"Trends in Internet Technologies: An Overview"

Electronic Media and Health Conference

Clinical and Health Research (CHSR), Yale University’s Center for Interdisciplinary Research on AIDS (CIRA)
Disclaimer

The programs contained within this presentation are shown to be examples of use, best practices, and / or lessons learned.

This presentation should not be considered endorsement of any specific campaign and is intended to be an endorsement of the technology and specific use of the available tools.
79% of all adults are online

The UN agency, International Telecommunications Union (ITU) estimates = 77.4% (1/2011)

Social Networking for 74+ up from 4% to 16% since 2008
Non-Internet Users

21% of Americans (6.4 million*)
- 31% are not interested (2 mil)
- 12% no computer (778,000)
- 10% costs (648,000)
- 9% too difficult (583,000)
- 7% waste of time (453,000)

* numbers are estimates

A New Digital Divide?

African-Americans and Latinos outpace whites in their use of data applications on handheld devices.

Nearly two-thirds of African-Americans (64%) and Latinos (63%) are wireless internet users.

“Research has shown that people with an actual connection at home, the ability to go online on a computer at home, are more engaged in a lot of different things that people who rely on access from work, a friend's house, or a phone.”

Aaron Smith

Minority users are also much more likely than whites to say it is “very important” for government agencies to post information and alerts on social networking sites.

Virtualizing, Augmenting, Mirroring ...
Two Lives: Responsibilities in Both Worlds

500 Million +
50% log on daily
Average user has 130 friends
# Internet Activities by Age

<table>
<thead>
<tr>
<th>Activity</th>
<th>Millennials (Age 18-39)</th>
<th>Gen X (Age 34-45)</th>
<th>Younger Boomers (Age 46-55)</th>
<th>Older Boomers (Age 56-64)</th>
<th>Silent Generation (Age 65-73)</th>
<th>G.I. Generation (Age 74+)</th>
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<td>Donate to charity</td>
<td>Online auction</td>
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Slicing across the first two columns (Millennials and Gen X), searching for health information is the third most popular activity for all users 18+.

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**Key:** % of internet users in each generation who engage in this online activity.
Health Seeking Behavior

- Four in five internet users have searched for health care info
- 66% look for info about a specific disease or medical problem
- 56% about a certain medical treatment or procedure

<table>
<thead>
<tr>
<th>Most likely:</th>
<th>Least likely:</th>
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</thead>
<tbody>
<tr>
<td>Adults who provided unpaid care</td>
<td>African Americans</td>
</tr>
<tr>
<td>Women</td>
<td>Latinos</td>
</tr>
<tr>
<td>Whites</td>
<td>Adults with disability</td>
</tr>
<tr>
<td>Ages 18-49</td>
<td>Adults over 65</td>
</tr>
<tr>
<td>Some college</td>
<td>High school education or less</td>
</tr>
<tr>
<td>Higher-income households</td>
<td>Low-income households</td>
</tr>
</tbody>
</table>

40% of online consumers use social media for health information

Webster, T., The Edison Research/Arbitron Internet and Multimedia Study, April 29, 2010

Better Health Through Social Networking

...public health interventions aimed at the spread of new health behaviors (for instance, improved diet, regular exercise, condom use, or needle exchange) may do better to target clustered residential networks rather than the casual contact networks across which disease may spread very quickly — particularly if the behaviors to be diffused are highly complex.

The clustered networks spread the behavior to more people than the casual contact networks.

What about clustered communities focused on sex-seeking and specific sexual activities (e.g. UAI)?

Online communities such as PatientsLikeMe are clustered communities and allow for quicker repetitive reinforcement from ‘peers’.

The first community (left) has a clustered network structure, while the second one is a more "random" casual contact network.

