mBCC Field Guide

A Resource for Developing Mobile Behavior Change Communication Programs

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The mHealth Working Group was created in 2009 by global health organizations for global health organizations. The Working Group provides a collaborative space for members to develop a shared perspective on mHealth implementation across a range of technical areas in developing countries. The group frames mHealth within global health strategies, standards and practices, and emphasizes practical and flexible guidance for program implementation. The mHealth Working Group is a forum for members to share, engage, partner and provide leadership in mHealth.

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To access this publication online, go to: *www.mbccfieldguide.com*

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List of Acronyms

AI	Avian influenza
AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral therapy
BCC	Behavior change communication
C-Change	Communication for Change Project
CCP	Center for Communication Programs
CHW	Community health worker
CPM	Cost per mille (cost per thousand)
DHS	Demographic and Health Survey
EAI	Equal Access International
FP	Family planning
GIS	Geographic information system
GPS	Global positioning system
GSM	Groupe Spéciale Mobile (Global System for Mobile Communications)
HIV	Human Immunodeficiency Virus
HUB	Health UnBound
ICT	Information and communication technology
IPC	Interpersonal communication
IRB	Institutional review board
IRH	Institute for Reproductive Health
IT	Information technology
IVR	Interactive voice response
JHU-CCP	Johns Hopkins University Center for Communication Programs
K4Health	Knowledge for Health project
M&E	Monitoring and evaluation
M4H	Mobiles for Health
MAMA	Mobile Alliance for Maternal Action
mBCC	Mobile behavior change communication
MDOT	Mobile direct observation of treatment
mHealth	Mobile health
MMS	Multimedia messaging service

MOH	Ministry of health
NGO	Non-governmental organization
PCM	Please Call Me
PDEV	Peace Through Development Project
QED	Quasi-experimental design
QR	Quick response code
RCT	Randomized control trial
RH	Reproductive health
SDM	Standard days method
SHOPS	Strengthening Health Outcomes through the Private Sector Project
SIM	Subscriber identity module
SMART	Specific, measurable, appropriate, realistic, time-bound
SMS	Short message service (text messaging)
SO HITCOM	Social Health and IT for Rural Communities
TB	Tuberculosis
UN	United Nations
UNESCO	United Nations Scientific, Educational and Cultural Organization
USAID	United States Agency for International Development
USSD	Unstructured supplementary service data
VCT	Voluntary counseling and testing

Background

Over the last several years, there has been a proliferation of mobile phone-based applications to address behavioral health challenges. Given the extraordinary prevalence of mobile services, this channel is particularly promising as a way to reach rural, traditionally hard-to-reach audiences (Akter and Ray 2010; Agarwal and Lau 2010). Most of the mobile efforts so far consist of small-scale pilots with scant evaluation and impact data that could guide best practices. To complicate the situation further, the breadth and scope of this new landscape is constantly changing, accelerated by decreasing prices of smartphones, improved mobile infrastructure, and blurred distinctions between phones and computers in developing countries. What is considered a standard mobile health (mHealth) program today might be defunct within a few short years. Tools are needed to guide the design of mobile applications for health and to elicit insights about what does and does not work without duplicating existing resources.

This Field Guide is an attempt to take stock of what we know today about the power of mobile communication tools to influence health behaviors at both the consumer and healthcare provider levels. While this guide focuses on applying mobile strategies to health problems, the same principles can be used to address issues in other sectors, such as agriculture and the environment. Compiled by Abt Associates Inc., the guide is based on a publication of the Johns Hopkins University Center for Communication Programs (JHU-CCP) entitled "A Field Guide to Designing a Health Communication Strategy" (O'Sullivan, Yonkler, Morgan, and Merritt, 2003). Development of the guide was a collaborative effort carried out under the auspices of the mHealth Working Group. The mHealth Working Group is supported by the United States Agency for International Development's Knowledge for Health (K4Health) project, which is implemented by JHU-CCP. A list of contributors is found on page 2.

Mobile behavior change communication (mBCC) is defined here as the use of mobile phones to promote behavior change. This definition encompasses health and clinical behaviors for clients and health providers (e.g., reminders to take a pill or quizzes to improve health workers' counseling skills) rather than operational behaviors (e.g., shifting from a paper-based survey to a mobile survey).

More broadly, behavior change communication (BCC) is defined as an interactive, research-based process that meets the informational needs of audience groups; reduces barriers to adopting beneficial behaviors; and motivates people to reduce risks, seek appropriate products and services, and act as advocates to others. Most BCC methodologies include the following steps:

1) situation analysis
2) formative research
3) audience segmentation
4) behavior change objectives
5) message and material development
6) pretesting
7) production
8) implementation
9) monitoring and evaluation (M&E)

The primary audience for the mBCC Field Guide is practitioners experienced in developing BCC strategies who are considering employing mobile solutions but need guidance on key issues and on questions to consider in the design process. Evidence-based examples and tools are highlighted wherever possible, although we recognize that few programs have published impact or outcome data.

The authors hope that this Field Guide will be a "living document." We welcome your feedback and suggestions for improving the guide's usefulness. We plan to issue updated versions as mobile platforms and the evidence base evolves. Contacts and references to relevant organizations and resources are noted wherever possible to facilitate communication and collaboration. Please use the evaluation form at the end of the guide to provide specific comments and recommendations.

Overview of the mBCC Field Guide

The Field Guide is composed of six chapters. The chapters are designed to advise health programs on the key steps to creating effective mBCC applications. Case studies are sprinkled throughout, to spark ideas and identify common challenges in implementing mBCC programs. The guide does not immediately dive into examples of mobile phone solutions. Instead, it provides a broader BCC framework to consider when folding mobile phones into your strategy. Unlike a typical BCC strategy, which focuses on an array of communication channels, this guide focuses on a single channel—mBCC. The authors developed the guide to help practitioners think through all of the BCC-related considerations pertaining to mobile phones, since they are a new and ever-changing field.

The first chapter, **Situation Analysis**, provides instructions on how to conduct an abridged assessment of the audience, required infrastructure, and financial constraints. The situation analysis is the most critical step in the process of identifying whether mobile phones are an appropriate channel for your program objectives. Topics covered in this chapter include 1) asking key questions; 2) looking at mobiles as a communication channel; 3) determining potential audiences; 4) identifying potential objectives, messages, tools, and technologies; 5) assessing the environment; and 6) considering BCC theory.

The **Audience Segmentation** chapter considers many factors to help you identify target audiences, understand their common demographic and psychosocial characteristics, and tailor messages to meet audience needs. Segmentation is a key step in developing effective message content and format. Topics in this chapter include 1) identifying the right audience segments, 2) prioritizing segments, 3) understanding influencing audiences, 4) creating a snapshot of the primary audience, and 5) understanding the context of the audience's mobile communication.

In the **Behavior Change Objectives** chapter, the focus is on developing measureable behavior change objectives for your mBCC program. The behavior change objectives will vary if you are conducting a one-off mobile program instead of a multi-channel integrated BCC program. This chapter provides guidance on 1) stating the behavior change that will meet the audience's health needs, 2) understanding how mobile phones can support behavior change, 3) considering timelines for change, and 4) developing indicators to be tracked. It also includes examples of metrics pertinent to the mobile channel.

The **Message Development** chapter discusses formative research, which is an integral component of developing messages that are appropriate for the audience. This research should feed into a creative brief (used by partners such as advertising agencies) that summarizes your understanding of the audience, the barriers to promoting desired behaviors, and other creative considerations. The chapter addresses the need to carefully craft messages, and discusses the importance of pretesting prior to wide-scale deployment to ensure that message content is clear, relevant, and motivational to the audience. Finally, it covers the integration of M&E planning into the message development process.

The **Tools & Technologies** chapter defines and helps you select communication support tools and technologies to effectively delivery your mBCC messages. It emphasizes the importance of incorporating mobile phones with other channels into an integrated strategy. Key considerations include reach and frequency, platforms and

applications, and the internal capacity of your organization and team to manage a technology-based program, given the need for troubleshooting during the testing and implementation phases.

The **Monitoring & Evaluation** chapter discusses some of the M&E challenges unique to the mBCC space, including the need for ongoing monitoring and accurate audience attribution. This chapter provides strategies for developing indicators for process evaluations and suggests approaches for impact evaluations. In addition, the chapter introduces an M&E template (contained in the attached worksheets), and encourages you to document and disseminate the results of your mBCC programs.

How to Use This Guide

The mBCC Field Guide is meant to be just that—a *guide*—to help users explore and understand key questions and issues in designing an mBCC program. It is not intended to be a step-by-step tool that would result in a "ready to launch" communication campaign for mobile phones.

Mobile phones are a unique and novel communication channel. To use them effectively, you will need to think about and plan for audiences, messages, and other dynamics that may be different from other channels. This guide will help you design an mBCC program, whether mobile phones are the exclusive channel of communication or whether mobiles are one of several channels in a larger BCC strategy. The guide provides context, laying out the steps to follow when creating a BCC or health communication strategy.

The guide takes you through an iterative process, revisiting some of the same questions and issues more in depth in subsequent sections. Remember to follow these tips when using the guide:

1) Read the guide through once before you sit down to begin applying it to your design process. This will help you understand the structure of the guide and avoid confusion about why you are seeing similar questions in more than one place.

2) Review and consider the questions in the Situation Analysis chapter with the understanding that you will be revisiting several of these questions in more detail in later sections. The Situation Analysis is designed to help you determine early in your design process whether you should even be considering the use of mobile phones for your BCC needs.

3) Use the parts of the guide that best support your needs. You may have already considered many of the issues or gone through many of the steps described in this guide and only need support with some steps. For example, perhaps you have already spent considerable time segmenting your audience and establishing behavioral objectives through a careful BCC design process, but you need help thinking through issues related to mobile phone message development. The individual components of the guide should be helpful on their own. However, you may also find that in applying just a single component, interrelated issues arise that you may not have considered in your previous design steps.

Situation Analysis

Understanding the context of your mBCC program will help you identify interdependencies. It will also influence design decisions. By conducting a broad-based analysis of the situation, audience, environment, potential barriers, and BCC theory, you will have enough information to know whether an mBCC program is worth pursuing.

If you are further along in the mBCC program design process, feel free to "cherry-pick" the information that makes the most sense for you. The key questions below can guide your situation analysis and provide a strong foundation before you design your mBCC program.

A. Asking Key Questions

1) **What health challenge will your mBCC program address?**

   What category of problem are you facing? What is the audience's awareness of the health problem? If the audience is unaware of the problem and its risks (e.g., unaware of tuberculosis [TB] as a disease), then your mBCC program is likely to focus on generating awareness and educating the audience. If they are aware of the problem and agree that they need to change their behavior (e.g., use condoms regularly), your mBCC program might provide incentives, instructions, or reminders to encourage behavior change.

2) **What desired behaviors would address this health challenge?**

   Your program is likely to be aimed at influencing the audience's knowledge, attitudes, or practices for a particular health behavior. Mobile phones can address even more nuanced behaviors that can lead to an eventual health behavior.

3) **Are mobile phones potentially appropriate for this program?**

   Does the audience have access to mobile phones? Are they comfortable with short message service (SMS) messages (if applicable)? Do they generally have service? Are the mobiles shared devices that might compromise privacy if sensitive information is conveyed? Take some time to understand the audience's current mobile phone usage and habits, as well as the potential risks of the channel, based on the program you are designing. Potential sources for this information include advertising agencies that periodically collect information about mobile habits and consumer behavior; university studies; industry publications; multilateral donor organizations such as the United Nations Scientific, Educational and Cultural Organization (UNESCO); foundations; and mHealth resource websites (see Behavior Change Objectives chapter, Page 25).

For example, by opening and reading a text message, the audience's attitude toward TB might be influenced by your mBCC program. However, if the audience does not know how to open a text message, your mBCC program will not be successful. You need to identify both the mobile and health behaviors that will lead to a successful mBCC program.

