Disclosure

Dr. Lorien Abroms/GWU has licensed Text2Quit to Voxiva Inc.

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Other mCessation Projects

ඇ Adult Smokers/Text2Quit
ඇ Pregnant Smoker
ඔ SmokefreeMOM (PI: Abroms)
ඔ Quit4Baby (PI: Abroms, Johnson)
ඔ HIV+ Smokers (PI: Shuter, Abroms)
ඔ Other countries
ඔ Israel (PI: Levine)
ඔ Hawaii & Pacific Islands (PI: Whittaker)
Why health systems
History of the Development of Text2Quit

Prototype Development of Text2Quit 1.0 (2009)

Pilot Test (N=23) and Refinement (2010-2011)

RCT of Text2Quit 2.0 (N=503) (2011-2013)

Dissemination of Text2Quit 3.0 to State Quitlines & Employee Wellness (2012; N=75,000+)

User satisfaction Survey for callers to NM Quitline who get Text2Quit 3.0 (2013; N=40)

Evaluation in the Context of Quitlines
Topics I’ll cover

1. **Text2Quit Design**
2. Evaluation
3. Dissemination
4. Key Issues
Evidence: Cessation programs should:

- Ask for tobacco use status
- Advise every user to quit
- Assess willingness to quit
- Assist with a quit plan
  - Recommend approved meds
  - Practical counseling
  - Intra-treatment social support
- Connect to a quitline
- Enhance motivation
- Arrange for follow-up
Text2Quit

- Automated, interactive, personalized text messages for quitting smoking
  - Supporting website and emails
- Messages are timed around quit date
  - Proactive: Advice on quitting, peer ex-smoker messages, medication msgs, games, and relapse messages.
  - On-Demand: need additional motivation, having a craving, relapse.
- 2-3 messages/day following quit date
Text2Quit. Tomorrow's the big day! Throw out all your cigs & clean out ashtrays. Keep busy & avoid smokers. Text CRAVE to fight cravings.

Medication msg
MEDS/Text2Quit. Be sure to have your NRT Patch on hand. Open the pack & read the instructions so you're ready to use it tomorrow when you quit. Txt STOP2end.

On demand games & tips
Text2Quit. Reply TIP for tips to get through your craving or reply GAME to play celebrity trivia and earn Craving Points. Std msg rates apply. Txt STOP2end.

Peer ex-smoker msg
Dee/Text2Quit. 4 more days to go. Don't talk yourself out of it. Think of why you're quitting & stay committed. You'll love being smoke-free! Txt STOP2end.

Check-ins
Text2Quit. Please be honest, did you quit smoking today? Reply YES or NO. Txt STOP2end.
Personalization

- QuitDate/No Date
- Reasons for quitting
- Triggers
- Gender
- Use of pharmacotherapy
- Stats on money saved and health benefits accrued

Text2Quit. Lorien’s reasons to quit are: To improve my health, To save money, So that I can be there for my kids Lailah, David & Maya
Interaction:

✎ Pre-Quit
  ✎ Track smoking
  ✎ “Are You Ready?” survey
✎ Quit & Post-Quit
  ✎ Track how day went (urges and smoking)
  ✎ Weekly smokefree pledge
  ✎ “Did you Quit?” surveys

Text2Quit. Time for a pre-quit check-in. Reply with the number of cigarettes you smoked yesterday (e.g. 16). Find out if you've met your goal.
24-7 Help

- CRAVE
- SMOKED
- REASONS
- STATS

(1/2) Text2Quit. Sorry to hear you smoked! You made a mistake, but you can go back to being a non-smoker.

(2/2) Is this a SLIP where you can go back to not smoking? Or RELAPSE where you are now smoking again? Reply SLIP or RELAPSE.
Figure 3. Frequency of Messages for those with an approaching QuitDate

Timing and Frequency of Texts in Text2Quit

Days after Enrollment

# of Texts Sent Per Day
Logic Model for mHealth & Smoking Cessation

mHealth inputs (SMS)
- Proactive Reminders
- Info on how to quit (tailored)
- Stories
- Tracking & feedback
- Tools if craving
- Tools if slip

Intermediate outcomes (theory)
- Social support
- Benefits (outcome expectations)
- Barriers
- Self-efficacy
- Behavioral capability

Proximal outcomes
- Quit attempt
- Call quitline
- Use NRT/medications
- Get back on track if slip

Health outcome
- Quit smoking

Abroms et al. 2014
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Randomized Trial of Text2Quit

Participants (n = 503) were recruited on the Internet with google ad words
Randomized to receive Text2Quit or a self-help material (Smokefree.gov; Clearing the Air).
Surveyed at baseline and at 1, 3, and 6 months post-enrollment to assess smoking status.
Saliva collected from self-reported quitters at 6 months
An intent to treat analysis was used, and those lost to follow up were categorized as smokers.

