Medicine 2.0
Boston, MA
Saturday, September 15, 2012 11:00 AM - 11:45 AM
Lessons on Texting 4 Health from an Expert MHealth Panel

Designing a Text messaging-Based Behavior Change program

Michele Ybarra MPH PhD
Center for Innovative Public Health

•Thank you for your interest in this presentation. Please note that analyses included herein are preliminary. More recent, finalized analyses may be available by contacting CiPHR for further information.

CiPHR Center for Innovative Public Health Research
Decoding how technology influences and can improve public health

---

METHODOLOGICAL AND DESIGN CONSIDERATIONS

- Methodological Considerations
  - Uni-directional versus bi-directional messaging
  - Provide phones / text messaging for participants or embed in eligibility criteria

- Design considerations
  - Using previous interventions as a Guide
  - Determine the study length: how long will messages be sent?
  - Number of text messages per day / week
  - How many characteristics will you tailor on? (and will you have unique messages throughout the program, or repeat based upon tailoring?)
  - Will you enhance the text program with other delivery modes? (e.g., online, face-to-face)

Ybarra ML, Holtrop JS, Bosi T, Emri S. Design considerations in developing a text messaging program aimed at smoking cessation. Journal of Medical Internet Research. Jul 24;14(4):e103, 2012 PMID: 22832182

STOP MY SMOKING (SMS) USA PROGRAM DEVELOPMENT

- Tailored to the unique needs of young adult smokers.
- Special efforts were made to reach youth both in and outside of higher education settings, and to ensure a racially and economically diverse sample.
- Formative development activities included:
  - Focus groups to better understand young adult smoking behavior;
  - A young adult advisory council to confirm content and tone; and
  - A brief field beta test
  - An (unintentional) full beta test

STOP MY SMOKING (SMS) USA PROGRAM DESIGN

- 6-weeks: 2-weeks pre-quit, 4-weeks post-quit
- Content topics included:
  - Preparing to quit,
  - Benefits of quitting,
  - Coping strategies,
  - Overcoming difficulties and discomforts,
  - Encouragement,
  - The importance of pharmacotherapy,
  - Quitting skills, and
  - Dealing with relapse
- Tailoring based upon where in the quitting process participants were:
  - Content: pre-quit, early quit, late quit, relapse (Participants were pathed at 2-days and 7-days post quit-day based upon their quitting status)
  - Message frequency: for the first week, participants received three messages per day. As participants got closer to the Quit Day (Day 14), we sent five messages per day. On the Quit day and the following day, eight messages were sent each day. For the next two days, six messages were sent; this was reduced to five messages on the next day. Four messages were sent each of the last two days of their first week post-quit. For the next two weeks, participants receive two messages per day. In the final week, messages were pared down to one message per day

Image from: http://www.mentalhelp.net/poc/view_doc.php?type=doc&id=2506&cn=105

DRAFTING THE CONTENT

Message type	Number of messages per quitting stage					
	Prequit	Quit day and day 2	Early quit	Late quit	Relapse	Encouragement to try quitting again later
Preparing to quit	17	0	0	0	0	0
Benefits of quitting	4	2	3	19	3	2
Coping strategies	14	4	11	6	7	1
Discomfort and difficulties	1	6	3	1	2	0
Encouragement	3	2	5	3	5	2
Nicotine replacement therapy and pharmacotherapy	3	2	2	1	2	1
Quitting skills	2	0	0	6	0	0
Relapse	0	0	0	0	5	0
Preparing to quit	17	0	0	0	0	0

Ybarra ML, Holtrop JS, Bosi T, Emri S. Design considerations in developing a text messaging program aimed at smoking cessation. Journal of Medical Internet Research. Jul 24;14(4):e103, 2012 PMID: 22832182

PROGRAM EVALUATION BY ARM

Program evaluation*	Control (n=49)	Intervention (n=80)	P-value
Made it easier to quit smoking	43%	70%	.04
Disrupted my schedule	6%	10%	.75
Received too many messages	12%	23%	.45
Messages talked about what I was feeling	70%	75%	.54
I stopped reading the messages by the end of the program	20%	29%	.68
Message tone was positive and made me feel supported	78%	93%	.10
Likelihood of recommending program to others	74%	82%	.49

*Somewhat / strongly agree (or likely)

ACKNOWLEDGEMENTS

I'd like thank the entire research team, including:
- Dr. Jodi Holtrop, Michigan State University
- Dr. Hossein Rahrbar, University of Texas
- Drs. David Strong and Amanda Graham, consultants
- Ms. Tonya Prescott and Mr. Joe Scwhab, CiPHR

Declaration of Interest: The author has no competing interests to declare.

SMS USA SAMPLE CHARACTERISTICS (N=164*)

| Personal characteristics	Control (n=63)	Intervention (n=101)	P-value
Demographic characteristics			
Age (Range: 18-25)	21.6 (2.1)	21.6 (2.1)	0.82
Female	44.4% (28)	43.6% (44)	0.91
Working 31+ hours / week	25.4% (16)	40.6% (41)	0.05
White race	65.1% (41)	64.4% (65)	0.95
HH education or lower	33.3% (21)	30.7% (31)	0.72
Smoking characteristics			
Average number of cigarettes smoked per day (Range: 4-30)	11.9 (5.7)	12.4 (6.3)	0.62
Age at first cigarette (Range: 4-23)	14.4 (3.4)	13.9 (3.2)	0.29
Confidence in quitting (Range: 0-10)	6.5 (2.6)	6.7 (2.4)	0.60

STOP MY SMOKING (SMS) USA PROGRAM DESIGN

○ Example SMS USA program messages:
- The SMS USA program is like a recipe book to help you quit smoking. Not every text will work for you, but try each one before you make a decision – just to see!
- When you go out with friends, watch the non-smokers. What do they do? What will you do as a non-smoker? Practice in your head being one of the non-smokers.

○ Attention matched control program messages:
- These next several weeks we're going to be working with you to improve your sleep and physical activity. Why? Because both will help you to quit smoking.
- Here's another thing that exercise, sleep, and quitting smoking have in common: they all help you live longer!

Image from: http://www.mentalhelp.net/poc/view_doc.php?type=doc&id=2506&cn=105

INTERVENTION-SPECIFIC PROGRAM EVALUATION
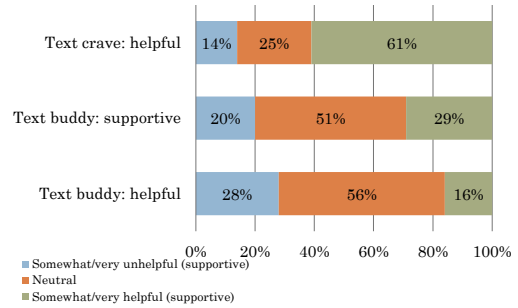
Text Crave and Text Buddy inspired by: Rodgers A, Corbett T, Bramley D, Riddell T, Wills M, Lin R-B, et al. Do u smoke after txt? Results of a randomised trial of smoking cessation using mobile phone text messaging. Tob Control. 2005;14(4):255-61. PMID:16046689

PRIMARY OUTCOME: SIGNIFICANT OTHER-VERIFIED CONTINUOUS ABSTINENCE SINCE QUIT DAY

OR = 2.44, 95% CI: 1.16, 5.13   OR=1.62, 95% CI: 0.82, 3.21