4) **Have you researched other relevant programs?**

Chances are, if you are working on a health-related mBCC program for end users or health providers, there are case studies from other practitioners that can provide insight into how to design your program. Spend some time meeting with stakeholders, other practitioners, and industry experts to leverage prior experiences and lessons that will make your mBCC program stronger. As you gather information, you can try to fill gaps in your understanding of the situation by using formative research tools such as focus groups (see the formative research section in the Message Development chapter).

B. Looking at Mobiles as a Communication Channel

This is a good point in time to quickly assess the following:

- Does the audience own or have access to mobile phones?
- What is the audience's literacy level? How accustomed are they to using mobile phones?

  If literacy levels are not sufficient for your needs, interactive voice response (IVR), which provides voice-based services, is an alternative to SMS. However, IVR is usually more expensive and time-consuming to implement.
- Does the audience know how to send and receive messages?
- Compared to other communication channels, do mobile phones add strategic (e.g., lower costs or broader reach than radio or television) in an area where mass media is limited (such as a rural area)?

For example, if the desired behavior objective is to have women open, read, and understand weekly text messages about safe motherhood, it will be useful to know if the audience in question currently 1) knows where the message inbox is located, 2) is familiar with receiving messages, and 3) is comfortable receiving health information over the mobile phone.

Research has shown that programs employing multiple communication channels are more effective than those using a single channel (Piotrow, Kincaid, Rimon, Rinehart, and Samson 1997). Mobile phones should be used in conjunction with other channels (such as mass media, outreach, and interpersonal communication) to assist in solving health problems. As a complementary component within a larger BCC program, mobile phones are great tools for sharing information, training providers, collecting data, and promoting behavior change.

If one or more of the following three statements are true, mobile phones are likely to add value to your BCC program, and you should continue to investigate their relevance:

1) Mobile phones are the only **reliable means to communicate with your audience**. In other words, you don't physically see them regularly and they don't have continuous access to the Internet, email, or other communication channels.

2) The intended communication plan has a **"frequency" that makes sense for mobile**. For example, if the communication happens infrequently, the audience may not recognize or trust the source and information may be able to be presented in a more digestible form through other communication methods (e.g., computers or billboards, which have bigger screens and more vibrant colors). However, if you need to communicate with people hourly, daily, weekly, or monthly, then mobiles may be an appropriate channel.

3) Mobile phones are **a convenient method for the users** at the point in time when you want to communicate with them. For example, if your mBCC program will send reminders to users to record their blood sugar at 2:00 p.m. daily, and you know your audience has consistent access to their phones, then mobile phones may work well. Given the personal nature of mobile phones, they are a unique channel for communicating confidential information such as test results or Human Immunodeficiency Virus (HIV) counseling material. However, practitioners should investigate the users' ownership and gain consent before sending such sensitive information over the phone.

CASE STUDY: Targeting Messages to the Literacy Level of Your Audience

In Jordan, a program called Social Health and Information Technology for Rural Communities piloted a reminder service for mothers who want to stay on track with their children's vaccination needs. Nurses at the health centers found that mothers were missing follow-up and vaccination appointments. The pilot was launched in September 2010. Two nurses at community health centers used SMS to log information on vaccination dates and mothers' literacy. The information was sent to a central database. For illiterate mothers, a prerecorded message was played when the phone was answered. For literate mothers, an SMS alert was sent, reminding them to bring in their children for the next round of vaccinations.

(Source: International Development Research Centre 2011)

C. Determining Potential Audiences

The next chapter (Audience Segmentation) will delve into a more detailed discussion, but it is useful to begin factoring audience considerations into your thinking during the situation analysis stage. Take this opportunity to draw on existing research and on programs relevant to the audience you are trying to reach. Understanding and effectively engaging the audience will be critical to your success. The following questions can help you develop a clear audience profile. They can also provide insights to guide your decisions about whether mobile phones will help address the health issue at hand.

What are the common characteristics of your audience?

Is the intended audience in a particular age range, gender, occupation, and residence? Or do audience members have a particular number of children? Does the audience have access to print, radio, television, media, and mobile phones? Is the audience limited to specific socioeconomic brackets or geographic locations (e.g., urban vs. rural)? How is the audience defined or differentiated from persons who are not at risk or do not have the health problem?

What is your audience's current practice relative to the desired behavior outcome?

Based on the desired behavior outcome, how close or far is the audience from practicing the behavior? For example, consider a clinic that offers an appointment reminder service for people familiar with SMS messaging. Clients who register to receive SMS reminders may be more likely to follow through on the behavior of attending scheduled appointments.

Potential data sources include informational interviews or focus group discussions with audience members, Demographic and Health Survey (DHS) reports, local Ministries of Health (MOH) or United States Agency for International Development (USAID) resources, local universities, and research firms. You may also consult with research experts to design and implement a baseline survey that generates reliable information about audience characteristics, behavioral issues, barriers to behavior change, and other relevant variables.

What barriers does your audience face?

Barriers to adopting behavior change can be either internal or external to the audience. They may include characteristics of mobile phone use or barriers to adopting healthy behaviors.

External barriers may represent environmental constraints, such as the lack of access to products and services or the lack of affordable products and services. Examples include the following:

- ***Access/ownership.*** Your intended audience may not have constant access to mobile phones, creating a barrier to having end users receive messages directly. Access may also refer to the availability of skilled healthcare workers. For example, if there are no skilled birth attendants available in a particular community, then messages about their importance will not change behaviors.
- ***Privacy.*** There might be barriers to conveying desired messages through mobiles. For example, if you are trying to reach women with family planning (FP) information via SMS, but the women's spouses control access to the mobile phone, these messages could infringe on privacy or even endanger the intended audience.
- ***Cost.*** The cost of the mobile device, air time, or text messages may be prohibitive for some audiences.
- ***Use limitations.*** Is the audience capable of retrieving messages on the phone? Many mobile phone owners are only familiar with phone calls and are not comfortable retrieving SMS messages.

Internal barriers to behavior change represent one of the four constructs of the Health Belief Model (Janz and Becker 1984), which is one of the most widely used behavior change theories in public health. Perceived barriers to changing behavior are, in fact, the most significant factor in determining whether people will change their behavior. In order for an mBCC strategy to work, the audience needs to believe that the benefits of the new behavior outweigh the consequences of continuing with the old behavior (Wong, Huhman, Heitzler, Asbury, Bretthauer-Mueller, McCarthy, Londe, et al. 2004). Examples of internal barriers to using mobile phones to promote behavior change include:

- ***Perception of the communication channel.*** How does the target audience view mobile phones? Do they trust the sender? What is their incentive or motivation to continue engagement with the program? Do they understand the messages that are being sent to them, and what is being asked of them?
- ***Cost/benefit analysis.*** Does the mobile platform and message convince the audience that the risk of behaving differently is less than the cost of continuing the current behavior?

Who are your audience's key influencers?

As you meet with organizations and experts familiar with the intended audience, you will begin to understand and validate your initial ideas about which people and organizations influence their health behaviors. For mBCC programs, health information sent from these influencers could result in higher rates of behavior change. For example, mothers-in-law might influence the timing and spacing of pregnancies, husbands might influence their wives' access to prenatal and postpartum information and services, and peers can be influencers for teen-focused health programs. Another way to identify key influencers is through primary research with the intended audience (see the formative research section in the Message Development chapter).

D. Identifying Potential Objectives, Messages, and Communication Tools and Technologies

Once you have thought through some of the principal audience-related considerations, you can begin to consider the types of behavioral objectives you might develop. You can also think about key message points and potential communication tools and technologies (mobile and others) that you might employ. Each of

these topics is covered in detail later in the guide. For now, however, as part of the situation analysis you will benefit from an initial review of the following considerations, which can help inform your strategic decisions.

As a result of the mBCC program, do you expect the audience to know more about how to prevent malaria? Or will the objective be more action-focused (such as increasing the frequency of bed net use)? How much time is available to achieve the desired change? Can you think of some realistic objectives, given factors such as your resource constraints, the ease or difficulty of reaching your audience, and ways to measure results?

In terms of messaging considerations, it is important to note that mobile phones by nature offer a few different options for delivering text or voice-based messages. Mobile phones are also a two-way channel that allows the audience to interact in real time with mBCC program implementers. These characteristics can be relevant when communicating about sensitive topics (e.g., reproductive health), when addressing a disparate group of people, or when information is needed real-time.

In thinking about mobile phones as a channel of communication, do you envision building an mBCC program focused on this channel alone, or do you see mobile phones as being integrated into a multi-channel strategy? Will your message target individuals, or will it focus on promoting change at the community level or social-norm level? Are you familiar with technologies such as *FrontLineSMS, Freedom Fone*, and *RapidSMS*? Understanding the platforms and applications that can effectively deliver messages to your audience will help you make decisions about whether mobile phones are a feasible channel to help reach your objectives.

E. Assessing the Environment

Important external and internal factors could limit the scope, scale, and impact of your mBCC program. By understanding the overall mobile climate and potential partnerships, and by integrating user privacy needs during the early stages, you can avoid challenges that might arise during implementation.

Policy environment

Issues such as national telecommunications policies are important to consider, as they might limit your distribution strategy or the content that you can disseminate.

- ***Telecommunications.*** What telecommunications policies are relevant to your program? Is there a history of mobile operators supporting mobile programs for health or social change?

- ***Data ownership.*** Establish who owns the data (e.g., phone numbers, responses from users) and which legal issues are of concern regarding client privacy and confidentiality.

  For example, in one Asian country, the government is currently collecting the phone numbers of all pregnant women who visit public health facilities. These numbers are being aggregated at the sub-district level and sent up to the national level, where they could be used in national-level communication campaigns. The government is currently considering how to issue instructions to the sub-district level to ensure that personally identifiable information is not connected to health status, to maintain individual privacy but still leverage the benefits of the mobile phone communication channel to reach women directly.

Collaborative environment

What potential partners and sponsors can make your mBCC program more sustainable? You might also consider reaching out to private sector partners who have an interest in reaching the audience and can provide financial support.

- ***Donors.*** Are there donors who have a vested interest in your mBCC program? Who are they? With a high-level perspective, donors may be able to introduce you to technology vendors and potential partners, and—equally important—inform you of challenges faced by prior mBCC programs in the region.

- ***Implementing and private sector partners.*** What are other organizations and companies doing in the country? Who are some potential partners? Many times, meeting with these organizations can provide lessons that will make your program more efficient and effective. They might also identify areas for cost savings and collaboration, such as sharing a short code for programs.

- ***MOH and other government agencies.*** If you are working on a health program, will it be necessary to get the MOH involved? To what extent? Does the MOH have a point person for mHealth?

Privacy and enrollment

Privacy is an important factor in the design of your mBCC program, especially when you are addressing sensitive health topics. Consider the following aspects of your environment:

- ***Personal privacy.*** Have you planned for privacy issues that arise when phones are shared? Phone sharing may be more common among low-income users or in areas with low mobile penetration. SMS or voicemails on shared phones may complicate privacy. Privacy protections could be increased by using tools such as passwords.

- ***Anonymity.*** Will the audience want to remain anonymous? Anonymity provides privacy for user identities but not necessarily their content. For example, callers to radio shows or hotlines may remain anonymous (Keisling 2010).

- ***Clarity.*** A clear written policy that guides decisions about personal privacy and about data access, storage, and sharing will help minimize the risk of compromising sensitive and confidential information. This policy should inform all aspects of the design and implementation of your mBCC program and should have the consensus of all program partners.

- ***User enrollment.*** As you develop the strategy for your mBCC program, plan to allow users to control their registration and withdrawal from your mBCC program. By giving users control over timing for their participation, you may increase their receptiveness while meeting their need for privacy (e.g., sending messages to women in the evening when they are more likely to have private access to a family phone).

