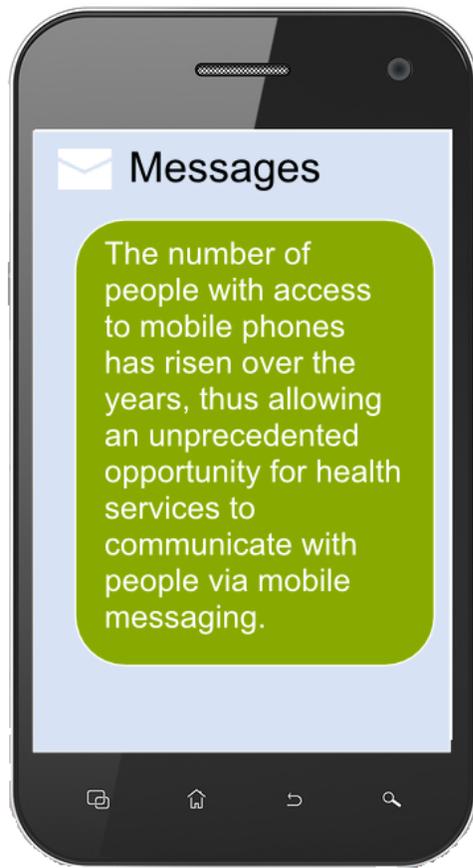


mHealth for Behavior Change Communication Brief

Why mHealth messaging?



Evidence has shown that effective communication message programs can improve a number of health behaviors for a variety of populations. Mobile messaging has been shown to be successful for many health behaviors, including medication adherence, chronic disease self-management, and disease prevention.

Mobile messaging programs have targeted diverse topics ranging from medication adherence for antiretroviral drugs regimens to pregnancy-related knowledge and antenatal care visits for pregnant women. Additional information about existing evidence for mHealth can be found at <http://www.mhealthevidence.org>

There have been several large-scale implementations of nation-wide mobile messaging programs including: MomConnect, a South African National Department of Health (NDoH) program which uses SMS to register pregnant women in South Africa and provide stage-based messages throughout pregnancy and up to the child's first birthday; the Stop Smoking Services SMS program, a United Kingdom National Health Service (NHS) program which aims to help smokers achieve smoking cessation;

and similarly the SmokefreeTXT program, a United States National Cancer Institute (NCI) program which also aims to help smokers achieve smoking cessation. Mobile phone messaging programs and campaigns such as these provide opportunities to meet some of the health care related needs of individuals living in low-resource settings by providing accurate and appropriate health care information.¹

What technology channels are available for mHealth messaging programs?

Channel	Pros and Cons
SMS (Short Messages Service)	Available on any phone. Messages pushed to user's phone but only text messages of 160 characters or less per message. Expensive for scaled programs in some countries.
USSD (unstructured supplementary service data)	Available on any phone. Only short messages similar in length to SMS. Information requested through numbered menus rather than text. Better than SMS for privacy and interactions. Expensive at scale.
MMS (Multimedia Message Service)	Can send pictures, audio and longer text messages than SMS. Messages pushed to user's phone. Not available on all phones. More expensive than SMS.
IVR (Interactive Voice Response)	Available on any phone. Allows message recipients to listen to the message and respond to audio prompts. Can be expensive for the user or operator.
Data (Apps / Internet)	Cheaper than other methods. Free to user services not always available which creates a barrier to use. Not available on all phones.

In deciding on a channel for messaging, it is important to consider the target audience practices and the context of their environment, as well as how this channel supports the program goal. For example, the actual time of the day that the SMS goes to the individual can affect how it is received. Additional considerations include human resources, budget, and opportunity for partnership with mobile network operators.

1

[http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(15\)00054-6/fulltext](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(15)00054-6/fulltext)

Currently, SMS is the most popular method for mHealth messaging programs; however, over time there will be advances in technology or increased access to technology that may shift the way people use mobile phones. Therefore, it is critical to constantly assess the appropriateness of the existing channel and seek opportunities for addition of other channels (e.g., utilizing data or smart phones) or integration of multiple channels for enhanced delivery of messages.

How do you create a mHealth messaging program?

Developing a mHealth messaging program is an iterative process that requires input from various stakeholders, including potential/ideal/intended users of the program. The program must be consistent with the best scientific and practice-based evidence and must also follow general principles of communication in order to make sure that the information is accurate, easy to read, and leads to improved health. In order to ensure these factors, a 10-step process is recommended when developing a mHealth messaging program. These steps are outlined below.

STEP 1: IDENTIFY MESSAGING TEAM AND PROGRAM MANAGER

The messaging team should be interdisciplinary in order to ensure that the perspectives of all key stakeholders are represented during the development of the messaging program. Potential key stakeholders include program staff, public health and medical professionals, communications specialists, information and communication technologists, government officials, and members of the target audience.