Node colors indicate people who adopted a behavior (blue) and those who did not (white), with lighted links showing the active pathways of communication.
Patients Like Me

N-1,323 (19% of invited)

- 72% rated the site moderately or very helpful regarding a symptom they experienced
- 12% changed their physician as a result of using the site (21% in regards to fibromyalgia)
- 41% of HIV patients agreed they had reduced risky behaviors as a result of using the site (peer-based behavioral intervention?)
- 22% of mood disorder patients agreed they needed less inpatient care as a result of using the site.

Analysis of the Web access logs showed that participants who used more features of the site (eg, posted in the online forum) perceived greater benefit.

Wicks, P., Sharing Health Data for Better Outcomes on PatientsLikeMe, PatientsLikeMe Inc., Research & Development, Cambridge, United States, June 2010
Social Media
National Guidelines for Internet-Based STD and HIV Prevention

Internet-based Partner Services

Health Communication

Internet Outreach
IPS, IO, Heath Communication in Online Communities
Research > Programs > Outcomes

Checking In: Showing Outcomes

<table>
<thead>
<tr>
<th>SITE</th>
<th>URL</th>
<th>MANAGED BY</th>
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<tbody>
<tr>
<td>MTV GYT site</td>
<td><a href="http://gytnow.org/">http://gytnow.org/</a></td>
<td>MTV</td>
</tr>
<tr>
<td>findSTDtest.org</td>
<td><a href="http://findstdtest.org/">http://findstdtest.org/</a></td>
<td>CDC-NPIN</td>
</tr>
<tr>
<td>STD Awareness Microsite</td>
<td><a href="http://www.cdcnpin.org/stdawareness/">http://www.cdcnpin.org/stdawareness/</a></td>
<td>CDC-NPIN</td>
</tr>
</tbody>
</table>

4,819 check-ins (9/1/10 - 10/20/10)
Gay Men = Early Adopters & ‘At Risk’

40% of gay men own an iPhone, 65% use iPhone, Blackberry, or Android devices.

One in five (19%) MSM in 21 major US cities infected with HIV, and nearly half (44%) unaware of their infection (CDC 2008).

1 in 6 couples married in the last 3 years met on an online dating site (2x the number that met in bars, clubs and other social events combined).

1 out of 5 single people have dated someone they met on an online dating site.***

Fabulis.com: The Online Gay Male 2010 March 2010
Match.com and Chadwick Martin Bailey 2009 - 2010 Studies: Recent Trends: Online Dating Marriage Survey: 7000 US adults age 18+, married within the past 5 years, Online Dating Survey: 3000 US adults age 18+, who used online dating in the past 5 years
Gay Men, Changing Culture: More Complex Prevention

“Gay communities undergoing structural decline” with many identifying the Internet as the underlying cause.

- businesses and bars closing down
- decreased visibility of gay people
- safer to talk on the Internet (rural and repressed areas, explicit language)
- gay neighborhoods disappearing / assimilating into suburban life (increased desire for connection?)
- Some integration:
  - “In London, the largest cruising [Internet] site just opened up an enormous bar in the middle of town with a computer so you can cruise their site while you’re out drinking.” (London).
  - “Bathhouses now have Internet hook-ups” (Copenhagen and six other cities)

These changes in the gay community were noted as increasing the complexity of sexual decision making and HIV risk, while decreasing effective prevention.

What is your motivation to use social networking sites? Mark all that apply.

- Communicate with friends: 63% (Lesbians), 63% (Gay men)
- Find old friends: 44% (Lesbians), 45% (Gay men)
- Entertainment: 36% (Lesbians), 46% (Gay men)
- Stay in communication with family: 36% (Lesbians), 32% (Gay men)
- Find information about upcoming events: 34% (Lesbians), 32% (Gay men)
- Stay in communication with work colleagues: 28% (Lesbians), 31% (Gay men)
- Dating: 27% (Lesbians), 21% (Gay men)
- Hook up: 28% (Lesbians), 24% (Gay men)
- Research products and services: 9% (Lesbians), 3% (Gay men)
- Discover new places to go (restaurants, clubs, hot spots): 21% (Lesbians), 21% (Gay men)
- Stay on top of what is happening in the LGBT community: 30% (Lesbians), 13% (Gay men)

Community Research, Inc. LGBT Consumer Index, 2009-10
Risk Online!