Internal program and technical capacity

Information technology (IT) security can include firewalls, encryption, and passwords to control access to user information. Government or institutional review board (IRB) regulations may require protection of user information.

- ***Partner controls.*** If you are working with partners to implement your program, do they agree with your privacy policy? Partner controls are an issue when user information is shared with partner organizations or information and communication technology (ICT) providers, since they may not have the same incentives or operating procedures on privacy. Partnerships benefit from agreements about who owns, manages, and protects databases of user information and phone numbers.

- ***Cost and scale.*** Have you considered the cost implications of your program scale? The communication tools and technologies you use can dramatically affect your budget. For example, if you are planning a national interactive voice response (IVR) strategy that will target hundreds of thousands of users, you will likely need to make investments with local telecommunications providers (e.g., servers and switches).

- ***Organizational capacity.*** Given the scale and scope of your mBCC program, are there sufficient technical, infrastructure, and human resources available to support it? For example, is there sufficient clinical capacity? Based on who is running the program (e.g., a local pharmacists association), is there enough in-house expertise to manage challenges as they arise?

F. Considering BCC Theory

Research has shown that programs based on theory have a better chance of success; theory also makes it easier to understand a strategy's success or lack of success (King 1999). Use the following examples and references to learn more about behavior change concepts and how they can apply to your program.

Over the past 50 years, social scientists have suggested various theoretical models to explain how communication influences human behavior. Stage or step theories are helpful in illustrating the long-term issues associated with behavior change. For example, "Diffusion of Innovation Theory" (Ryan and Gross 1943; Rogers and Shoemaker 1971) traces the process by which a new idea or practice is communicated through certain channels over time among members of a social system. People are divided into five distinct categories:

1) **Innovators** are leaders and the first individuals to adopt an innovation
2) **Early adopters** follow; they have considerable influence over the remaining groups
3) The **early majority** tends to be slower in adopting the innovation, compared to the first two groups
4) The **late majority** approaches innovation with a great degree of skepticism and takes a long time to convince
5) **Laggards** tend to be older, strong believers in tradition, and resistant to change

This theory is particularly helpful when considering how mobile phone innovations have been used to reach audiences in new and different ways compared with other communication channels.

The "Stages of Change Theory" (Prochaska, DiClemente, and Norcross 1992) identifies psychological processes that people undergo as they adopt a new behavior, moving through a continuum that begins with "precontemplation" and ends with sustained behavior change.

Other useful constructs related to behavior change are found in cognitive theories such as the "Theory of Reasoned Action" (Fishbein and Azjen 1975) and "Social Cognitive (Learning) Theory" (Bandura 1977). These models highlight the importance of attitudes, beliefs, and self-efficacy (belief in one's ability to carry out the desired behavior change) in individual risk perception and decisions a about specific behaviors.

CASE STUDY: Behavior Change Theory Applied to Reproductive Health

CycleTel™ is a mobile health service developed by Georgetown University's Institute for Reproductive Health (IRH). It uses SMS to help a woman identify which days during her menstrual cycle she is most likely to become pregnant, based on the standard days method (SDM) of family planning.

CycleTel is grounded in social cognitive theory, as it aims to provide women and couples with the behavioral capability to prevent unplanned pregnancy. The service is designed to provide couples with the knowledge and skills they need to use SDM correctly, with the aid of SMS messages sent directly to and from the users' mobile phones. Because the service requires women to send in the start dates of their periods each month, there is a level of sustained interaction with the end user beyond "push" messages.

Results from the proof-of-concept show that the service facilitates couples' communication about family planning, and that it and improves male involvement (70 percent of participants showed their husbands messages from CycleTel to facilitate this conversation). Additionally, correct use increases over time as messages reinforce the behavior: 22 percent had unprotected sex on a fertile day during the first cycle of use, whereas 13 percent reported having unprotected sex on a fertile day during the second cycle of use.

(Source: Meredith Puleio, Georgetown University Institute for Reproductive Health, email message to the authors, August 12, 2011)

Theories illustrate the complex nature of human decision-making and clarify the rationale behind the choices people make about their health. Many behavior change strategies in public health use a knowledge-based approach to educate individual audience members about ways to improve or protect their health (Schiavo 2007). The assumption is that if people know about risk factors for disease and about ways to minimize the risk of illness, they will take the desired actions. Therefore, educational channels such as brochures, posters, and, most recently, mobile channels such as SMS messages are often produced to increase awareness and knowledge measures. In reality, however, knowledge does not necessarily translate into behavior change. In fact, social factors such as gender roles, audience perceptions about what is important to loved ones and peers, and fear of stigma or negative consequences are key determinants of health behavior. The implications for health and behavior change programs are clear: messages will only be effective if they are relevant to audience members' lives and if they clearly define a key benefit of the behavior or action being promoted.

Social network analysis has potentially significant relevance to mBCC applications. This analysis views social relationships through a network theory—consisting of nodes (individual actors within networks) and ties (relationships between the actors). These connections are depicted graphically and help identify the people with the largest number of connections in a network; they also show different spheres of influence. Research has shown that social networks operate on many levels, from families to nations, and play a critical role in determining the way problems are solved.

CASE STUDY: Phone Ownership and Confidentiality Concerns in mBCC Programs

A 2008 survey of adult antiretroviral therapy (ART) patients in South Africa and pilot by the Reproductive Health & HIV Research Unit examined the privacy of SMS for supporting adherence to ART. The survey found that 47 percent of respondents (18 of 38) shared their mobile phones with co-owners. Regarding occurrences of sharing, 51 respondents let an average of 1.47 peers use their cell phone in the preceding seven days. Based on these results, a pilot program was developed to send adherence reminders by SMS to 27 ART patients in the same South African clinic to test confidentiality and user satisfaction with SMS. Regarding confidentiality, pilot participants reported no accidental disclosure of HIV status (0 of 23) during the pilot. However, 84 percent of participants (16 of 19) discussed the pilot SMS with their peers. Results indicate that SMS may present a reasonably safe channel of communication for HIV information, despite phone sharing. Participants' voluntary discussion of text messages with peers suggests a need for informed and opt-in participation, discreet message content, and monitoring for accidental disclosure of HIV status.

(Source: Keisling 2008)

Which theory is most relevant for your potential mBCC program?

As you review the many theoretical constructs and frameworks relevant to behavior change strategies, take a moment to consider if and how mobile phone programs fit within your strategic approach.

To learn more, review these supplemental resources about behavior change theories and tools:

- "Tools for BCC"
  www.k4health.org/toolkits/pc-bcc/behavior-change-communication
- *Making Health Communication Programs Work. A Planner's Guide*. 2001
  nci.nih.gov/cancertopics/cancerlibrary/pinkbook/Pink_Book.pdf
- "A Tool Box for Building Health Communication Capacity"
  www.globalhealthcommunication.org/tools/29
- "C-Modules: A Learning Package for Social and Behavior Change Communication"
  www.c-changeprogram.org/focus-areas/capacity-strengthening/sbcc-modules
- "Sexual Behavioral Change for HIV: Where have Theories Taken Us?"
  www.who.int/hiv/strategic/surveillance/pubchange/en/index.html

G. Section Wrap Up

Now that you have gone through the initial process of assessing the situation for your potential mBCC program, you have one question to ask before you continue through the mBCC Field Guide: ***are mobile phones an appropriate communication channel for your needs?***

To answer this seemingly simple question, you have briefly considered the following:

- The health challenge you are addressing, the related behaviors, and whether communicating through mobile phones can influence those behaviors
- The audience you are addressing, their characteristics, current practices, barriers, and influencers related to your intended behaviors
- Potential behavior change objectives, messages, tools, and technologies
- The environment in which your mBCC program will be implemented and whether there are supportive policies, collaborators, and technical capacities; what privacy concerns might arise
- Whether you are applying a behavior change theory and how mobile phones as a communication channel fit into that theory

If, after you have considered all of these initial issues, you conclude that ***mobile phones ARE an appropriate communication channel for your needs,*** then it is time to move into the following sections of the guide. If you conclude that perhaps mobile phones are not an appropriate channel, it may be better to continue exploring other communication channels that can help you achieve your behavior change objectives.

In the following sections you will revisit some of the issues above in more depth. You will explore some additional areas, such as message development, program management, and M&E. The guide will continue to identify issues and questions for you to consider as you move through your mBCC design process.

Activity: Worksheet 1

Refer to Worksheet 1 at the end of the guide to start planning your mBCC program.

Audience Segmentation

After contemplating the issues and questions raised in the Situation Analysis, you have decided that mobile phones are an appropriate channel for your mBCC program. In this section, we will discuss how you should target your program to one or more audiences.

Audience segmentation is a process of grouping people by similar characteristics—demographic, social, attitudinal, and others. This enables you to better tailor messages and to use communication channels efficiently. You will need to focus on the audience (or audiences) whose behavior you are attempting to change, but you should also consider secondary audiences who serve as points of influence and sources of information.

Take, for example, an mBCC program encouraging women to take their children for annual check-ups. Many times, the mother does not have access to a mobile phone. The secondary audience (the father who owns the phone and is a gatekeeper of the phone) will be a key audience. Messages from the program should encourage him to support his wife in taking the child to the doctor.

Segmentation may be necessary if you are trying to reach a broad portion of the population (e.g., the general public) or if there are many different demographic, social, and attitudinal groups within this population. Segmentation may not be necessary, however, if you are trying to reach a more specific population, such as FP service providers reaching poor people, or married men who do not use condoms and live in a geographic area with particularly homogeneous socioeconomic characteristics.

If your mBCC program is supplementing a larger BCC initiative, it might seem like your primary audience segments are clearly defined. However, since many people in developing countries do not own or have primary access to a mobile phone, it will be important for you to tailor your mBCC program accordingly.

A. How Do You Identify the Right Audience Segments?

To determine the appropriate audience segments, go back to the desired behavior change. Which groups of people do not practice the desired behavior or are at various stages of behavior adoption? Within the groups of people who do not practice the behavior, are there sub-groups who might react best to different types of information and channels of communication such as mobile phones?

When identifying mBCC audience segments, understanding the way your audience interacts with or accesses mobile phones is a critical dynamic. Consider the following:

> *How does mobile phone use differ by audience demographic segment? For example, younger segments might use games and SMS functions on phones, while older audiences may only be comfortable with voice programs. Additionally, some individuals may be accustomed to receiving and forwarding SMS messages but not used to creating their own messages. Consider literacy levels. For example, if a woman is not able to read the SMS that is sent to her, she may have to ask a friend to read what the message says.*

By identifying audience characteristics, you will be able to identify the best distribution method for mobile phone services. For example, if the audience is broad (e.g., all parents of children under five years old in a country), mass distribution to all cell phone numbers may be effective. On the other hand, if the audience is limited to a member group (such as a microfinance cooperative in Accra), a closed communication method using only the numbers of the members would work best.

Your segmentation decisions might also be influenced by the resources available for your program. If you do not have a sufficient budget to have separate strategies for multiple segments, you might need to settle on a generic approach or target only one segment of your audience. This may also be a good time to assess whether you have sufficient information about your audience or whether you need to conduct formative research to fill in gaps. See the Message Development chapter for a more detailed discussion of formative research considerations.

B. How Do You Prioritize Segments?

If you do not have enough resources to address all audience segments, which ones should receive attention first? If you are focusing on a health problem that requires urgent behavior change, you might focus on the segments with the largest audience. On the other hand, if the behavior change strategy is long-term, it might be worthwhile to target early adopters who can be influencers for broader segments of the population. Alternatively, you may want to address the audience that is easiest to reach, most receptive to hearing the message, or at a stage where audience members are most likely to move to the next behavior change stage.

