SMS 2.0: Implementation of text messaging in HIV healthcare, education, and research

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Learning Objectives
Upon completion of this presentation, learners should be better able to:

• Identify advance text messaging tools for HIV prevention and treatment.
• Implement text messaging tools in one or more of three HIV domains: healthcare, education, and/or research.
Outline

• Short Message Service (SMS) Use
• SMS Data Capture Types
• Considerations
• GSM Cartographic Analysis
• SMS Gateway
  – SMS Gateway Programs
• SMS, EMR & PHI
• Biomedical Adherence
• Sexual Health Education
• SMS in HIV Research: Pilot Study
• SMS in HIV Research: MTN017
Short Message Service (SMS) Use

• Over 3.7 billion active users SMS text messaging is the most widely used data application in the world\(^1\) – or 74% of all mobile phone subscribers

• Youth, African Americans, Latinos lead trends\(^2\)

SMS Data Capture Types

• One-way Out
  – Messages/Reminders

• One-way In
  – SMS Form/Field mobile data collection
  – GIS (Geographic Information Systems)

• Two-way
  – SMS-based CASI - Comp/Human
  – OC (Open Communication) - Human/Human
Considerations

• Why use SMS?
  – Is it appropriate?
  – Population (N) Size?

• Site Capacity
  – Computer
  – GSM Capabilities

• What to use?
  – Developer, Open Source, GSM Gateway Service

• What’s the Cost?
  – Computer x site
  – SMS messages
    • $0.01-$0.20 x #m x N
    • send/receive vs. send
  – Compensation
  – Open Source = Free
  – SMS/Web CASI inverse
Considerations (cont'd)

- Technological Literacy
  - Participants & Staff
  - Cultural Norms
- Question types
  - Yes/NO
  - Multiple choice
  - Open ended
- Question structure
  - Sequence
  - Confirmatory
  - Skip Patterns
- Data Management
  - Transmittal
  - Database/Repository
  - Disposal
GSM Cartographic Analysis
SMS Gateway
SMS Gateway Programs

- FrontlineSMS (Free/Open Source/CPU native app)
- RapidSMS (Free/Open Source)
- JavaRosa (Free/Open Source)
- Mobile Researcher (Pay/Web Hosted)
- Episurveyor (Free/Open Source)
- OutlookSMS plug-in (Pay/CPU native app)
SMS, EMR & PHI

• SMS modular integration with Electronic Medical Record (EMR)
  – Clinician text data in
  – System send info out to clinician, billing, patient

• Public Health Information (PHI)
  – Security concerns
    • Third party software
    • SMS service provider
    • Information on mobile handset
Biomedical Adherence

• Medication reminders
  – Antiretroviral Therapy
• Appointment reminders
• Appointment scheduling
• Medication refilling
• Behavioral reporting

• Biomedical protocol compliance
  – Single event
  – Multiple events
Sexual Health Education

- SexINFO
- Sexual health text messaging program for youth in San Francisco
- By texting a message, youth can find...
  - What to do if the condom broke
  - Get help deciding if they're ready to have sex
  - Clinic locations
Sexual Health Education (cont’d)

• Hookup
• Health text messaging program for youth throughout California
• Texting keyword
  – Weekly health tips
  – Find a clinic in their zip code
SMS in HIV Research: Pilot Study

- N=11
- MSM in NY
- High Unprotected Anal Intercourse
- HIV Partner Testing
- Daily SMS reminder
- Daily SMS-based CASI

*Unpublished data, HIV Center for Clinical and Behavioral Studies
SMS in HIV Research: MTN017

- N=200
- MSM+Trans.
- South Africa, U.S., Peru, Thailand
- 4 languages, 8 sites
- Rectal/Oral Microbicide
  - 3 study arms, Clinic visits, Bio-markers, Web CASI,
- Daily SMS reminder
- Daily SMS-based CASI/Diary

*Unpublished data, HIV Center for Clinical and Behavioral Studies
SMS System in MTN 017

- Each Country has its own SMS system
- Eliminates international SMS fees
- System in site’s active language
- All sites using same system
- FrontlineSMS
- Capacity remains with the site post MTN 017

*Unpublished data, HIV Center for Clinical and Behavioral Studies*
SMS System in MTN 017 (cont’d)

- Data Push/Pull biomedical informatics techniques
  - Automated SMS forwarding via email to a secure and centralized SMS repository (Data Push)
  - Remote access to all SMS systems and databases by Columbia Univ. BRWG (Data Pull)
  - Automated and Manual data aggregation are secure and reciprocally redundant

*Unpublished data, HIV Center for Clinical and Behavioral Studies*
Summary

- Considerations
  - Capacity
  - GSM Cartographic Analysis
  - SMS Gateway Programs
- SMS integration with EMR & PHI
- Biomedical adherence to ART
- Enhanced sexual health education
- SMS in HIV research could improve data factors
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