Chapter 5 - Text "Ahhhhh" for Me Please

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Smoking is the single largest preventable cause of disease and premature death. Among teens worldwide, ages 13 to 15, about one in five smokes. Evidence shows around 50 percent of those who start smoking in adolescence continue to smoke for 15 to 20 years.

We at HSA Global are intrigued by the potential of utilizing the ubiquity of mobile phones, and the growing acceptance of SMS as a communications norm, to facilitate deeper interaction between care providers and recipients.

"First Generation" usage of SMS in Health—Texting as Alerts

Our background research found that the use of texting in the healthcare industry has become increasingly commonplace. SMS messages are now a normal and well-accepted means of communication between patients and care organizations. For example, the National Health Service in the United Kingdom has piloted the use of SMS for sending outpatient appointment reminders to patients' mobile phones and to inform bank nurses of shift availability (NHS Turns To SMS, 2008).

A simple Internet search results in numerous hits for commercial appointment-reminder and alert-based applications, targeted at clinical practices. Considerable online research material discussing the use of SMS texting in providing community outreach for the public health system is also available. All of this research, and the availability of SMS-based software solutions, amply demonstrate that mobile technology and SMS texting will become permanently established in the healthcare sector.

A common attribute of these "first generation" initiatives is their orientation toward one-way communication, such as information delivery or alerts. We recognize the potential cost benefits and improved communication these solutions can deliver within the healthcare sector, however, we believe the true medical benefit of texting can be exploited by creating an interactive, content-based "dialogue" between patient and provider, enabling the individual to be part of their own healthcare management. We believe this interaction represents the "second generation" of SMS—an exemplar being the STOMP smoking cessation initiative created at the University of Auckland in 2005.

STOMP was created as the result of a large trial conducted by the Clinical Trials Research Unit (CTRU) at the University of Auckland, New Zealand. The CTRU noted that "existing effective smoking cessation services, such as advice from health professionals and nicotine replacement" were not heavily used by adolescents. Little direct evidence showed these programs were effective over the long term for younger smokers (Rodgers, A., Corbett, T., Bramley, D., et al, 2005).

Figure 1 - STOMP (Stop Smoking Over Mobile Phone)

The CTRU identified mobile phones as a potential delivery tool for adolescents. The research proposal highlighted mobile phones as a highly popular technology with teenagers and represented a more age-appropriate channel for a smoking-cessation intervention. Other channels, such as call centers or literature-based services, were not popular with teenagers.

To test their hypotheses, the CTRU ran a randomized–controlled trial of over 1700 participants throughout New Zealand. Participants in the trial were selected based on their desire to quit smoking, age (over 15 years), and owning a mobile phone. They were allocated to one of two groups: a control group that received no SMS intervention content and a group that received a program of SMS-delivered intervention messages.

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The SMS content database built by the CTRU contained over 1000 messages that provided different information, such as support and reinforcement, advice, and distractions. Participant messages were based on the use of keyword algorithms, such as demographic and cultural attributes, and self-reported data from the participants. The use of these algorithms made it possible for participants to receive customized messages. The CTRU also varied the frequency of sent messages in relation to an agreed quit day selected by the participant.

Participants of the trial were able to directly interact with the program by sending text messages back to their new friend and mentor, "STOMP". By sending a "Crave" text to the program the participant received an immediate response, suggesting tactics to manage the craving and offering encouragement at the most needed times.

The results of the study were very positive. The intervention showed a two-fold increase in self-reported quit rates at six weeks (28 percent compared to 13 percent). The results were consistent across subgroups identified in the analysis; age, sex, income level, and geographic location. Interestingly, the results showed the program's effectiveness across all age groups, not just younger participants. A trial targeted at better support of cessation in teenagers using SMS also doubled the quit success rates for other age groups (Rodgers, A., Corbett, T., Bramley, D., et al, 2005).

As a result of the STOMP program success, HSAGlobal and the CTRU entered into an exclusive global distribution arrangement for the STOMP smoking cessation intervention program in 2007. HSAGlobal and The Quit Group were subsequently commissioned by the New Zealand Ministry of Health to deploy this program nationally under the "Text 2 Quit" moniker starting in June 2008.

From Trial to Service—Commercializing STOMP Program through the Health Messaging Engine

HSAGlobal's role in taking STOMP to a global audience began with the development of an underlying technology platform—the Health Messaging Engine (HME). The HME was designed to manage and execute STOMP program logic to ensure important and effective messages are reliably delivered to people seeking help in beating their addictions.