CASE STUDY: The Potential Market for Expanded Private Sector Family Planning in the Philippines

In a segmentation study conducted on the FP market in the Philippines, researchers applied quantitative and qualitative research approaches and cluster analysis to establish distinct market segments. These segments were defined by demographic and sociographic characteristics related to life-stage attitudes toward FP, and by other issues such as trusted sources of information and preferred use of information channels (including mobile phones). In addition, audiences were analyzed according to an applied behavior change theory—the *process of behavior change*, based on Prochaska's Stages of Change (1992). Once the segments were identified, they were prioritized so that a targeted behavior change campaign could be created that would make the most effective use of limited resources.

Market Segment Summary Description	Stage of Behavior Change
Young, rural, intend to use modern methods	Pre-knowledgeable (of modern FP methods)
Young, urban, intend to use modern methods	Pre-knowledgeable
Low-income, culturally traditional	Knowledgeable
Conventional and skeptical of modern methods	Knowledgeable
Ready to limit family size but conservative	Approving of/intending to use (modern FP methods)
Ready to limit family size and pragmatic-minded	Approving of/intending to use

Program designers identified how different segments might be ready to use FP, and combined this with an in-depth understanding of the ways these segments seek information and are exposed to media and other channels. This gave the designers solid evidence to create a campaign focused on the groups they most wanted to reach for greatest impact. Targeting specific audiences—the two groups ready to limit their family size and approving of/intending to use a modern FP method—maximized the campaign's ability to achieve its objective of increasing the use of modern contraceptives.

(Source: Winfrey, Scribner, Armand, Carlson, and Dougherty 2003)

If you choose to use a staged approach in your mBCC program, what is your approach? Are you addressing the easiest-to-reach and expanding to the hardest-to-reach? Are you reaching the most receptive and scaling to the least receptive?

C. Who Are Influencing Audiences?

There are typically two types of influencing audiences: authority figures outside of the intended audience's personal life, and personal influencers such as spouses, other relatives, and friends. You can use sources that influence your target audience's behavior as the "voice" of an SMS program and as the primary voice for IVR programs. As you determine who influences the audience's knowledge and attitudes about the health problem under consideration, ask these questions:

- Who does the audience trust as sources of information on health issues? These sources could be generic groups, such as doctors, but could also be specific to the audience (e.g., mothers).
- Who influences their decisions to seek health services or practice health behaviors?
- Who influences their decisions to continue or discontinue new health behaviors?

The following is a list of potential influencers who could be relevant for your mBCC program:

- Primary healthcare providers (non-governmental organizations [NGOs], governments, clinics, or traditional healers)
- Family members and friends
- Religious leaders
- Local government representatives
- Celebrities and other public figures
- Community leaders (such as teachers)

As you describe the primary audience, consider the following questions:

- Is the person you want to reach a woman? If so, how old is she? What does she look like?
- Where does she live? In an urban or rural setting? If she is married, what is her husband like? How many children does she have? What is the family income range?
- What is her household structure? Does she live with her mother-in-law?
- How much formal education does she have?
- Does she work for income? If so, what does she do?
- What are her media habits? Is she more likely to watch television or listen to the radio?
- Does she own a mobile phone? How often does she use it and for what purpose? Does she use text or voice or both?
- Who or what are her most trusted sources of health information?
- Can you describe a day in the life of this person?
- If the person you want to reach is a healthcare provider, where does she work? What are the tasks that make up her job? Does she already use any technology on a regular basis at work (e.g., computer or phone).

D. Creating a Snapshot of the Primary Audience

A common BCC practice is to paint a portrait of the primary audience. Based on the research you have done, this exercise will not only allow you and your team to agree on the characteristics of the target audience, but will also allow you to logically verify the appropriate audience and sources of influence to affect behavior change. You can gather information by conducting desk research, contacting other development projects in your market, asking your mobile operators, conducting quick formative research with target users, etc.

E. What is the Context of the Audience's Mobile Communication?

mBCC is typically only a small fraction of an audience's telecommunication experience. Consider how mBCC messages complement or contrast with the larger mobile communication context surrounding the intended audience.

For example:

- Providers, patients, and peers may already informally discuss health issues by phone, so your strategy could be to build on these relevant behaviors.
- Non-health communication such as mobile marketing and spam may detract from health messages or may cause the audience not to trust the messages.
- The intended audience might already use phones for purposes with negative health effects. Examples include using phones to meet sex partners or texting while driving

Activity: Worksheets 2 and 3

Refer to Worksheet 2 to note down the characteristics of your intended audience, its size, and the optimal form of communication. Worksheet 3 will help you note literacy rates, mobile phone access, and user needs of various sub-groups within the audience.

Behavior Change Objectives

By now you have analyzed the broader context of your mBCC program and narrowed down the intended audience. This chapter is dedicated to setting your behavior change objectives. It will frame the core of your program. Topics include understanding the audience's current behavior relative to the ideal health behavior, identifying how much the mobile component might contribute to overall behavior change, and looking at metrics to measure progress and outcomes relative to your end goal.

Creating concise, clearly stated behavior change objectives can allow you to develop measurable indicators that will help you track the progress of your mBCC program. As you think about developing these objectives, consider the following:

- Review each of the audience segments you have defined. Does each segment require a different behavioral objective?
- What is the behavior that will change as a result of the message?
- Are your objectives so broad that they require several types of behavior change? You might need to focus your objectives to get tangible results.

A. Keeping your Behavior Objectives "SMART"

A "SMART" (specific, measurable, appropriate, realistic, and time-bound) objective (Piotrow, Kincaid, Rimon, Rinehart, and Samson 1997) is one that is:

- **Specific.** The objective should say who or what is the focus of the effort and what type of change is intended.
- **Measurable.** The objective should include a verifiable amount or proportion of change expected.
- **Appropriate.** The objective should be sensitive to audience needs and preferences as well as to societal norms and expectations.
- **Realistic.** The objective should include a degree of change that can reasonably be achieved under the given conditions.
- **Time-bound.** The objective should clearly state the time period for achieving these behavior changes

Case Study: SMART Objectives for TB Adherence

A pilot model in Nairobi, Kenya, was designed to provide mobile direct observation of treatment (MDOT) for TB patients. The MDOT model combines clinic protocols with community direct observation of treatment through the use of mobile phone video capture and transmission. This alleviated the travel burden for patients and health professionals. Videos were submitted for review by the health professionals, and patients were asked to view motivational and educational SMS and video health messages about TB. Surveys were conducted at intake, at 15 days, and at 30 days. Data were collected in 2008 and analyzed in 2009.

SMART research objectives

- ***Technical feasibility.*** Assess the technical and tactical implementation feasibility of providing remote MDOT through mobile phone video capture capabilities to TB patients in Kenya over a four-week time period, by no later than fall 2008.
- ***Participant receptivity and MDOT.*** Evaluate and document patient and clinician receptivity to MDOT, to inform future research design and recommendations within eight weeks of completing the pilot. Use pre-pilot, mid-pilot, and post-pilot survey instruments.
- ***Participant receptivity and messaging strategy.*** Explore patient receptivity to motivational and educational messaging about TB through text (SMS) and video (multimedia messaging service [MMS]). Assess frequency, language, and message type (fear, authority, and testimonials) using pre-pilot, mid-pilot, and post-pilot surveys.

Results and Conclusions. Three health professionals and 11 patients completed the trial. MDOT is technically feasible. Both patients and health professionals appeared empowered by the ability to communicate with each other. They appeared receptive to remote MDOT and health messaging over mobile.

(Source: Hoffman, Dekker, Suleh, Sundsmo, Cunningham, Igonya, and Hunt-Glassman 2009)

B. Stating the Behavior Change That Will Meet the Audience's Health Needs

Behavior change objectives should advance one or more larger program goals, even if the program goals do not include a specific behavior change or communication component. For example, an mBCC effort to ensure that pregnant women receive proper prenatal and postnatal care might link to a broader maternal and child health strategy developed by a donor agency such as USAID or by the MOH in a specific country. In defining behavioral objectives, think about the stages of behavior change (awareness, knowledge, attitudinal shifts, trial of the behavior, sustained behavior change, and advocacy to others). Where does your audience currently fall within this behavior change spectrum? How far would you expect them to move along the continuum, given the program's time frame and available resources? For example, is the audience comprised of chicken- and duck-raising households who are unaware of avian influenza (AI), its associated health and economic risks, and how it is transmitted/prevented? Is the audience made up of healthcare providers who have gaps in their patient counseling skills? What determinants of behavior change will you address? Socioeconomic determinants such as education levels and income are difficult to influence, but other determinants such as self-efficacy (an individual's belief in his or her own ability to make the change) can shift when included as part of behavior change objective-setting.

In the avian influenza example, the behavior change that will meet the audience's needs is centered around improved hand washing to prevent transmission of the illness. A measurable goal of the program could be to increase the percentage of farmers who consistently wash their hands after handling poultry from 10 percent at baseline to 30 percent at endline.

C. Being Realistic About How Mobile Phones Can Support Behavior Change

Remember not to assume that barriers to change are easy to overcome with mobile phones. For example, it might seem simple to expect the audience to receive, open, read, and understand a text message, and send an SMS response. However, such behaviors can often be challenging to inculcate. This is why it is critical to learn from the experience of others in the field. Fortunately, the mHealth field has pooled several lists of projects, so you can quickly find other programs similar to yours and contact the project managers directly. These resources include:

- www.mobileactive.org
- www.healthunbound.org
- www.k4health.org/toolkits/mhealth
- www.mhealthinfo.org

These sources can help you understand some of the barriers to change and provide ideas for potential solutions. For example, messages may need to come from a trusted source, the audience may never have opened an SMS before, literacy levels might prevent the audience from understanding the messages clearly, or the message may be sent at the wrong time of day. Also consider the variety of languages or dialects spoken by the intended audience and whether local phones can text in the local alphabet. These variables may automatically either eliminate the mobile phone channel, require you to purchase costly translation software, or use voice-based solutions such as IVR, which is also expensive.

This initial analysis will allow you to determine how much behavior change is needed for the program to succeed.

D. What is the Time Frame for Change?

Sustained behavior change is unlikely to be achieved as a result of a brief campaign. Remember to establish the time frame within the broader framework of the overall program. What is the time frame in which change will be achieved? How does this time frame fit within the framework of the overall program?

The time frame for behavior change is also a function of the type of approach chosen for your mBCC program. For example, if your mBCC program is using mobile phones as a trigger or cue (e.g., a reminder to get an immunization), the time frame is very short term. Additionally, some programs are time-bound so the time frame for change is limited.

For example, Text4Baby, a national program in the United States, sends informational messages via mobile phones to women during pregnancy and for the first year after a child is born. For longer-term behavior change programs, a blended approach across multiple channels and sources of information is recommended.

E. Identifying Indicators to Track

Indicators are the interim measures used to track progress toward achieving objectives. Once you have fixed an indicator's beginning point or baseline value, you can monitor it over time to see whether the intended behavior change is being achieved. Further details about monitoring strategies are described in the Monitoring & Evaluation chapter of this guide.

A full, complete, and appropriate set of indicators should include at least one measure for each major aspect of the mBCC program, such as:

- Percent of the audience who reports learning about the target behavior by SMS/IVR
- Number of SMS messages received or number of IVR messages listened to
- Number of active users receiving text messages
- Number of drop-outs from the system
- Response rate to SMS quizzes
- Percent of clients who use an SMS referral code at a health clinic
- Number of mobile vouchers used to access health services
- Audience awareness about the mobile phone program from the outreach organization

Activity: Worksheet 4

Refer to Worksheet 4 to capture your SMART objectives for each audience group.

Message Development

By this point, you have identified the issue your mBCC program will focus on, analyzed the intended audience, and identified your behavior change objectives. This chapter of the field guide is focused on developing the most effective messages for your mBCC program. Basic steps for ensuring that your messages achieve your behavioral objectives include 1) performing formative research, 2) creating a message brief, 3) crafting messages, 4) pretesting messages, and 5) integrating M&E planning into the message development process.