• “...online sex seeking among MSM has been reliably associated with greater numbers of partners, higher likelihood of meeting HIV-positive (HIV+) partners, more receptive anal sex, and greater methamphetamine use”

• “...men meeting online are no more likely to engage in unprotected anal intercourse than they are with partners met off-line.”

• “MSM who met sexual partners exclusively offline reported the fewest partners but the greatest proportion of partnerships involving unprotected anal intercourse.”

• “The association between using the Internet to meet sex partners and UAI depended on whether MSM resided in rural or urban areas. Rural MSM may have different patterns of risk behavior from urban MSM.”

• Control Centers for Disease Methamphetamine Use and Risk for HIV/AIDS. - Atlanta, 2007.
• Kakietek, J., Sullivan, P., Heffrelfinger, J., You’ve Got Male: Internet Use, Rural Residence, and Risky Sex in Men Who Have Sex With Men Recruited in 12 U.S. Cities
Reaching a Broad Sample

• Images should match the site’s mission
  – Often competing with adult images
  – Always competing with other advertisers
  – Banner blindness exists and must be addressed
  – One image may not be enough, especially for long campaigns in one location

• One site may not be enough – most active users also belong to multiple sites

• Images that reach Gay men may not reach MSM
Married and bi
Participants explained their sexual behaviors by giving a variety of reasons for these sexual encounters, such as economic need, recreation or sport, sexual curiosity, convenience, or anger at their girlfriend/wife.

These strategies helped the participants maintain their heterosexual identity despite behaviors that were conventionally consistent with a bisexual identity. Some protected their heterosexual identity by explaining their sexual behavior as infrequent (Tony: “I’m not having sex every day, or every other day, with a man”), accidental (Donnell: “Something just happens”), recreational (Talon: “We all play games to relieve stress”), unnecessary (Jason: “Don’t need to do that”), or a necessity (Mark: “I needed the money at the time”).

Can Computers Do ‘It’ Better?

- Ubiquitous internet access (availability of broad range of potential participants)
- Reach more (possible to gather data from thousands a day)
- Privacy (+ increased honesty, - possible duplicate respondents)
- Convenience (researcher and participant)
- Lower costs
- Transportable
- Faster / Timely (7 days a week / 24 hours a day)
- Prevents ‘experimenter expectancy” effect (no interactions)
- Data is already coded, reduce or eliminate data entry errors
But...

• Will Internet users represent your target (77-79% of us)
• What about complex questions, often limited by tech – potential for misunderstandings)
• IRB / Decision makers may be obstacles
• Duplicate responses
  – Emails (not enough but needed)
  – Lottery or mail incentive (obtain name /address)
  – Collect IP (multiple people on the ISP may have same IP)
• Drop out is easy (opposed to face to face)
• Time (stop and start, rush)
Online Recruitment

'Never Testing for HIV' Among Men Who Have Sex with Men Recruited from a Sexual Networking Website, United States.

Marcoglis AD, Joseph H. Belshe L, Hirshfield L, Chiasson MA.

Prevention Research Branch, Division of HIV/AIDS Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, 1600 Clifton Road, Mail Stop E-57, Atlanta, GA, 30333, USA, AMargolis@cdc.gov.

Abstract

HIV testing was assessed online among men accessing a sexual networking website for men who have sex with men. Most of the 8,040 participants reported HIV testing (53.2% ≤ 1 year, 33.1% > 1 year) and 17.1% were HIV-positive. Overall, 8.6% of men including 24% of those 18-24 years of age had never been tested. Among never testers, 25% did not know where to get tested. Predictors of never being tested included younger age (18-24), bisexual or heterosexual orientation, living outside of large metropolitan areas, and not having a healthcare provider. Increasing access to and knowledge of HIV testing sites is needed.