Members of the messaging team may serve in different roles, depending on their area of expertise. For instance, some members may be involved with developing the framework for messaging, while others write messaging content, and others review messages.

It is important to ensure that the messaging program has a program manager who is responsible for coordination of the messaging program development. This person serves not only the critical role of keeping the project on schedule, but is also responsible for convening the appropriate stakeholders and consolidating their input.

STEP 2: SPECIFY EXACTLY WHAT THE PROGRAM AIMS TO ADDRESS THROUGH MESSAGING

A successful mobile behavior change communication-messaging program requires a clear scope and goal. The goal of the program can be defined using a SMART sentence, which helps to ensure that results are specific, measurable, achievable, relevant and time-based (SMART). A key aspect of outlining the program scope/goal is determining the target audience and geographic scope of

the messaging program. Additionally, SMART goals should be developed with consideration to the availability of evaluation methods for measuring the impact of the program.

Example of a SMART Sentence

EXAMPLE STRUCTURE: The scope of this messaging program is to (verb) (target audience) preposition (action/fact) (time), as measured by (quantifiable indicator metric).

PROGRAM EXAMPLE: The scope of this messaging program is to remind pregnant women to take folic acid pills every day during pregnancy, as measured by the number of pill refills they request from the CHW.

The project team should collectively decide on the program scope and once this scope is defined, it is useful to confirm that all appropriate stakeholders have been identified for participation on the messaging team.

At this step in the process it is often helpful to create a logic model to ensure that all stakeholders are on the same page about which identified resources and key inputs will lead to the expected outputs, short-term, and long-term goals of the project.

STEP 3: CREATE MESSAGING PROGRAM FRAMEWORK

Developing the framework will allow key stakeholders to provide input on important aspects of the program early in the process and ensure consistency throughout the messaging program. In some instances, development of the messaging program framework may require formative research such as scientific literature reviews, environmental scans, or input from the target population.

The topic list should give consideration to scientific evidence, practice-based evidence, as well as cultural practices and knowledge of the target population

The ethics of using mHealth for health information is also a key consideration. In some communities, husbands and wives/ partners use the same phone. If the health messages relate to specific health conditions, such as HIV, and one of the partners has not disclosed to the other, there is potential for breaking confidentiality when the message is read by unintended person. In other settings, the recipient may not be able to read and may ask someone to be reading the messages for them.

Key Considerations for the Messaging Program Framework

<p><i>Guiding Behavioral Theories and Message Frames:</i></p> <p>Any guiding behavioral theories and message frames should be identified and outlined in the context of the program goals and target population. Evidence shows that behavior change communication programs are more effective when informed by theories of behavior, and that the way a message is framed can influence the way a person interprets and accepts the message. There are several established theories of human behavior and communication that can be used to identify the determinants of human behavior that are most critical to adoption of the behavior that the messaging campaign is aiming to influence.</p>	<p><i>Context for Target Population:</i></p> <p>Messaging content should be written with consideration of the target user's perspective and the context in which they might receive the message, specifically related to common constraints and social factors (e.g., family structure, religious practices, and economic status). It may help to use probing questions to understand the user's perspective, such as: How does this information fit into the context of a message recipient's daily life? Does the message recipient have other competing sources of information? Are messages being delivered to the key decision maker? In all of this it is important to consider using terms that are preferred by the target audience.</p>	<p><i>Frequency of Message Delivery and Amount of Messages:</i></p> <p>This should include consideration of factors such as whether messages need to be delivered in a particular order or at random or whether a greater amount of information is more pertinent at particular stage. Messaging frequency will likely differ by topic and must align with messaging program goals. A review of scientific and/or practice-based evidence may provide insight as to the best approach.</p>
<p><i>One-way vs. Two-way messages:</i></p> <p>A decision should be made on whether the program will only provide messages to message recipients, or whether the program will allow two-way communication, enabling message recipients to interact with the program. Evidence shows that programs with two-way interactivity are more successful in improving health outcomes, however this is not always feasible because the cost may be greater.</p>	<p><i>Guidelines for Resource Recommendations and Referrals:</i></p> <p>A standard for referrals and recommendations should be developed. Considerations include determining whether the program will provide information for only those resources controlled by the organization developing the messaging program or whether it will link to outside resources. It is important that the services will be able to handle the demand that may be generated.</p>	<p><i>Message Tone:</i></p> <p>The tone of messages should be decided, as this may influence the way the messaging program is perceived by the target audience. Some messaging programs may choose an authoritative tone, while others find a friendly, conversational tone to be more appropriate.</p>

STEP 4: IDENTIFY PROGRAM CONSTRAINTS

Constraints of the program should be discussed and communicated to the message development team and all key stakeholders. Program development should continue with consideration to these constraints. Potential constraints to consider are the program budget, additional costs associated with implementation, organizational capacity, costs transferred to the message recipient (e.g., mobile network operator SMS fees), mobile connectivity, access to a mobile phone by the target audience, and literacy and/or numeracy of the target audience.