Be Free Study (N=503)

- Text2Quit:
  - 1 month: 30.5%
  - 3 months: 33.2%
  - 6 months: 31.7%

- Control:
  - 1 month: 14.5%
  - 3 months: 19.9%
  - 6 months: 20.7%

Abroms et al. 2013
<table>
<thead>
<tr>
<th>Follow-up Survey</th>
<th>Measure</th>
<th>Intervention (SE) (n = 262)</th>
<th>Control (SE) (n = 241)</th>
<th>Relative risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary outcome</td>
<td>Biochemically confirmed RPP abstinence</td>
<td>11.1% (.02)</td>
<td>5.0% (.01)</td>
<td>2.22 (1.16 – 4.26)*</td>
</tr>
<tr>
<td></td>
<td>Self-reported RPP abstinence</td>
<td>19.9% (.02)</td>
<td>10.0% (.02)</td>
<td>1.99 (1.27 – 3.13)**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary outcomes</td>
<td>Biochemically confirmed abstinence</td>
<td>15.7% (.02)</td>
<td>11.2% (.02)</td>
<td>1.40 (.89 – 2.20)</td>
</tr>
<tr>
<td>6 Months</td>
<td>Not smoked in the past 7 days (%)</td>
<td>31.7% (.03)</td>
<td>20.8% (.03)</td>
<td>1.53 (1.13 – 2.07)**</td>
</tr>
<tr>
<td></td>
<td>Not smoked in the past 30 days (%)</td>
<td>24.8% (.03)</td>
<td>15.8% (.02)</td>
<td>1.57 (1.10 – 2.26)*</td>
</tr>
<tr>
<td>3 Months</td>
<td>Not smoked in the past 7 days (%)</td>
<td>33.2% (.03)</td>
<td>19.9% (.03)</td>
<td>1.67 (1.23 – 2.26)**</td>
</tr>
<tr>
<td></td>
<td>Not smoked in the past 30 days (%)</td>
<td>27.5% (.03)</td>
<td>16.2% (.02)</td>
<td>1.70 (1.20 – 2.41)**</td>
</tr>
<tr>
<td>1 Month</td>
<td>Not smoked in the past 7 days (%)</td>
<td>30.5% (.03)</td>
<td>14.5% (.02)</td>
<td>2.10 (1.47 – 3.00)**</td>
</tr>
<tr>
<td></td>
<td>Not smoked in the past 30 days (%)</td>
<td>11.8% (.02)</td>
<td>7.5% (.02)</td>
<td>1.58 (.91 -2.76)</td>
</tr>
</tbody>
</table>
Figure 2. Forest plot of comparison 1: Mobile phone intervention versus control, 26 week continuous abstinence

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Treatment Events</th>
<th>Treatment Total</th>
<th>Control Events</th>
<th>Control Total</th>
<th>Weight</th>
<th>Risk Ratio M-H, Fixed, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borland 2012</td>
<td>68</td>
<td>755</td>
<td>26</td>
<td>422</td>
<td>13.5%</td>
<td>1.46 [0.95, 2.26]</td>
</tr>
<tr>
<td>Free 2009</td>
<td>15</td>
<td>102</td>
<td>19</td>
<td>98</td>
<td>7.8%</td>
<td>0.76 [0.41, 1.41]</td>
</tr>
<tr>
<td>Free 2011</td>
<td>268</td>
<td>2911</td>
<td>124</td>
<td>2881</td>
<td>50.4%</td>
<td>2.14 [1.74, 2.63]</td>
</tr>
<tr>
<td>Rodgers 2005</td>
<td>64</td>
<td>852</td>
<td>39</td>
<td>853</td>
<td>15.7%</td>
<td>1.64 [1.12, 2.42]</td>
</tr>
<tr>
<td>Whittaker 2011</td>
<td>29</td>
<td>110</td>
<td>32</td>
<td>116</td>
<td>12.6%</td>
<td>0.96 [0.62, 1.47]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td>4730</td>
<td>4370</td>
<td></td>
<td>100.0%</td>
<td>1.71 [1.47, 1.99]</td>
</tr>
</tbody>
</table>

Total events: 444, 240

Heterogeneity: Chi² = 18.77, df = 4 (P = 0.0009); I² = 79%
Test for overall effect: Z = 7.00 (P < 0.00001)

Whittaker et al. 2012
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Covers 27 States, 675 employers/health plans

Participants receive:
1) multiple outbound coaching calls,
2) Web Coach®
3) Text2Quit℠

Over 100,000 callers enrolled in Text2Quit
Hurdle #1: HIPAA

- Alere Quitline is a HIPAA covered entity
- Callers are told about privacy risks with SMS and then asked if they want them.
  - (97% say yes! (but then 68% verify via SMS and opt-in))
Hurdle #2: Electronic Systems Integration

- Alere uses a sophisticated electronic record keeping system across Quit For Life Services
- Gets E-referrals from large hospital and primary care practices
- Text2Quit had to be integrated into existing systems
- End result (after 1 year and big $$)
  - Change their service elections on one system (e.g. Text2Quit) and have the changes be reflected on other (e.g. phone counseling, Web Coach).
  - quit date
  - use of quit smoking medications
  - SMS reminder one day before counseling call.
New Mexico Quitline callers (N=40)

- 100% of participants would highly recommend the combined PC+T2Q to a friend
  - 77% would highly recommend the PC alone
  - 68% the T2Q service alone
- Liked the program: quitting reminders, the content of the messages, and cigarette tracking
- 9% unsubscribe
  - too many texts.

Combined Quitline Counseling and SMS

- Quasi experimental design and propensity score matching
- Similar rates of 7-day abstinence were reported for Multi-Call Phone Counseling alone and with Text2Quit
- Text2Quit+ MC-PC more satisfied
- Text2Quit not confer benefit for quitting in tandem with Multi-Call

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Samuel Simmens, Ph.D.
Kelly M Carpenter, Ph.D., under review
Bottom Line

- Integration in health system is possible. Able to surmount HIPAA challenges and electronic systems integration.
- High uptake but
  - Customers report higher satisfaction but quit rates already saturated and no additional effect.

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Lessons Learned

Have models where HIPAA handled and privacy protected while offering services (not that hard)

Challenge is computer systems that don’t talk to each other.

Still lots of hesitancy by health systems for adoption

how integrate with more traditional health care systems (e.g. EHR and primary care)

Need for effectiveness studies
Thank You!
References & Selected Readings


“You can’t list your iPhone as your primary-care physician.”