Internet based HIV prevention research targeting rural MSM: feasibility, acceptability, and preliminary efficacy.

Bowen AM, Williams ML, Daniel CM, Clariton S.

Department of Psychology, University of Wyoming, Dept. 3415, 1000 E. University, Laramie, WY 82071, USA. abowen@uwyo.edu

Abstract

Internet delivered primary prevention interventions for HIV risk reduction present significant challenges. Changing lifestyle behaviors, such as beginning to use condoms, may lead to low initiation and high dropout rates. Many Internet delivered HIV risk assessment programs of the Internet's capabilities or did not conduct evaluation. This study focuses on the development of an intervention program for rural men who have sex with men (MSM). The program included Internet delivered primary prevention interventions. The intervention was developed based on iterative research and the intervention was delivered by Internet. The intervention included reduced anal sex and significant increases in the intervention group. Results also support traditional research methods to evaluate HIV prevention programs.

Sexual Dysfunction in an Internet Sample of U.S. Men Who Have Sex with Men

Sabina Hirshfield, PhD, Mary Ann Chiasson, DrPH, Robert L. Wagnmiller, Jr., PhD, Robert H. Remien, PhD, Mike Humberstone, BFA, Roberta Scheinmann, MPH, and Christian Grov, PhD

Public Health Solutions—Department of Research & Evaluation, New York, New York, USA

University at Buffalo, State University of New York—Department of Sociology, Buffalo, New York, USA

New York State Psychiatric Institute and Columbia University—HIV Center for Clinical and Behavioral Studies, New York, New York, USA

Local Initiative Support Corporation, New York, New York, USA

Brooklyn College of the City University of New York, Brooklyn, NY and Center for HIV/AIDS Educational Studies & Training—Department of Health & Nutrition Sciences, New York, New York, USA

Corresponding Author: Sabina Hirshfield, PhD, Research & Evaluation, Public Health Solutions, 220 Church Street, 5th Floor, New York 10013, USA. Tel: 646-619-6676; Fax: 646-619-6777; Email: shirshfield@healthsolutions.org
Development Adolescent Sexual Health (DASH)
yMSM recruitment (hard to reach / sub-pop)

Between the ages of 16-30 at enrollment
10 or fewer male lifetime partners OR
5 or fewer years since same-sex sexual debut

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<tr>
<th>Date</th>
<th>Total (cumulative)</th>
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<td>12/16-12/31</td>
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- Screened
- Enrolled

Expanded eligibility criteria & Facebook advertisements

SU Triangle Club, 1%
American Friends, 2%
Unknown, 3%
Listserv, 3%
Other, 5%
Craigslist, 3%
Friend, 5%
Participant, 21%
Lifelong AIDS Alliance, 4%
STD Clinic, 10%
UW Q Center, 7%
Facebook, 36%

Matthew Golden, MD, MPH, Sara Nelson Glick, PhD, MPH, Brittany Walsh, MSW candidate
UW Center for AIDS and STD, Public Health of Seattle and King County STD Clinic (206-744-6829) golden@uw.edu
Craigslist Recruitment Example

Hot or Not and Science - w4w

Date: 2011-05-03, 4:26PM EDT
Reply to: Reply To This Post

Hello Ladies-

I currently do research at San Francisco State University on how we form social perceptions of others.

Please consider taking this short survey where you will rate how attractive you think several photos of women and men are.

http://survey.qualtrics.com/SN?SID=SV_bpc3ZxDGUvCg4MA

Your responses will be 100% confidential and NO contact information will be collected from you. It takes about 10-15 to complete.

I've been pushing the researchers in my department to make sure they include lesbian women in studies because currently this group is under-represented.