Strategically, we decided to offer STOMP as a software service (SaaS) using the HME rather than a traditional packaged application. This approach allows smoking cessation providers to focus on the delivery of the service not the operation of the service. For example, in the U.S. market, we are able to minimize the complexity for potential customers by aggregating SMS capabilities across a wide range of mobile carriers.

(*Note*: Any organization looking to commercialize an SMS-based service or program in North America requires a thorough understanding of local messaging guidelines and carrier requirements. A valuable resource that describes best practice guidelines can be found at the Mobile Marketing Association Web site, www.mmaglobal.com).

The HME/STOMP service may be one of several components within an overall initiative offered by smoking cessation providers. The initial CTRU trial was conducted in parallel with other smoking cessation offerings, such as "quit line" phone support and nicotine replacement therapy. We also expect to enhance HME/STOMP in the future with a "direct to consumer" service through integration with emerging Patient Health Repositories, such as Microsoft HealthVault.

HME/STOMP combines the capabilities of a rule-driven, scheduled, and automated message management system (HME) with a clinically tested smoking cessation program. It gives effective and timely support to participants, including

- Personalized Cessation Support—text message content tailored to the target participants
- Quit Tips—consistent and helpful text messages reminding the participant of the overall goal to quit smoking
- Culturally Relevant Messages—text messages tailored for specific cultures and languages requirements
- Smoking Facts—general-fact text messages that help reinforce smoking cessation
- Craving and Slip Up Support—responsive text message content for participants craving a cigarette or those who have smoked a cigarette
- Polling—participants can text their answers to questions posed by providers, and then view results
- Message Blackouts—participants can designate one specific period per day during which STOMP will not send them messages
- Relapse Program—a four-week intensive program in which participants can enroll if they started smoking again, but still wish to quit

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Importantly, HME/STOMP is built to deliver messages in a cycle and volume which aligns with the smoker's quit stage, as depicted in the table below. HME/STOMP also allows for human frailty. If someone succumbs to temptation, they can put themselves back on an intensive relapse program, or ask for encouragement if they "crave" a cigarette.

Here's how HME-STOMP interacts with the smoker over a 26-week "relationship":

HME STOMP				
THE PROGRAM	STAGE	PERIOD	MESSAGE RATE	MESSAGE TYPE
	Pre-Quit	14 – 1 days prior to Quitting	1 – 2 per day	Cessation
	Quit Day	1 day	3 on day	Cessation
	Intensive	Quit Day – 4 wks	3 per day	Cessation
	Maintenance	Week 5 – End	1 every 3 days	Cessation
RELAPSE	Relapse Early or Late	4 weeks – After Quit Day only	3 per day	Relapse
CRAVE & SLIP UP	Anytime	50 Anytime	n/a	Crave Slip Up

Figure 2 - Structure of HME-STOMP messages

Potential for Better Care

We believe that HME/STOMP is an exemplary model for "Texting 4 Health". Not only does it provide a low-cost delivery mechanism across potentially large populations, it also increases a healthcare organization's ability to connect with people, such as adolescents, who have been previously reluctant to seek help through more traditional methods. HME/STOMP represents the realization of a simple, targeted, and clinically proven point-of-care "second generation" SMS service to deliver tangible personal and social benefits.

We also see the capabilities developed in HME/STOMP being used in chronic care and long-term condition and disease management. Successfully treating chronic conditions such as diabetes and heart disease often depends on patient involvement. We believe that HME STOMP can provide a way to bridge the gap between care-givers and patients, allowing the patient to be more informed and active in their own health.

Citations

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About the Authors

Mark Smith is the Auckland, New Zealand–based HME Program Manager for HSAGlobal. He's responsible for working with service providers and channel partners to establish the underlying infrastructure, networks, and relationships to get STOMP delivered to smokers in need. Prior to joining HSA Global, Mark worked in various management, architecture, and consulting roles, primarily for a number of large-scale global vendors, including Hewlett Packard, Computer Associates, and Unisys.

Lisa Harris was a Senior Project Manager for HSAGlobal in Auckland who actively supported deployments of the HME STOMP Program around the globe. She was responsible for managing HME STOMP analysis, development, implementation, training, user acceptance testing, and support. Lisa has extensive project management experience in technology projects, and a strong background in relationship management and marketing.

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