise of Technology for Promoting Widespread Reach of Evidence-based HIV/STI Prevention Interventions**

- Technology-based therapeutic tools offer great promise for enabling the widespread dissemination of evidence-based HIV/STI Prevention interventions.
- Technology-based (e.g., web-based, 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 an array of settings via flexible dissemination channels

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 rapid diffusion

Tailoring/Customization Readily Accomplished

May increase adoption of science-based prevention interventions

# An Overview of Technology-delivered HIV/STI Prevention Interventions

- A number of computer-based (including Internet-based) prevention interventions have been developed and evaluated, including those for MSMs, heterosexual adolescents and adults, injection drug users, other at-risk groups, as well as “prevention for positives”.
- These programs are typically designed to decrease risk behavior as well as increase accurate knowledge about HIV and effective preventive actions, increase intentions to reduce risk behavior and communicate about safer sex with partners, and improve attitudes toward safer sex.

# An Overview of Technology-delivered HIV/STI Prevention Interventions

- Computer-based prevention programs are often based on Information-Motivation-Behavior, Social Cognitive or Transtheoretical models of behavior change.
- A few studies have also used instant messaging (IM) approaches (e.g., Moskowitz et al., 2009).
- Limited research has focused on prevention interventions delivered via mobile devices (e.g., text messages with tailored facts about sexual health and referral to health clinics and social services –Levine et al., 2007; Lord et al., in progress)

# An Overview of Technology-delivered HIV/STI Prevention Interventions

- Some (limited) international research in Africa:
  - High interest and acceptance of Internet-based prevention in urban and rural areas of sub-Saharan Africa (Borzekowski et al., 2006; Ybarra et al., 2006).
  - The Internet has been used to provide distance training in evidence-based prevention to NGO staff (Kelley et al., 2004)
  - A computerized counseling intervention for HIV+ individuals in Kenya is ongoing (Ann Kurth).

# Effectiveness of Technology-delivered HIV/STI Prevention Interventions

- On average, computer-based, technology-delivered interventions are at least as effective as (or exceed) traditionally-delivered HIV/STI prevention interventions.

e.g., Noar et al. meta-analysis (2009) showed OR = 1.54 ( $d = .0259$ ) of computer interventions for increasing condom use (compared to ORs of 1.13 – 1.64 and  $d$  of approx. 0.18 for traditionally-delivered interventions)

Also, reduced frequency of sexual behavior, incidence of STIs and reduced number of sex partners

- Most effective if use individualized tailoring

# Future Considerations for Technology-based HIV/STI Prevention Interventions

- Although results from this line of research to date are promising and underscore how technology can provide powerful tools for the delivery of prevention interventions, the public health impact of this work could be increased.
- Many existing tools are computer-based and not Internet-delivered, which prevents central deployment, central updates, and tracking usage activity
- The content of many tools is grounded in a scientific understanding of HIV prevention, but limited attention has been paid to the use of evidence-based informational technologies grounded in an understanding of principles of learning

# Future Considerations for Technology-based HIV/STI Prevention Interventions

- Target Audiences have been minimally involved in development of these technology-based tools; Iterative development processes have shown considerable promise for program development.
- Flexible systems or “platforms” should be developed for delivering web- and mobile-based interventions that allow for content (“modules”) to be inserted or removed based on the needs of a given target population or of an individual

# Future Considerations for Technology-based HIV/STI Prevention Interventions

- By offering interventions on a wide variety of platforms to optimally capitalize on the technology most frequently used by various target populations, technology-based interventions also offer great potential to eliminate the “digital divide” and address healthcare disparities that exist in many traditional models of care.

(e.g., Although White (80%) Americans are more likely to use the Internet than Black (72%) or Hispanic (61%) Americans, Blacks are the most active users of the mobile Internet (accessed via mobile devices).

Rate of increase in use of mobile devices to access the Internet among minority groups is twice the national average since 2007 – e.g., 141% increased use for African Americans vs. 73% average (Horrigan, 2009).

# Future Considerations for Technology-based HIV/STI Prevention Interventions

- Other novel dissemination efforts should be explored (e.g., developing and embedding interventions on popular online social networks, which capitalize on the infrastructure and communication structure of such networks, offer enormous reach potential)

*(400 million users on Facebook alone)*

- Integrate HIV prevention into comprehensive risk reduction programs (e.g., focused on psychosocial treatment for substance use disorders, mental health issues, etc.)
- Integrate “prevention for positives” with technology-based adherence approaches.

# Future Considerations for Technology-based HIV/STI Prevention Interventions

- Expand research to focus on delivery of technology-based HIV prevention interventions in mid-income countries where technology-based communication structures are strong, but (due to increased globalization and the opening of economies) drug use and other risk behavior, along with HIV incidence, are extraordinarily high.
- Focus on including core aspects of technology-based behavior change that will persist once the “technology of the moment” fades away
- Assess cost-effectiveness of intervention delivery (especially in comparative effectiveness trials) – allows more effective communication with/influence of others outside the researcher/clinician community

# Opportunities with Technology-based Interventions

- A technology-based approach to intervention delivery creates new opportunities and outlets for intervention efforts and may greatly increase the availability of science-based prevention interventions.
- Technology-based interventions can transcend geographic boundaries and may be used in a wide variety of settings, including home, community organizations, schools, emergency rooms, health care providers' offices, mobile devices, and online social networks.
- Potential to offer considerable public health impact.

