SMS 4 SRH: Using Mobile Phones to Reduce Barriers to Youth Access to Sexual and Reproductive Health Services and Information
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Contents

- Acknowledgements........................................................................................................1
- Acronyms......................................................................................................................3
- Glossary.........................................................................................................................4
- Executive Summary.......................................................................................................5
- Introduction...................................................................................................................6
- Report Objectives.........................................................................................................7
- Report Methodology.....................................................................................................8
- Barriers to Youth Access to Sexual and Reproductive Health Information and Services...9
  - Accessibility Barriers.................................................................................................10
    - Cost.........................................................................................................................10
    - Location.................................................................................................................12
      - Case Study 1: MSIE’s eVoucher.........................................................................11
  - Information Barriers....................................................................................................14
    - Lack of Sexual and Reproductive Health Information ..............................................14
      - Case Study 2: FHI 360’s m4RH .....................................................................16
    - Lack of Location Information ...............................................................................18
      - Case Study 3: CFHC’s The Hookup ..................................................................19
  - Socio-Cultural Barriers...............................................................................................20
    - Embarrassment and Fear of Social Stigma............................................................20
      - Case Study 4: Learning About Living: My Questions and My Answers ............21
    - Social Pressure and Cultural Norms....................................................................23
  - Provider Barriers.........................................................................................................25
    - Provider Bias..........................................................................................................25
      - Case Study 5: Public Health Solution’s Contraceptive Method Selector ...........26
    - Lack of Provider Training.....................................................................................27
      - Case Study 6: Marie Stopes Uganda’s m4QI.......................................................29
    - Service Delivery Management..............................................................................30
- Lessons Learned............................................................................................................33
- Conclusion......................................................................................................................36
- References......................................................................................................................37
- Appendices.....................................................................................................................41
  - Appendix 1: mHealth Models....................................................................................41
  - Appendix 2: SMS 4 SRH Cheat Sheet......................................................................45
  - Appendix 3: Additional Resources...........................................................................47
Acronyms

AIDS  Acquired immune deficiency syndrome
CFHC  California Family Health Council
CHW   Community health worker
eVoucher  Electronic voucher
HIV   Human immunodeficiency virus
ISIS  Internet Sexuality Information Services, Inc.
mHealth  Mobile health
MSI   Marie Stopes International
PSPI  Population Services Pilipinas Inc.
SMS   Short Message Service
SRH   Sexual and reproductive health
STI   Sexually transmitted infection
Glossary

**Push messaging:** Messages are sent automatically to a user, without an individual request; the programme “pushes” the information to the user.

**Pull messaging:** Messages are sent to the user in response to an individual request for information; the user “pulls” the information from the service.

**One-way SMS:** Messages are sent from a programme to an individual or multiple users; users do not respond to the messages. One-way SMS messages typically are “push” messages.

**Two-way SMS:** Messages are sent back and forth between individual users and programme staff; they may be automated (pre-prepared responses) or individually generated by programme staff. Two-way SMS messages typically involve “push” and “pull” messages.

**Opt-in SMS programming:** Users consent to allow a programme to send information and messages to their mobile phone; users receive only information they have agreed or requested to receive.

**Opt-Out SMS programming:** Users are automatically enrolled to receive information and messages to their mobile phones and must request to be removed from the programme if they wish to stop receiving messages.

**Smartphone:** A mobile telephone that includes additional functions such as Internet access and other applications.

**Youth-Friendly Services***: The World Health Organization defines youth-friendly services as those that are accessible, acceptable, equitable, appropriate, and effective for young people. Although no consistent standard exists, youth-friendly services are generally considered a holistic, sexual, and reproductive healthcare package for youth that may feature:

- Providers trained in youth reproductive health issues and communication
- Respectful, non-judgemental attitude
- Confidentiality and privacy
- Youth participation
- Convenient hours and location
- A comfortable, nonthreatening environment
- Affordable fees
- Community involvement and support
- Recognition of the diversity of young people, including genders, backgrounds, and sexualities.