A. Formative Research

Formative research is a critical step, essential for program success. If the early stages of planning and development for your mBCC program have not yet included formative research, this is the perfect time to start. There are various approaches, ranging from sophisticated quantitative surveys to qualitative individual interviews. Regardless of the approach, however, the most important goal of formative research is to understand the intended audience.

Formative research is generally qualitative in nature. It typically consists of a review of literature relevant to your audience and behavioral objectives, as well as focus group discussions and in-depth individual interviews with representatives of your intended audience. Quantitative data can also inform your messages, but open-ended discussions with your intended audience will allow you the opportunity to hear the vocabulary they use when talking about health topics and behaviors and will provide deep insight into their own perceptions of these issues.

If you decide to use focus groups, organize them according to your audience groups. For example, if your primary audience is low-income pregnant women ages 15-24 and your secondary audience is mothers and mothers in-law who influence these women, be sure to organize the discussions separately to increase the chances of the interactions being honest and genuine.

In performing formative research, it is important to revisit the questions you answered in the Situation Analysis and to explore how your intended audience accesses and interacts with mobile phones. This will affect the length, tone, and content of your messages. In addition, you will need to match these considerations to the appropriate mobile format. The table on the following page illustrates the various mobile formats available, each of which has its own strengths and limitations. There is a related discussion in the in Tools & Technologies chapter.

B. The Creative Brief

A creative brief is the document that informs message development and other key dynamics of a behavior change strategy. The brief will act as a foundation for developing mobile messages for your program. It should incorporate and synthesize everything that you have learned from applying this field guide, including your responses to the questions from previous sections and the findings of your formative research. The more

comprehensive the creative brief, the more likely that communication will be effective. See the creative brief template found in Worksheet 5 for further guidance.

Examples of Mobile Format Applications

Format	Example
Visual	
Text-based SMS	SMS messages sent to provide prenatal health information to women
Data	Code sent by consumer to a centralized database to confirm authenticity of drug, encouraging safe use
Multimedia MMS	MMS format allowing a static message to be sent in a local language when SMS is not possible in that language (could also be used to send short animations or pictures)
Video-based MMS	Video-enabled phones distributed to TB patients to record a short video clip on taking their TB meds (sent via cell phone to clinic staff for verification)
Mxit	A free online mobile instant messenger and social network that features private and public chat rooms, games, music, and shopping
Audio	
Voice calls	Calls to a health information hotline with targeted information on reproductive health methods
Pre-recorded messages	Audio messages that start when a user answers the phone; useful for low-literate audiences
IVR	Interactive platform that allows a more savvy cell phone user to navigate a message platform

CASE STUDY: Cross-Sector Collaboration to Develop mBCC Messages

Through a new global partnership, the Mobile Alliance for Maternal Action (MAMA), USAID helped form a public-private coalition in Bangladesh to support the implementation of a national health information service. This initiative will provide both audio and text health messages to pregnant women and new mothers, linked to their delivery dates. The target is to reach 500,000 users within three years. The goal of the initiative is to substantively contribute to a reduction in maternal and neonatal mortality by improving health-seeking and preventative behaviors of pregnant women, new mothers, and their families. Scheduled to be launched on a national scale in 2012, MAMA Bangladesh will be sustained through corporate sponsorships, co-branding opportunities, product advertising, user fees, and local and global partners.

To develop appropriate content for messages, a multimedia company implemented a collaborative multi-stage process. Using formative research from the target audience, weekly "raw" messages were developed based on national guidelines, with input from health institutions. To ensure appropriate prioritization, balance, consistency, comprehensiveness, and accuracy, a consultative workshop was convened. Twenty-eight specialists from 15 organizations reviewed and advised on the messages. This Health Advisory Board, led by the MOH, brought together top experts in nutrition, FP, newborn care, obstetrics, and safe motherhood to collectively validate messages that would be developed into recorded scripts. The result was a nationally approved and vetted standard for the program. The Health Advisory Board will convene on a regular basis to review feedback from users and recommend modifications to address health challenges.

(Source: Riley 2011)

C. The Importance of Carefully Crafting Messages

Here are some important considerations in developing mobile content:

- When possible, engage a professional agency to craft and produce your messages. Meet with your creative partners to ensure that they understand the brief. Be proactive in engaging the agency's creative team on each of the points in the brief, to ensure that they are prepared to apply these points when crafting your messages. If you don't have the resources to do this, at least validate the messages you create with content experts.
- Never assume you know the best vocabulary, phrasing, length, tone, or other dynamics. Always apply your research to ensure that your messages are based on the evidence you have collected. Pretest the messages before finalizing them.
- Keep the limitations of your channel in mind while still being creative. If your channel is SMS, you are limited by the number of characters—how can you creatively deliver an appropriate and effective message in just 160 characters? If your channel is IVR, you may be tempted to make a message longer than the audience is willing to spend listening. Are multiple voices appropriate?
- If your mobile messages are part of a larger multi-channel program, make sure that they are consistent with key points in messages for all other channels. If messages are not carefully crafted to reinforce one another, they can potentially confuse an audience or lead them to ignore the messages.
- Accuracy is critical. If your messages contain technical health information it is essential to make sure that this information is correct and consistent with the standards of the country in which you are working and with global standards. You may partner with a technical working group, a partner agency, or an in-country organization to review the technical accuracy of your messages. Look outside your own team for this support to ensure objectivity.
- Who is sending the mBCC message? The source or perceived source of mBCC communication can affect a user's reaction. The branding and reputation of the source may affect the credibility or attractiveness of information. For example, receiving a message from a doctor could be perceived differently than receiving a message from a famous person.
- Include local languages and language options where appropriate.

D. Why Pretest Messages?

One of the most common mistakes in developing communication strategies (for any channel) is to assume that after following your formative research and careful message development process, you have gotten it right the first time. Pretesting invariably yields insights and feedback from your intended audience that you would never have thought of before audience members were exposed to your actual messages. Pretesting messages directly with your intended audience is an essential step in developing appropriate, accessible, and effective messages. It also saves time, effort, and resources by helping avoid costly revisions.

Essential considerations include the following:

- Present ALL messages you plan to disseminate directly to a sample of your intended audience. Ideally, you should do this in exactly the same way you intend to disseminate them, for example by sending a text message or playing a recorded voice message and then asking your sample audience questions in an organized way. However, if you are not able to pre-produce your messages in the format you are planning to use, be sure to present one message at a time and allow the audience to react to each

message. If there is any sequence in which the audience will receive the messages, be sure to follow that sequence when exposing them to messages during pretesting.

- Look outside the team that created the messages to conduct this pretesting. A common mistake in pretesting is to listen to your intended audiences' reactions and then justify the message, since it is based on your expansive context and other information. The pretester needs to have a significant level of objectivity.
- There are different ways to pretest, including group exposure or individual exposure to your messages. You should try to replicate the situation in which people will receive and interact with the messages. For example, if the message content is sensitive or personal, and the person who receives it is unlikely to share it with others, then you may want to pretest it in an individual interview. If the message is not sensitive and recipients are encouraged to share with others, then you may want to pretest in a group to encourage deeper discussion and insights.
- Think of these variables when testing: Is the message clear? Is the message relevant and appropriate to the audience? Is the audience motivated to follow through on the "call to action" you are promoting?
- Incorporate audience feedback into the final messages.
- If your pretest audience has strong negative reactions, you should be prepared to do a second round of pretesting to ensure that your revisions result in appropriate, accessible, and effective messages. Audience reactions, for example, might include finding the message culturally inappropriate or the technical language confusing. There may also have been too many competing messages.

E. Integrating Monitoring and Evaluation Into the Crafting of Your Message

The last section of this field guide is on M&E in your mBCC program. Here are some important considerations to ensure effective monitoring and evaluation:

- If you have performed a baseline as part of your formative research, be sure to include message-related questions in the research. Analyze the findings to inform your message strategy.
- If your messages will be a sequence or progression of information, consider how your M&E processes can track recall and behavior change in that same sequence or progression.
- If possible, have a research or M&E specialist integrated into your team from the beginning. This can help ensure that you are able to identify and include important M&E variables throughout the program development process.

Activity: Worksheet 5

Now that you have ideas about your creative strategy and message strategy, take some time to fill in the Creative Brief (created by Gael O'Sullivan of Abt Associates Inc. in 2011) template in Worksheet 5.

Tools & Technologies

You have now identified the intended audience, the appropriate mBCC objectives, and the key messages you are planning to relay. Clearly, you have chosen mobile phones as the channel for your mBCC program, but how does this channel work for your audience members? Do they always have access to a phone or is the phone a shared device? What times of day or days of the week does your audience prefer to receive and respond to messages? What other channels are you considering? Insight from this chapter will help you understand various BCC tools and technologies and the benefits and challenges of each.

In this guide, "tools" means communication approaches that define the way the audience is exposed to your message (e.g., advocacy or public relations). "Technologies" include software that sits on the mobile device and is used to present your message (e.g., CommCare) or platforms through which the devices operate or communicate (e.g., FrontLineSMS).

A. Technology Considerations

Understanding your audience, identifying mBCC objectives, and carefully designing your messages will help you choose the tools and applications that will be most effective in delivering your mBCC messages. The following questions will help you determine the optimal mix of tools and technologies:

1. Which type of information flow is most relevant to your mBCC program?

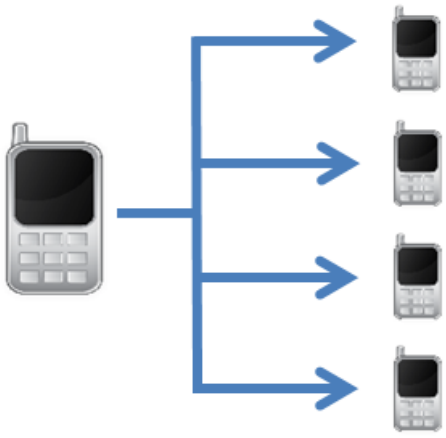
There are several common types of information flows for mBCC programs (Keisling 2010).

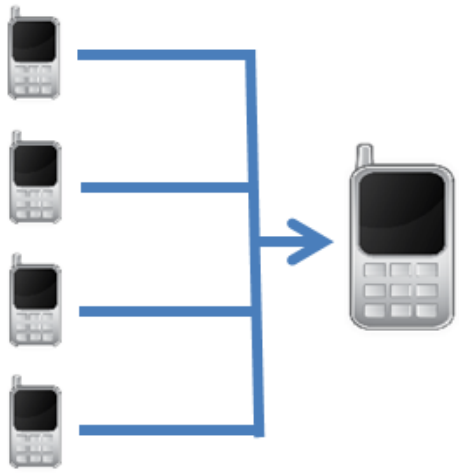
One-to-One

- Also called *interactive interpersonal communication.* The mBCC program acts as a communication medium between two parties (e.g., a health practitioner interacts directly with a patient via SMS or by talking on the phone directly with the patient).

One-to-Many

- *Outbound community-based communication*. The mBCC program serves a specific community (e.g., by sending systematic medication adherence reminders to patients taking TB medications).
- *Outbound mobile mass media.* The mBCC program essentially acts as a mass media channel similar to radio or print, such as an MOH-sponsored national IVR program to support healthy diets that sends pre-recorded messages to all subscribers of a mobile service provider.



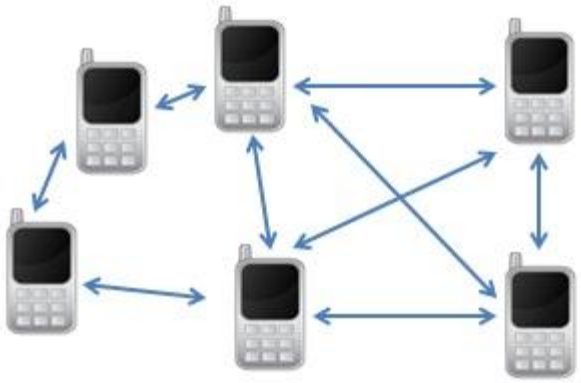


Many-to-One

- Encourages the intended audience to initiate communication with another component of an mBCC program, such as a national radio station asking listeners to SMS responses to a health quiz to win a prize.