There may also be various legal restrictions in the way that the data must be collected or processed. It will also be necessary to consider how to Remove individuals from the messaging system if they are no longer interested in receiving messages (opt out method)

How to remove individuals who phone numbers are no longer in use, as people may change their phone numbers

often or have multiple phone lines depending on which mobile service providers offers a better price deal.

STEP 5: DEVELOP OR ADAPT THE FIRST DRAFT OF THE MESSAGE LIBRARY

The first draft of the message library should be developed using the message framework as a guide. Before developing any messages, it is important to search for existing message libraries that can be adapted (in part or in full) to fulfill the goals of the current program. Many existing programs have messaging libraries that can be accessed publicly or provided upon direct request.

Because of the short nature of messages it is important that all messages are comprehensible and focus on the key points identified in the topic list. After the first draft of the messaging library is created, the message development team should review all content to ensure that the program goals are being met as identified by the SMART goal statement, and outlined in the logic model and messaging framework.

STEP 6: CONDUCT EXPERT REVIEW

The first draft of the message library should be presented to a team of experts for review and revised according to the feedback received. Members of the expert review team should review the messages with regard to factors such as scientific accuracy, practicality, and cultural appropriateness.

It is critical to develop a systematic process by which to receive feedback from experts. One approach is to have experts review the messages independently and provide written feedback, while another approach is to ask the review panel to convene for in-person or phone meetings during which all feedback is discussed and the panel has the opportunity to discuss the various opinions.

One of the most critical purposes of the expert review panel is to ensure that the message library includes information that is scientifically sound and reasonably expected to do no harm.

STEP 7: GATHER FEEDBACK FROM TARGET AUDIENCE

The revised message library should be presented to members of the target audience for feedback. This feedback should provide insight on factors such as the practicality and feasibility of messages in the context of the recipient's daily life, preferred length and frequency of delivery of messages, whether the message recipient perceives the information to be useful, and whether the message influences the message recipient's intention to perform the target behavior.

Feedback can be gathered using a variety of methods including survey, focus groups, in-depth interviews, usability testing on a mobile device, or short-term implementation of the messaging program in the context of the message recipient's real life (e.g., 1 week trial period followed by a survey or interview).

STEP 8: MESSAGE REFINEMENT

Refine the message library in accordance with feedback from the target audience, and in consult with expert stakeholders and the message development team to ensure scientific accuracy and appropriateness. Ideally, refinement of the message library should be an iterative process that includes feedback from the target audience and expert stakeholders, as well as alignment with the program goals as defined by the SMART statement and logic model.

STEP 9: CONTINUAL REVIEW OF CONTENT AND CHANNELS

Develop a schedule for continual review of message library content and delivery channels in order to ensure that information provided is in line with the best science and

also still relevant to the context of the target audience. Continual review will ensure that current events have not changed the meaning of any of the messages. Also, if website links and resource or referrals are included in the messaging content, it is important to ensure that those resources have not changed and remain the best resource to support the message purpose.

STEP 10: EVALUATION OF PROGRAM SUCCESS

Although listed last in this sequence, preparation for evaluation of program impact begins from the very beginning of the process. With a clear definition of the project scope and SMART goals, as well as development of a logic model, a guiding messaging framework and various formative research exercises, evaluation of the messaging program should be relatively straightforward. Evaluation activities are conducted to measure not only the intended health outcomes of the messaging program, but also target audience satisfaction and perception of messages. Early in the development of the messaging program, key stakeholders should come to an agreement about realistic options for program impact evaluation.

How does a messaging program deal with multiple languages?

In many instances, the target audience for a messaging program may speak more than one language. For instance, South Africa has 11 official languages. Therefore, a messaging program with a SMART goal that includes reaching the entire population of South Africa will have to be translated into multiple languages.

There are many complexities that exist during translation of a mobile messaging program because the character limitation may be restrictive, making it difficult to get the same information across in multiple languages. Furthermore, there are phrases in one language with no equivalent in other languages, and oftentimes, regional differences may exist. Many of the message translation approaches provide recommendations for dealing with these constraints.

Regardless of the translation technique utilized, it is imperative to test the message library again with both members of the target audience and expert stakeholders in order to ensure that both the meaning and context of messages is the same and that the scientific information is accurate.

Additionally, back translation (i.e., translation of the message library from the new language back to the original language by an independent translator) is recommended in order to ensure that the original meaning and tone of the message has been retained.