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* This definition is a compilation of information from [WHO](https://www.who.int), [UNFPA](https://www.unfpa.org), [FHI 360](https://fhi360.org), and IPAS.
Executive Summary

The current generation of young people is the largest in history, with three billion people under the age of 25 and 1.8 billion between the ages of 10 and 24 worldwide. These young people face a range of barriers that limit their access to sexual and reproductive health (SRH) information and services, contributing to a widespread, global, unmet need for contraception. The growing penetration of mobile phones around the globe, especially among youth, offers a prospective solution to these barriers through mobile health (mHealth) programming. mHealth, or the use of mobile and wireless devices to improve health outcomes, healthcare services, and health research, has enormous potential as a uniquely effective tool for engaging with youth, who have widely adapted mobile phones into their everyday lives.

This summary report provides an overview of how mHealth programming may be used to improve youth access to SRH services and information. The report frames the discussion of mHealth through an examination of the specific barriers that limit youth access to them. The barriers identified have been divided into four categories:

- **Accessibility Barriers**, including cost and location
- **Information Barriers**, including lack of SRH information and lack of location information
- **Socio-Cultural Barriers**, including embarrassment/fear of social stigma and social pressure/cultural norms
- **Provider Barriers**, including provider bias, lack of provider training, and poor service and delivery management.

Each barrier is illustrated with examples of how it limits youth access to SRH information and services around the world. Potential mHealth approaches to each barrier are offered, with examples and case studies of existing programs from a variety of settings and organizations. Limitations and opportunities for using mHealth to address each barrier are discussed. Finally, lessons that have been learned are offered to guide the process of developing and implementing mHealth programming focused on youth.

Understanding the barriers that young people face in accessing SRH information and services can help determine whether and what type of mHealth intervention could be most effective. When developed and implemented with the audience in mind, mHealth programmes have the potential to be effective in reducing barriers and connecting people to essential information and services in an innovative, private, and acceptable manner. Although mHealth is not a silver bullet, it has great potential for improving youth SRH around the world.
SMS 4 SRH

Introduction

The current generation of young people is the largest in history, with three billion people under the age of 25 and 1.8 billion between the ages of 10 and 24 worldwide. These young people face a range of barriers that limit their access to sexual and reproductive health (SRH) information and services, contributing to a widespread, global, unmet need for contraceptives among youth.

The growing need to address the SRH of young people has been paralleled by a growing interest in the application of mobile telephones to engage populations and improve health and healthcare. In 2011, there were six billion mobile phone subscriptions around the world, 4.5 billion of which were in developing countries.\(^1\) The rapid increase in mobile phone penetration around the world, especially in developing countries, is providing new opportunities to utilise everyday technology to improve health outcomes. This use of mobile phones for health, known as mHealth, encompasses a range of programmes that use mobile and wireless devices, including mobile phones, smart phones, and tablet computers. Because the field of mHealth is still new, the evidence base for mHealth programming is limited. However, mHealth does present a promising option for engaging with mobile phone users to improve health and healthcare around the world.

mHealth is defined as the use of mobile and wireless devices to improve health outcomes, healthcare services, and health research.

For the purpose of this paper, youth are individuals between the ages of 15 and 24 years, as defined by the United Nations.

mHealth has enormous potential as a uniquely effective tool for engaging with youth, who tend to be enthusiastic adopters of new technology and have the capacity to quickly learn to use it and adapt it to their everyday life.\(^2\) Globally, youth aged 15–24 are more likely to use mobile telephones than the general population.\(^3\) Youth are also using technology in new and innovative ways, by adopting Short Message Service (SMS), or text messaging, as a means of social communication. SMS is a fast, reliable, convenient, low-cost, and trusted form of communication, which has the potential to improve the transfer of health information to users and improve communication within the healthcare system.\(^4\) Overall, youth are considered enthusiastic adopters of mobile phones and avid users of SMS, making them an ideal population with whom to implement mHealth programming.