Many-to-Many

- Chat rooms or mobile forums are useful ways to connect a group of people with a single message. For example, Mxit, an online mobile instant messenger and social network company, has instant messenger and chat room capabilities. The service, initially started in South Africa, is available in many countries and works on Java, Android, iPhone, BlackBerry, Nokia, and Windows handsets.



Regardless of the type of information flow for your mBCC program, if your program is initiating the communication flow, it is important to assess user preferences and needs when designing the program format. This will increase the program's relevance to the audience's needs and circumstances.

2. What format is best for your program?

The format you select should fit with the way your audience uses phones, their access to technology, and the capacity of their phones, as well as with cultural norms for phone use. Each format will have its own interface, usability qualities, appeal, local familiarity, cost, and IT requirements. The most commonly used formats for health programs in developing countries are SMS and IVR, which is used with audiences where literacy is a barrier to communication. In addition, graphic icons are becoming more prevalent as a way to communicate with non-literate audiences. As the cost of smartphones and data fees decrease, tools such as MMS and video-based programs for behavior change are likely to become more common.

Types of formats. Communication can be delivered by mobile phone in a variety of formats:

- Audio: calls, voicemails, IVR, call centers, voiceSMS
- Text: SMS, SMS menu, unstructured supplementary service data (USSD)
- Flashing (This refers to calling and hanging up to prompt an action. For example, a clinic flashes TB patients to remind them to take their medicine.)
- Music, ringtones
- Photos: user-received or user-generated

- Web access to online content
- MMS: visual content such as video, graphics such as quick response (QR) codes
- Games

Capacities. Mobile formats have varying capacities:

- ***Information capacity.*** Each format has unique limitations on the amount, complexity, and qualities of information with cost implications. "Flashing" (or "beeping"), where the caller lets the phone ring once or twice and hangs up, can be an inexpensive reminder for someone to take a pill. A phone-based video conveys compelling and complex visual information, but requires more expensive phones and may need more reliable signal coverage or more media and memory capabilities on the device.
- ***Stand-alone versus integrated capacity.*** The limitations of a format can be offset by integrating the use of phones and other sources, such as radio, print materials, or interpersonal communication. As described in the *Equal Access* case study later in this chapter, you can deepen your audience's interaction with your message by combining different channels.

Implications. Mobile formats have varied implications for users:

- ***Technological.*** Feasible format options are limited by the capability of users' handsets and subscribed services. These can vary from universally accessible SMS to less available Java-enabled phones to high-cost and high-bandwidth smartphones with multimedia capability.
- ***Cost to user.*** Costs include handsets, SIM cards, credits, payments to owner-intermediaries, and any social costs of borrowing, power, and repair.
- ***Convenience/burden of use.*** Beyond financial costs, each format has different requirements for users. For example, SMS allows users to read a message when convenient but is difficult for illiterate populations to use.

B. What Communication Tools Should You Use?

Now that you have considered the various formats and technological parameters related to mobile phones, you should decide which of the following tools will help you achieve your behavior change objectives.

Advocacy involves mobilizing resources to support an issue, policy, or constituency. The most likely mBCC advocacy programs will involve outbound messages to inform constituents about events or policy-related issues and will use inbound messages to collect information.

- ***Pros:*** Provides a remote ability to build a database of policy-related information.
- ***Cons****:* Difficult to inculcate response behavior.

Advertising is informative and can motivate an audience through a controlled setting, usually to buy products or services. Partners can sponsor messages for your mBCC program.

- ***Example:*** Praekult Foundation's "Please Call Me" (PCM) campaign (see SouthAfrica.info 2008)
- ***Pros:*** Ability to control message content, quality, consistency, etc.
- ***Cons:*** Purchasing advertising is expensive; advertising can be perceived as less credible due to obvious sales motivations.

Promotion provides incentives to the audience to participate in a particular behavior.

- ***Examples:*** QR codes (see image) that provide links through a smartphone to a discount for a promoted product or service

- ***Pros:*** High response rate, causes action and engagement by target audience.
- ***Cons:*** Action is immediate but often short-term, can be expensive.

Interpersonal communication (IPC) involves interaction between a service provider and one or more clients for counseling, information exchange, etc.

- ***Examples:*** Clinic reminders for medication adherence or reminders for appointments.
- ***Pros:*** Allows providers to reinforce behavior, builds relationships, lends itself to effective feedback process with client.
- ***Cons:*** Dependent on successful communication (reliable, helpful, and relevant); can be costly and difficult to scale.

Community mobilization engages individuals, networks, and institutions across the community to achieve a common behavior change or objective.

- ***Examples:*** Mobile forums, leveraging of social and civic networks to improve message reach.
- ***Pros:*** Can extend the reach, leverage trusted sources, and amplify the message.
- **Cons:** May require extensive stakeholder consultation, which can prolong development of messages or other issues; might require incentives to different stakeholder to gain their participation.

Entertainment is the most relevant for national BCC programs. Messages can be tied in with local TV or radio programs, using a mobile engagement aspect to support behavior change.

- ***Example:*** Radio show contest on health where participants submit responses to questions via SMS.
- ***Pros:*** Audiences are very receptive; messages can be persuasive.
- ***Cons:*** Costly to produce and requires careful design.

CASE STUDY: Promotion

MDNet is a low-cost, high-engagement healthcare initiative built to improve the interactions of healthcare professionals in African countries. MDNet creates free mobile phone networks among physicians within countries in Africa. The communications initiative—the first of its kind in Africa—advances the transfer of medical knowledge and emergency response capabilities, improving healthcare and ultimately saving lives. MDNet Ghana, launched on January 1, 2008, in partnership with Ghana Onetouch, created the first county-wide mobile doctors' network in Africa. The program created and distributed the first country-wide directory of physicians in Ghana, a directory that is accessible from any location through call-in directory assistance. In addition, MDNet Ghana has allowed the Ghana Medical Association to easily send bulk text messages to all physicians in the country, improving country-wide emergency response capabilities and communication. Since the program's inception, more than 1,900 physicians in Ghana have registered for the MDNet program; they have logged more than a million calls. After only six months, each MDNet doctor made an average of 1 hour and 15 minutes-worth of calls per month to other doctors within the network. In the month of June alone, there was a total of 2,266 hours of medical discussion within Ghana.

(Source: Africa Aid 2011)

C. Reach and Frequency

Reach, frequency, and cost per mille (cost per thousand) (CPM) are standard terms in the advertising industry. "Reach" refers to the number or percent of *different* people within a target audience exposed to a message. "Frequency" is the *average number of times* the target audience is exposed to a message within a certain time frame. CPM is the cost of delivering one thousand impressions within a defined population group.

The CPM equals the media cost (in whatever currency you are using) divided by gross impressions (in thousands). CPMs offer one way to compare the efficiencies of different communication channels and may be helpful when deciding if mobile communication is appropriate to use.

"Effective frequency" refers to the minimum number of media exposures needed for a behavior change goal to be achieved. For example, generally you will need fewer exposures to create awareness than you will need to shift attitudes. Another important consideration is message content. If your message or topic is personal in nature, the audience might be more receptive to increased message frequency, especially if mobile phones are a trusted source of information. It is challenging to strike the right balance between message frequency and reach so that you effectively impact your target audience while simultaneously containing costs.

When making decisions about the geographic and numerical reach of mBCC messages and the optimal frequency with which to engage your audience, consider the appropriate balance between these two variables. If your program's reach is not broad enough, or if the frequency is not appropriate for the audience, the potential program impact can limited. Cost is an added consideration. While the unit cost per SMS may decline as the quantity of messages increases, for example, the overall cost of a large-scale communication effort in general will be higher than a more limited effort.

D. Multi-channel Approach

Research has shown that strategies employing multiple channels are more effective than single-channel communication (Piotrow, Kincaid, Rimon, Rinehart, and Samson 1997) in increasing the likelihood of catalyzing a change in behavior. Consider the channels, tools, and technologies that contribute to your mBCC approach. Are you using mass media such as radio dramas? Are you linking radio programming to SMS quizzes about health messages in the dramas?

In a multi-channel approach, each channel has strengths and weaknesses and offers opportunities to complement other channels. While you will have designed different specific messages for dissemination through each channel, all the messages should reinforce one another by taking advantage of each channel's strengths.

Consider the example below to see how other channels can complement a TV serial drama:

Channel	**Example**
Primary channel: TV	Serial drama aired on TV
Complementary channel: radio	Discussion of health topics based on the plot of the TV serial
Complementary channel: interpersonal communication	Community-based listening groups call into radio show with comments on health topics
Complementary channel: mobile phones	SMS quizzes about the content and messages of the serial drama

CASE STUDY—Multi-channel Approach to Promote Peace

As part of the USAID Peace through Development (PDEV) Project, Equal Access International (EAI) launched SMS and IVR toll-free lines for listeners of three radio program series in Niger (on youth development, good governance, and religious tolerance). The radio programs and related mobile phone communication channels were part of a nationwide communication campaign to promote peace and tolerance and to counter violent extremist messages in a country affected by insurgency and international terrorism.

Despite high levels of illiteracy and poverty, mobile phone use is growing rapidly in Niger. This growth creates an opportunity for communications professionals to engage with Nigerien audiences in new and beneficial ways. When paired with the PDEV radio programs, mobile phones helped personalize and enliven communications between producers and listeners. Each individual was empowered to share his or her unique perspective and experience in new, more interactive ways.

In turn, the project team actively engaged with feedback received. Through SMS (built on the FrontLine SMS platform) and IVR (built on the Freedom Fone platform) lines, EAI producers were able to encourage multi-directional dialogue between content producers, community listening circles, and individual listeners. These dialogues took the form of debates about pressing national and regional issues, such as the first democratic election in Niger following the 2010 coup d'état and Al-Qaeda in the Islamic Maghreb attacks. The overall effect was to build the PDEV radio programs in Niger into symbols for a more open society. Through the radio and mobile phone communication channels, the programs and the audiences demonstrated transparency, collaboration, inclusion, and tolerance of diverse viewpoints.

(Source: Graham P. Gardner, Equal Access, email interview with Stephen Rahaim, September 7, 2011)

E. What Platforms and Applications Will You Use?

A variety of mobile platforms and applications exist to help implement your mBCC program. Listed below are some examples of popular platforms and applications that are widely available. Note, however, that this landscape is constantly evolving, especially with regard to applications targeting smart phones. Portions of the following section are based on content from MobileActive.com.

FrontLineSMS (platform)

Problem or need. In developing countries, a lack of communication can be a major barrier to grassroots organizations. FrontLineSMS uses resources that many NGOs already have (phones and computers) to create a means of instantaneous, two-way communication.

Brief description. FrontLineSMS is a free software that turns a laptop and a mobile phone or global system for mobile communications (GSM) modem into a central communications hub. Once installed, the program enables users to send and receive text messages with groups of people through mobile phones.

Technology details. The platform does not require an Internet connection. It is laptop-based, so it can be used on the road or during power outages.

Main services. Services include bulk SMS, tracking outgoing/incoming messages, and grouping users.

FrontLineSMS: Learn (platform)

Problem or need. In developing countries, disparate groups of health providers lack access to regular and affordable training programs. FrontLineSMS: Learn supports and strengthens education and training initiatives and human capacity development.

Brief description. The application focuses on building knowledge, higher-order reasoning, and decision-making skills that can be developed, reinforced, and assessed using the tool. Potential results include improved transfer of learning, increased knowledge retention, long-term changes in behavior, and—ultimately—improvements in service delivery.

Technology details. FrontLineSMS: Learn is built on top of the core FrontLineSMS platform. It does not require an Internet connection. It is laptop-based, so it can be used on the road or during power outages.

Main services. The main service is bulk SMS.