Your participation is deeply appreciated! Cheers!
Manhunt and Research

- Use Internet innovations for global sex research and health promotion
- Address critical sexual health issues and knowledge gaps that impact sexual health
- Support and produce assets-based research and interventions

**Our Product Mix:**

**Online Focus Groups:** Online focus groups can be utilized during any or all stages of campaign development or may be used to evaluate previous campaigns, websites, and/or online interventions. Online focus group services include formative research, participant recruitment, implementation, data collection, analysis, and custom reports.

**Display:**

Within OLB’s sites: Banner advertising using traditional impression based (CPM) delivery to geotarget OLB members. Sophisticated banner delivery software guarantees consistent ad placement and delivery.

Outside OLB’s sites: Banner advertising using impression based (CPM) or cost per click (CPC) delivery designed to retarget visitors after they’ve visited OLB’s brands. Have your ad seen on top-rated comScore® sites using this innovative approach.

**Email Broadcasts:** Communicate individually with OLB members through email broadcasts. Designed to provide immediate impact and results, email broadcasts have consistently produced high open and click through rates. Purchase either a single or monthly email broadcast. Geotargeting and behavioral targeting is also available.

**Custom Profiles:** Promote research and health organizations through custom profiles designed to stand out from standard member profiles.
## 2011 Health Outreach Options - MANHUNT & DList

<table>
<thead>
<tr>
<th></th>
<th>Online Focus Groups (ONE-TIME)</th>
<th>E-mail Broadcast (ONE-TIME)</th>
<th>Banners (PER MONTH)</th>
<th>Group (DList only) (PER MONTH)</th>
<th>Profile (ANNUAL or 6-MONTH)</th>
</tr>
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<tbody>
<tr>
<td><strong>Costs Start At</strong></td>
<td>$7,500</td>
<td>$1,500</td>
<td>$1,000</td>
<td>$250</td>
<td>$900 / $500</td>
</tr>
</tbody>
</table>
| **Explanation and Reach** | Purchase full service OLB Research institute online focus group services  
Evaluate your program or health campaign, or learn how to maximize your fundraising activities | Purchase a specified number of member profiles that will receive your health message  
Target members based on location (city/state/country), age, ethnicity, intos, stats, and profile headline or content | Purchase monthly banner ads that promote your health message  
*Standard*: Target members based on location-based geotargeting (city/state/country)  
*Premium*: Target members based on age, ethnicity, intos, and stats | Purchase a social network health group that promotes your health message*  
Ability to have members join and share your health-related group | Purchase a member profile designed to promote your health message  
Ability to interact with members when logged into your specialized health profile*  
*Health profiles cannot initiate contact with members - only respond to inquiries* |
| **Health Outreach Pace** | 3 Months  
Online focus group to research results analysis report | Immediate  
Most responses within first two weeks after e-mail broadcast | Consistent  
Scheduled number of banner impressions resulting in click-throughs to your site | Variable  
Scattered enrollment in your group based on number of logins and updates to group | Variable  
Scattered inquiries to your health profile based on number of logins |
| **Staff Time**        | Moderate  
Your staff approves OLB e-mail creative broadcast, survey screen and focus group content  
Participates in online focus group as observer | Minimal  
Your staff approves OLB e-mail creative broadcast  
Your staff monitors visits to your website and fields inquiries post e-mail broadcast | Moderate  
Your creative staff designs all banner ads (OLB approves banners)  
Premium: Contract with OLB creative staff to produce banner ads (your staff approves banners) | Extensive  
Your staff co-creates group with OLB health staff  
Multiple promotional elements required for maximum reach | Extensive  
Your staff provides agency-specific health outreach protocols to OLB  
OLB and your staff co-create health profile |
| **Design Specifics**   | OLB creates e-mail broadcast, survey screen, moderator guide, research results and analysis report | OLB creates e-mail broadcast using agency-specific language/logos | Standard: OLB provides banner sizes and specifications to your staff  
Premium: OLB creates banners using agency specific language/logos | OLB approves all changes to health-related group | OLB approves all changes to health profile |