As one of the largest international family planning organisations in the world delivering family planning and reproductive health services in more than 41 countries around the globe, Marie Stopes International (MSI) is in a unique position to ensure that millions of young people have access to essential SRH information and services. To facilitate and communicate organisation-wide efforts to improve SRH services and programmes focused on youth, the MSI Youth Taskforce was formed in 2012. With the goal of expanding and institutionalising youth programming across MSI, the Youth Taskforce worked to identify new and innovative ways to engage youth and expand youth access to SRH information and services. This research was commissioned to help reach this goal.
Report Objectives

This document was developed to assist practitioners interested in youth and SRH to think about the potential of mHealth programming.†

The report examines the potential for mHealth programmes to improve youth access to SRH services and information. Whereas the mHealth toolkit includes a range of useful ideas such as social networks, multimedia messaging, games, smartphone applications, mobile money, and mobile Internet, this report focuses primarily on SMS-based mHealth programmes that could be implemented in a variety of settings in developed and developing countries alike. It offers examples of SMS-based mHealth programmes designed to address common barriers young people face in accessing SRH services and information, and summarizes the lessons that have been learned thus far. It provides guidance and direction for programme managers, SRH organisations, and donors interested in connecting youth with SRH information and services.

This report examines the potential for mHealth programming to address youth SRH needs through a focus on barriers that restrict their access to SRH services and information. By focusing on barriers, readers may understand their importance in serving as obstacles to access and how good programmes can help avoid them. In addition, focusing on barriers provides an effective way to conceptualise potential solutions, such as mHealth in the context of the target population’s needs and limitations. By framing this discussion of mHealth programming around an examination of barriers faced by youth, this report should encourage practitioners to expend the necessary time and energy to fully understand the population and the barriers they face, and to develop effective and sustainable mHealth programmes.

† The report is also designed in part to complement to an existing guide to mHealth programming, Mobile Behavior Change Communication (mBCC) Field Guide, by Abt Associates, which helps practitioners understand the questions and issues involved in designing mBCC programmes.
Report Methodology

In preparing this report, the author reviewed more than 130 relevant documents provided by key stakeholders and obtained through online literature searches. Additionally, the author interviewed key programme staff from MSI and other SRH organizations to obtain more information on the topic and specific mHealth programmes. A list of recommended resources appears in Appendix 3.

Information on particular programmes was gathered through online searches and discussions with programme staff from several SRH organizations. Programmes were sought that could provide insight into the effectiveness of an mHealth approach in addressing SRH among youth populations, but were not limited to programmes specifically focused on youth or SRH. Programmes were included in this review if:

1. There was sufficient information available online to determine its relevance
2. They were mobile phone–based
3. They addressed SRH or could be adapted to address SRH
4. They focused on youth or could be adapted to engage youth
5. They could be applicable in a developing country
6. Programme staff responded to requests for information and/or there was sufficient online information to provide an overview of the programme and some evidence of its effectiveness.

Limitations: Although this review attempts to provide a comprehensive survey of mHealth programmes designed to improve youth access to SRH information and services, it suffers a few limitations. Limited published evidence or online documentation of existing mHealth programmes restricted the report's ability to include many existing programmes and to document the evidence supporting the effectiveness of all the programmes that were reviewed. In addition, limited information was available on the effects of mHealth on particular populations such as young women, sexual minority youth, and rural populations in developing countries, thus limiting the report's ability to conclusively state the effectiveness of mHealth programming among these groups. Many of the examples used in this paper come from developed countries; however, an effort was made to focus on examples that could be adapted for use in a developing country and, where possible, to include examples from developing countries.