Medic Mobile (platform)

Problem or need. As health workers travel from clinics to reach isolated patients, they are often as disconnected from central clinics as the patients they are trying to serve. Many gaps and shortcomings of health systems can be addressed using simple, locally appropriate communication technologies.

Brief description. Medic Mobile develops and extends existing open-source platforms, including FrontLineSMS, OpenMRS, Ushahidi, Google Apps, and HealthMap. These tools support coordination and management of community health workers, community mobilization for vaccination and satellite clinics, logistics and supply chain management, referrals, routine data collection, and mapping of health services.

Technology details. Part of Medic Mobile's business is built on top of the core FrontLineSMS platform. Other products include subscriber identity module (SIM) card applications for health workers.

Main services. Services include supportive supervision, data collection, and GIS mapping.

Freedom Fone (platform)

Problem or need. Freedom Fone addresses the need for simple, affordable, uncensored communication technology. It allows frequently updated, short-segment audio programming. It removes the technical challenge of hosting and setting up the technical infrastructure, allowing users to concentrate on content.

Brief description. Freedom Fone merges mobile phones with citizen radio programming. Audio files are stored by Freedom Fone in a content management system, which is updated through a simple-to-use browser interface. These audio clips populate an IVR menu through which callers can navigate for information. Individuals can contribute questions, content, and feedback by leaving voice messages via the IVR interface. Freedom Fone can be operated as a collective, with different groups managing different channels of information from the same installation.

Technology details. The application resides and runs on a server.

Main services. The main services are IVR, voting, data collection, surveys, and polling.

CommCare (application)

Problem or need. Community health workers (CHWs) play a vital role in serving poor and rural populations. They are typically in the best position to promote preventive care and convey important

health information. However, paper-based systems and low levels of supervision limit opportunities for CHWs to effectively collect information and provide care to their communities.

Brief description. Dimagi and D-Tree international are leading CommCare, a mobile phone-based application that enables CHWs to provide better, more efficient care while also fostering better supervision and coordination of community health programs. Each CHW has a phone running the CommCare software, which assists them in managing household visits and planning their day. CommCare collects and reports data that will help monitor and evaluate community health programs.

Technology details. The application resides and runs on a mobile phone. It is a web-based application/ web service.

Main services. The main services are bulk SMS, information resources/information databases, and stand-alone applications.

RapidSMS (platform with its own application)

Problem or need. There is a need for improved data collection and group coordination, as well as for automatic analysis and response.

Brief description. Rapid SMS provides a framework and libraries for building SMS services rapidly.

Technology details. The application resides and runs on a server. It is a web-based application/web service, which resides and runs on a computer with a tethered modem or mobile phone.

Main services. The main services include bulk SMS, voting, data collection, surveys, polling, location-specific services, geographic information systems (GIS), and mobile social networks/peer-to-peer networks.

Ushahidi (platform)

Problem or need. Gathering immediate or emergency information from the general public can provide insights into events happening in near real-time. Allowing easy intake, visualization, and mapping of this information can be very valuable.

Brief description: Ushahidi is a platform that allows anyone to set up a way to gather reports by mobile phone, email, and the web—and to visualize and map them. It is being built so that it can grow with the changing environment of the web and work with other websites and online tools.

Technology details: Ushahidi is a web-based application/web service.

Main services: The main services are voting, data collection, surveys, polling, location-specific services, and GIS.

Text to Change (platform)

Problem or need. Mobile phones are mostly being used as person-to-person communication tools. Text to Change came up with the idea to use mobile phones as an educational tool on health.

Brief description. The platform uses incentive-based quizzes to educate, engage, and empower people on health. Using a toll-free short code, there is no cost involved for participants. The model encourages continued participation in programs and sparks dialogue on topics (such as HIV/AIDS) that are often considered taboo.

Technology details. Text to Change runs on a server.

Main services. The main services are bulk SMS, voting, data collection, surveys, polling, location-specific services, and GIS.

CASE STUDY: Development of FrontLineSMS: Learn

Staff in remote clinical settings rarely have access to supplemental training that would improve their quality of care and make them more confident and capable contributors. To address this gap, Abt Associates' Strengthening Health Outcomes through the Private Sector (SHOPS) project collaborated with partners Jhpiego and Marie Stopes International to pilot a project in Uganda. The pilot tested the use of mobile phones to reinforce clinical training and monitor quality of care. Clinical staff received daily texts, tips, and quizzes on target behaviors related to infection prevention, patient care, and adherence to standards and guidelines. The objective was to improve clinical staff practices, while patients benefited as a secondary audience through higher-quality care. The pilot's open source application was intended to work in "no Internet" environments with low-end phones, to ensure replicability and scalability.

The team adapted the FrontLineSMS platform to create FrontLineSMS: Learn, expanding FrontLine's assessment and automated feedback functionality and its peer-to-peer interactions. Pilot results produced promising self-reported behavior change, including increased information-sharing among staff and increased use of clinical practice manuals.

(Source: Riley and BonTempo 2011)

Choosing between available technologies can be daunting and confusing. These popular, widely used resources will provide you with case studies and further descriptions of available technologies:

- www.mobileactive.org
- www.healthunbound.org
- www.k4health.org/toolkits/mhealth
- www.mhealthinfo.org

F. What is Your Internal Capacity?

At this stage, you have investigated the audience, the messages, and the technologies that might make sense for your program. It is equally important to evaluate your organization's internal capacity to implement the mBCC program you design. Using a new technology always increases the amount of time and effort needed for program development, and will almost inevitably cause some delays in the program. Sometimes the technical problems are outside your team's skill set, leaving you completely dependent on a technology contractor to troubleshoot the problem.

Think about your organization's capacity to support this activity. Does your program budget support external resources? What equipment and software management is required? Sometimes it is helpful to hire an external consultant for setup of the program and pay an ongoing fee for continued support as the program evolves.

G. What Are the Roles of People Involved in the mBCC Program?

Answering these questions will help you assign ownership of the mBCC program within the organization.

- Who is the owner of the mBCC program?
- Are there multiple owners of the program (e.g., the face of the program for people outside of your organization vs. the program leader)?
- Who will make strategic decisions about the program? Is this person different from the person managing the day-to-day program and the person who manages financial sustainability?
- Who will manage the day-to-day program?
- Who is responsible for measuring outcomes?
- How does the mBCC program fit into the broader budget?
- Who will implement the program?
- Who will collaborate with external partners and stakeholders?
- What is your time frame?
- What financial resources you will need?
- What is the best platform for the program?
- How will you aggregate user information?
- Who will build the technology required for the program? Does an open source software already exist that you can adapt and use?

Activity: Worksheets 6, 7, and 8

Use Worksheet 6 to document the various audience groups' access to technology and ownership of equipment. Worksheet 7 will help you clarify the roles and responsibilities of team members who are part of the program. Worksheet 8 helps you link communication activities with specific audiences and formats.

Monitoring & Evaluation

At this point, you know your audience and your behavior change objectives. You have thought through the messages you will be using and the mBCC tools and technologies that are best for your program. This chapter links the behavior change objectives you identified with an M&E plan. In this chapter, you will learn about M&E challenges for mBCC and about the difference between monitoring and evaluation. The chapter also provides links to additional resources if you need to conduct further research.

Given the growing use and interest in using mobile platforms to promote behavior change, it is important to establish an M&E plan for your mBCC program. An M&E plan enables practitioners to obtain data that can be used to:

1) Understand how a program was implemented in practice
2) Gain knowledge about the experience of the target population exposed to the program
3) Identify the key outputs of the program
4) If possible, assess the impact of the program on key health outcomes

The information collected through the monitoring and evaluation plan can then be used as a feedback mechanism to redesign the program to better meet the population's needs, scale up the program, or replicate it in a different setting. Since mBCC programs are relatively new, there is little demonstrated evidence about their impact. For this reason, it is important to evaluate them whenever possible to validate their use in promoting behavior change and to justify continued funding.

A. Issues and Challenges in M&E of mBCC Programs

Since mBCC is such a nascent field, many technical issues and challenges may arise during the implementation stage. It is, therefore, important to have a monitoring system in place that can help identify challenges early on.

In a project led by Abt Associates, for example, technical difficulties prevented SMS messages sent over the FrontLineSMS platform from being transmitted. Outreach workers monitored the situation and saw that messages were not being received by the intended audience. Having this informal monitoring system in place facilitated resolution of the technical problem. This example highlights the importance of having an ongoing monitoring system that can track whether messages are being received by users, so that bottlenecks in the process of implementation can be identified.

Another challenge in M&E of mBCC programs is being able to collect data about the end users, to determine whether messages were opened and read or listened to by the audience. For example, did the users stay on the phone to listen to the entire recorded message instead of hanging up after they answered? Among poorer populations, there are also higher rates of phone sharing, which means that the intended user is not necessarily the one to read or listen to the message. There will be spillover from the programs because intended users share the information they receive and other non-users may change their behavior as well. For example, women who receive messages about RH may share what they learn from a program with their

friends and family. Because of these positive potential spillovers, it is important that the M&E plan incorporate data collection from non-users whose behavior may also be affected. This will allow you to capture the magnitude of the program's effect.

It is also important to monitor specific data about the program, such as the frequency of SMS messages sent, the day they are sent, and the time of day they are sent. These data will provide complete information about how the program was implemented. They can be used to understand how specific characteristics of the program may affect outcomes of interest. For example, if you have data on the day SMS messages were sent to remind women to attend prenatal care visits, you can compare the messages' effect on women who receive them closer to the day the health clinic is open for prenatal visits against the effect on women who get the messages many days before they can attend a prenatal care session.

Finally, because mBCC is a new field, over time continuing innovations will alter the ways that mBCC programs are implemented. This, in turn, will increase opportunities for data collection. For example, geo-spatial data will eventually become available; it could be used to monitor whether individuals' locations upon receipt of SMS messages affects their behavior.

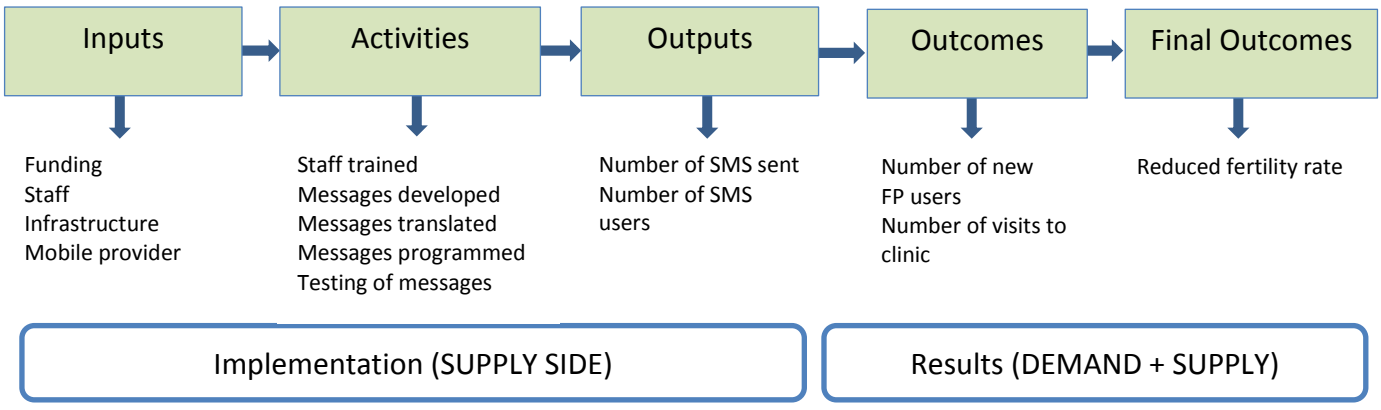
B. Monitoring

Monitoring indicators are useful as a management tool and as a way to demonstrate the results of the program. This not only motivates staff, but it can ultimately be used for evaluation purposes to show donors, policymakers, and practitioners how the program benefits the audience.