*Discounts Available for Packages of 2 or more*
Adam4Adam

- Reduced costs for public health related banners
  - 9,000,000 impressions per month
  - $3500 (monthly is the only option)
- Must be national
- Must be reviewed and approved

Example of banner performance

4/28/2011
301,162 impressions
0.05% click thru rate
App users are disproportionately male, young, educated and affluent

<table>
<thead>
<tr>
<th>Demographic Category</th>
<th>App Users (n=460)</th>
<th>Adult Cell Phone Users Who Do Not Use Apps (n=1,457)</th>
<th>Total U.S. Adults (n=2,252)</th>
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</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
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<tr>
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<td><strong>Age</strong></td>
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</tr>
<tr>
<td>18-29</td>
<td>44</td>
<td>18</td>
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<tr>
<td>30-49</td>
<td>41</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>50+</td>
<td>14</td>
<td>46</td>
<td>41</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
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<td></td>
</tr>
<tr>
<td>White (non-Hispanic)</td>
<td>64</td>
<td>70</td>
<td>69</td>
</tr>
<tr>
<td>Black (non-Hispanic)</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Hispanic (English-speaking)</td>
<td>14</td>
<td>11</td>
<td>11</td>
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<tr>
<td><strong>Education</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>8</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>High school graduate</td>
<td>24</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>Some college</td>
<td>29</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>College graduate</td>
<td>39</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td><strong>Annual Household Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $50,000</td>
<td>41</td>
<td>43</td>
<td>46</td>
</tr>
<tr>
<td>$50,000-$74,999</td>
<td>15</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>$75,000+</td>
<td>36</td>
<td>24</td>
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</tbody>
</table>


Figure 1: 24% of Adults use cell phone apps
Grindr

Over 1,000,000 users
3000 + a day

(Grinder: 9/15/10)
Recruiting on GRINDR

- Broadcast at login
- Two broadcast sent out once in 24 hour period
  - ~70% of registered users
- Define broadcast location and radius
  - 8 mile radius centered on West Hollywood
  - 20 mile radius centered on downtown LA
- Broadcast linked to contact information through landing page

- ~46,400 Los Angeles users
  - ~70% logging in daily
  - ~32,480 users see our broadcast daily
- From May through July 2010
  - 1,389 click throughs
    - ~4.3% of users who saw broadcast
  - Received 137 emails/calls
    - ~10% of men who clicked through
    - ~0.3% of GRINDR users in LA
Male Baseline Demographics

- Participants: 23.8% GRINDR, 75.2% Other
- 18-30 year olds: 56.0% GRINDR, 18.8% Other
- White identified: 44.0% GRINDR, 30.4% Other
- English speaking: 88.0% GRINDR, 94.9% Other
- College or more: 40.3% GRINDR, 68.0% Other
- Homeless in previous 12 months: 7.6% GRINDR, 0.0% Other

*Chi^2 p-value <0.05
GRINDR Recruitment Results

• Younger
• White identified
• More anal sex partners in previous 14 days
• High throughput recruitment technique
  – 14 men screened and scheduled on first day of launch
• Higher rate of follow-up after being contacted by study staff compared to
  – craigslist.org
  – LA Weekly
Text Message / Behavior Change

17 articles representing 12 studies (5 disease prevention and 7 disease management) in peer reviewed journals were included in systematic review (05- June 09, 9 countries represented)

Effect of Text Messaging  (8 found evidence of a short term effect or clinical outcome)

- Greater prevalence of current nonsmoking by smokers
- Increase in frequency of blood glucose monitoring and reporting
- Greater weight loss in obese adults

This evidence is consistent with existing literature suggesting that mobile phones are a useful tool for interventions seeking improvement in health outcomes

Make Contact

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