Because this paper was commissioned by Marie Stopes International, whose primary focus is to improve access to family planning and contraceptives, many of the examples and discussions contained in it focus on youth access to contraceptives and comprehensive information on pregnancy prevention and contraceptives. However, many of the programmes could also be used to address larger SRH issues facing youth, including sexually transmitted infections (STIs) and HIV, and for this reason, the paper overall focuses on youth SRH. Because little evidence exists to assess the effectiveness of mHealth programmes to improve youth access to SRH information and services, this paper attempts to examine the existing evidence and information, and extrapolates from that conclusions about what types of SMS-based mHealth programmes might be most effective for addressing the SRH needs of youth around the world.
## Barriers to Youth Access to SRH Services

This report examines the potential for mHealth to improve youth access to SRH information and services through the lens of barriers that limit that access.‡

In examining these barriers, several distinct categories arise. Whereas the World Health Organization divides barriers to youth service into those of availability, accessibility, acceptability, and equity, alternative categories were used to classify barriers on the basis of those identified in preparing this paper.§ In this report, barriers that restrict youth access have been divided into four categories: accessibility, information, socio-cultural, and provider.§ Each broad category and the specific barriers that fall within it require a unique mHealth approach.

### Chart 1: Barriers to Youth Access

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‡ The concept of perceived barriers is drawn from the Health Belief Model, one of the most widely used models of behaviour change in public health. According to the model, an individual’s choice to change a health behaviour (e.g., adopt a new behaviour, stop an existing behaviour, change a current behaviour) is based on six constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and perceived self-efficacy. Analyses of interventions using the Health Belief Model have found perceived barriers to be the most powerful of the constructs and the most likely construct, if addressed, to produce behaviour change. For this reason, this summary report is organized around the construct of barriers.

§ The barriers discussed in this report assume a context in which SRH services are available. Additional barriers such as national policies that limit access or parental consent requirements are not discussed.
Accessibility Barriers

Accessibility barriers are logistical constraints that directly limit the ability of young people to access and utilise SRH services. The two primary accessibility barriers reported by young people around the world are cost and location.

COST

Overview

Globally, cost is one of the most commonly cited barriers to accessing SRH services among all age groups. However, this barrier can be particularly acute for young people, whose limited ability to pay for services restrains their access to contraceptives and STI testing and treatment. Lack of personal financial resources also restricts a young person's ability to access SRH services privately and confidentially because it may require them to ask parents for financial assistance. In many nations, especially those without a universal national health insurance scheme, financial considerations play a major role in determining the level of access that adolescents have to SRH services and contraceptives. Youth enrolled in school may be unable to pursue or maintain employment and therefore be unable to pay for services on their own. In rural Uganda, cost was found to be a much more significant barrier to contraceptive use among young people enrolled in school than those who had left school. However, even for young people who are no longer in school, paying for SRH services may be difficult considering that globally, young people face higher rates of unemployment and lower wages than their older counterparts.

Reducing This Barrier

A variety of methods have been used to reduce these barriers, including changes to public policy, sliding fee scales, and subsidy programs. Paper-based voucher programmes have also shown to remove cost barriers. Mobile phone health programming represents a new avenue for removing the barrier of cost by strengthening existing efforts to use technology that is already available to youth. Voucher programmes typically involve eligible clients purchasing low-cost vouchers for particular SRH services from a community based distributor. The client then presents the voucher to a participating healthcare provider to receive the service for which they paid. Vouchers are typically sold at low cost to eligible clients and subsidized by an organisation such as Marie Stopes International, which reimburses the service provider for the cost of the service. Incorporating mobile phone technology into existing voucher programmes can streamline the voucher distribution and reimbursement process, improve the efficiency and reliability of voucher programmes, and advance monitoring and evaluation efforts.

A mobile phone–based voucher, or eVoucher programme, would follow a similar process, with community based distributers gathering information about clients using a mobile phone, and then distributing vouchers using SMS. In addition, an eVoucher programme can also allow healthcare providers to verify vouchers and receive financial reimbursement for services using

** The 2012 global youth (15–24) unemployment rate is projected to be 12.7%, more than double the 6% 2012 global unemployment rate (Employment Trends unit of the ILO Employment Sector, 2012).
SMS. The Marie Stopes Madagascar Integrated SMS System and mobile money use SMS to verify vouchers and an SMS-based money transfer system to reimburse service providers for vouchers, contributing to greater efficiency and faster payment to providers. Overall, transitioning from paper vouchers to eVouchers could improve existing paper voucher programmes and, by using mobile phones, provide a more youth-oriented and accessible way to access low-cost services.