To create a monitoring plan, you must first establish the indicators you wish to track. These indicators can be categorized in the following ways:

1) Inputs
2) Activities
3) Outputs
4) Outcomes
5) Final outcomes

Below is an illustration of the types of indicators that would be included under each category for an mBCC program aimed at increasing access to and use of family planning:



(Source: Gertler, Martinez, Premand, Rawlings, and Vermeersch 2011)

Most monitoring plans will focus on the higher-level indicators, which include output, outcomes, and final outcomes. The ideal indicators are ones that are:

- Direct and precise
  - *Example: number of new pill users at primary health center*
- Objective, with no ambiguity about what is being measured
  - *Example: number of household heads who report having slept under a bed net the previous night*
- Useful for management
  - Process/output indicators are typically useful earlier in project, while outcome indicators are only available at the end of the project
- Practical and timely
  - Given resources available, how often and from whom can the data be collected?
- Attributable to the donor and practitioner
  - Ask if the indicator result would be different if the mBCC program had not occurred
- Reliable and replicable
  - Are the indicators comparable with other programs? Can these indicators be used for management decisions?

Although quantitative indicators are useful because they are comparable across different projects and easier to interpret, you can also collect qualitative data to complement quantitative data. Qualitative indicators help capture nuances about the program that cannot be documented through quantitative data. For example, qualitative data to monitor performance of an mBCC program might examine the following questions:

> *What were the users' experiences receiving the SMS message? Were they aware of the message? Was the content useful? Was the message welcome or annoying? Was the frequency of messages appropriate? If the message were changed, what information would be more useful?*

For each indicator, you should identify the data source and determine how frequently you will collect that data. You can obtain data in various ways, including from focus group interviews, key informant interviews, file reviews (for example, at the health center), or surveys. The frequency of data collection, the type of data collected, and the sources for the data collected will all depend on the program's budget constraints. One rule of thumb is that the cost of monitoring and evaluation should range between 3 percent and 10 percent of the total budget for the program (USAID 2003).

C. Evaluation

Process evaluations and impact evaluations are two primary types of evaluation methodologies. You need to select the approach that is appropriate for your program, given your goals and objectives.

Process evaluations help you capture how the program was implemented in practice compared to what was initially planned. The evaluation is descriptive in nature and provides information on 1) the structure of the mBCC program; 2) its organization; 3) the necessary inputs, activities, and processes; and 4) the target audience's experiences. The data you need for a process evaluation is based on the data you collected in the monitoring plan.

Process evaluation is a synthesis of these different data sources with the goal of understanding how the program was implemented and what its immediate results were. Because this evaluation also includes

qualitative data, the evaluation can also provide answers to questions such as the following: How did users respond to the SMS messages? Did they find them helpful? How could the messages have been more useful? This type of evaluation does not look at the impact of the program, but instead focuses on processes and outputs.

Impact evaluations are evaluations that enable you to attribute changes in outcomes directly to your mBCC program. Through an impact evaluation, you will be able to provide practitioners, policymakers, and donors with evidence they can use in deciding whether to scale up the program, replicate it in other settings, and/or continue to provide funding. For further reading about conducting impact evaluations, please refer to Gertler, Martinez, Premand, Rawlings, and Vermeersch 2011.

While there are different methods available to evaluate program impact, the gold standard is randomization. Using a randomized control trial (RCT), you randomly assign participants to the mBCC program. For example, if your mBCC program targets adolescents, you would find a sample of adolescents and select half to receive an SMS voucher to attend a health center presentation on voluntary counseling and testing (VCT) for HIV. By randomly assigning those who will receive the SMS messages, you would ensure that you have a control group that should be similar to the adolescents receiving the messages. By the end of the program, you would therefore be able to say that any change in the adolescents' willingness to get tested is due to the SMS vouchers. Random assignment has been used to evaluate the impact of many health programs, including one in Kenya that randomly assigned de-worming medication and health education materials about washing hands to different schools (Kremer and Miguel 2004).

CASE STUDY: Randomized Control Trial

In Malawi, the Communication for Change (C-Change) project is partnering with the Health Education Unit of the MOH to implement a study that will assess the effects of using mobile text messaging to reinforce the uptake of FP services in selected districts. The study seeks to answer the question "Does a focused FP campaign implemented via SMS increase the number of family planning clinic clients/visits?" Family planning uptake will be measured by 1) the number of new users of FP methods; 2) the number of FP visits; and 3) couple-years of protection. The post-intervention values of these measures will be compared with their pre-intervention values. It is expected that the interventions will be implemented for about six months.

Using a randomized controlled trial, four districts were selected for this study: two in which intervention messaging will be implemented (Kasungu and Machinga) and two in which it will not be implemented for comparison purposes (Mchinji and Balaka). FP clients visiting the selected clinics in the intervention districts will be asked to provide their mobile phone numbers and asked if they wished to receive FP and other RH messages through SMS. In addition, the clients will be asked to provide mobile phone numbers of friends and colleagues who might be interested in FP services. Friends or colleagues whose phone numbers are provided will be first contacted for their consent before FP messages are sent to them. C-Change will then send FP-focused text messages to FP clinic clients and their friends through the web-to-SMS platform of a mobile phone service provider in Malawi. The messages to be sent over the phone will include 1) invitations to attend an FP event where special FP services or information will be provided; 2) information on available FP services; and 3) invitations to ask questions or provide feedback through an FP/RH hotline.

This study has not yet launched so results are not yet available.

(Source: FHI 360 2004, accessed May 10, 2011)

This approach requires planning before the mBCC program is implemented. You need to consider how you will

1) Identify the target population and unit of assignment (e.g., individual, clinic, village)
2) Randomly assign the program
3) Collect baseline data from the treatment and control groups
   - Data include information related to the program (e.g., use of mobiles, use of SMS, literacy, access to health centers, contact with health educators) and data on socioeconomic and demographic characteristics
   - Data on the outcome of interest (e.g., use of VCT, consistent condom use, use of skilled birth attendants)
4) Collect endline data
   - Same data as baseline data

If randomization is not feasible, other approaches exist. One option is to establish equivalent comparison groups (a quasi-experimental design, or QED) and collect data before the program in both the treatment and control sites, and then collect data after the program.

An impact evaluation requires expertise in study design, sample size calculation, data collection, and data analysis approaches. For this reason, it is important for program designers to collaborate with researchers as early in the process as possible. This will enable you to establish the foundations for an impact evaluation before the mBCC program is implemented.

One of the most important considerations in determining whether to conduct an impact evaluation is whether you have sufficient funding to

1) Create a control trial (RCT study) or equivalent comparison group (QED study)
2) Have a large enough sample size to detect an impact, if there is one
3) Collect comprehensive baseline and endline data

You can justify using funding for an impact evaluation by arguing that it would be a missed opportunity if you were not able to assess your program's impact (if there is one), determine how large that impact is, and identify those who have been primarily impacted by the program. Donors and practitioners are concerned about these issues as they try to allocate limited resources across competing opportunities to effect behavior change.

D. M&E Template

For illustrative purposes, an M&E template is included in Worksheet 9. The illustrative output indicators are indicators that directly measure the results of the mBCC program. They include the number of different types of SMS messages sent out and the number of registered users. The outcome indicators monitor how those outputs are used by the target population, to monitor whether or not there are changes in the target population's knowledge, attitudes, and behaviors. The template lists possible outcome indicators, such as the percentage of women who know at least three modern FP methods and the number of new users of a particular method. The final outcomes represent ultimate results. These are health outcome-related results, such as changes in the fertility rate or changes in mortality and morbidity rates, which would be measured over a longer period of time. Collecting data on these final outcomes depends on the resources available and on the length of the program. The monitoring plan should also identify the data sources and state how

frequently these data will be collected. Survey data collected at baseline and after the program will require significantly more resources than data collected from reviews of secondary sources such as health records and program managers' reports.

E. Documenting and Disseminating Results

The mBCC field will benefit greatly from examples of both successful and less successful mBCC programs. There are many channels through which you can share your results and serve as a resource to other practitioners. These include forums such as the mHealth Working Group, where practitioners share their first-hand experiences; online resources such as the mHealth Toolkit, MobileActive, and the Health UnBound website (the HUB); and numerous mHealth conferences.

F. More Information on M&E

For a more thorough explanation of M&E concepts, take a look at the following resources:

1) FHI 360. September 2004. "Module 6: Monitoring and Evaluating Behavior Change Communication Programs." *Monitoring HIV/AIDS Programs: A Facilitator's Training Guide, A USAID Resource for Prevention, Care and Treatment.* Accessed May 10, 2011. http://www.fhi.org/NR/rdonlyres /ejp5m2gbtwupuf5h25y6b4oyz2lkxza334grizafsrlaux7qbbmlksdqy4bsoi2lw3ol27rukt7l6m/Mod06.pdf

2) Gertler, P., S. Martinez, P. Premand, L.B. Rawlings, and C.M.J. Vermeersch. 2011. *Impact Evaluations in Practice.* Washington, DC: The World Bank. http://issuu.com/world.bank.publications/docs /9780821385418?mode=embed&layout=http://skin.issuu.com/v/light/layout.xml&showFlipBtn=true

3) Global Health eLearning Center. March 2006. "Training Course: M&E Fundamentals." Washington, DC: USAID. http://www.globalhealthlearning.org/courseguide.cfm?course=28

4) Sullivan, T.M., M. Strachan, and B.K. Timmons. Edited by W. Rinehart. 2007. *Guide to Monitoring and Evaluating Health Information Products and Services.* Baltimore: Johns Hopkins University Center for Communication Programs; Washington, DC: Constella Futures; Cambridge, MA: Management Sciences for Health. http://www.hipnet.org/sites/default/files/MEGuide/MEGUIDE2007.pdf

5) USAID. 2003. "The Performance Management Toolkit—A Guide to Developing and Implementing Performance Management Plans." Washington, DC: USAID Policy and Program Coordination Bureau. http://pdf.usaid.gov/pdf_docs/PNACT871.pdf

Activity: Worksheet 9

By now you should have a good idea of the M&E indicators you will use to track your mBCC program. Use Worksheet 9 to outline the output, outcome, and final outcome indicators you will use. Keep in mind that the source for the information might vary, and consider the frequency with which you will want to collect data.

Conclusion

Mobile phones are an exceptional new channel for reaching audiences right in their own pockets, greatly increasing access to previously difficult-to-reach audiences. Although mobile phones do require you to learn about a new technology, the idea of using them as an mBCC channel should not leave you feeling intimidated.

This Field Guide is designed to help practitioners think through the major dynamics of designing a mobile behavior change communication program or integrating mobile phones into a multi-channel communication strategy. It includes questions that may lead you to determine that mobile phones are *not* an appropriate choice. It also includes questions to guide you in making efficient and effective use of mobile phone technologies if they *are* appropriate for your program.

You will find that the guide challenges you to define aspects of your behavior change program that you might not have previously considered. Skipping steps in the design process will eventually limit results. You may later find yourself unclear about your actual behavioral objectives, after you have launched the program and when it is too late to revise messages and materials.

Finally, this guide discusses best practices from a core group of health professionals who have worked in BCC and with mobile phones. The guide has been vetted by a network of development and BCC experts. We encourage you to apply the tips in the guide, learn from your successes and mistakes, and—most importantly—document and share them with others. Use the mHealth Alliance HUB, the Knowledge for Health website, or any other relevant platform to share your challenges and successes with other people. This will allow us to work together to advance this nascent but very important field. There is an evaluation form attached to the guide. We welcome your direct feedback so that we can incorporate your comments into future versions of the guide.

Activity: Worksheet 10

Once you are close to launching your program, you should summarize the goals, audience, strategy, and M&E approach in a one-page document. Worksheet 10 provides a Use Case Template which will be helpful for internal dialogue as well as for presenting your program quickly to an external audience.

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