CASE STUDY 1: eVoucher System from Marie Stopes International Ethiopia

In Ethiopia, Marie Stopes International is implementing an innovative programme using mobile phones to reduce the cost of youth access to SRH services by linking young people with low-cost vouchers for service. The eVoucher system allows the distribution and tracking of vouchers for SRH services to young people, among others, through mobile phones.

The programme follows the format of traditional paper-based voucher programmes in which community health workers (CHW) reach out to clients, counsel them on SRH, and then provide low-cost vouchers to obtain contraception. Through this programme, MSI provides CHW with smart phones preloaded with a voucher application through which they collect a client’s demographic information and then generate an eVoucher (a unique alphanumeric code). The eVoucher is immediately sent to the client’s mobile phone via SMS, or provided on paper if the client doesn’t have a mobile phone. The client then takes the voucher to a participating service provider, such as a Marie Stopes International Ethiopia clinic or an affiliated BlueStar social franchise, and redeems the voucher for the service.

Providers are able to verify the voucher by sending an SMS to the eVoucher system. Once the service has been completed, the provider is then able to confirm voucher redemption and payment owed to them by sending a second SMS to the eVoucher system detailing the date and type of service. Finally, the voucher information is accessible through an online management and reporting portal, allowing Marie Stopes International Ethiopia staff to manage users, view details of eVoucher sales and redemptions, and generate reports on voucher distribution and use.

Between August and September 2012, a total of 485 vouchers had been issued, 62% of which were issued to youth. So far, 89 of those vouchers issued to youth had been redeemed for SRH services. Although the overall voucher redemption rate during this period was relatively low (around 26%), youth aged 16–24 redeemed the vouchers at slightly higher rates (28.3%) than those over 24 years old (22.5%).

†† Marie Stopes International social franchises create and support a network of existing private providers to offer needed health services.
This programme has the potential to expand access to comprehensive SRH services to young people by providing them with low-cost vouchers in a private, acceptable, and easy to use format. CHW play an essential role in the implementation of this programme, so trainings and incentives have been provided, and tracking of performance and effectiveness have been incorporated into the programme. By improving tracking of voucher distribution and use through an eVoucher system, Marie Stopes International Ethiopia should be able to gather more information on clients, improve service delivery, and reduce the burdens of a paper voucher system.

For more information: [www.apposit.com/content/evouchers-reproductive-health](http://www.apposit.com/content/evouchers-reproductive-health)  
[www.mariestopes.org/where-in-the-world#ethiopia](http://www.mariestopes.org/where-in-the-world#ethiopia)

**Limitations and Opportunities of This mHealth Approach**

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<td>Because the dominant format of voucher programmes involves face-to-face interaction with a community based distributor or CHW, young people may be less likely to take advantage of SRH services as a result of the stigma of accessing them and the potential biases of the CHW against youth sexual activity.</td>
<td>Using peer educators, training young people as CHW, or training CHW in youth-friendly service delivery could help young clients be more comfortable purchasing the vouchers and reduce the potential bias of those distributing the vouchers. Whether peers or not, training for CHW should include identifying and addressing CHW attitudes towards sexual activity of young people. Consideration could also be given to designing a voucher programme that does not include face-to-face contact, such as vouchers distributed via a call centre or through two-way automated SMS.</td>
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**LOCATION**

**Overview**

For many young people, the location of SRH services significantly limits their ability to access those services. Clinics may be located in areas that are distant from where young people live, work, or attend school, or they may be difficult to access via public transportation. Youth in Uganda, for example, reported that transportation and the convenience of a service provider’s location was a serious concern when seeking SRH services.12,13 Studies in Latin America and Angola also found that young people reported difficulty travelling long distances to access clinics and that distance from a provider can limit access to SRH services and impede contraceptive use.14,15 In addition, in many developing countries where youth are in great need of SRH information and services, limited healthcare coverage and weak healthcare systems can hamper the accessibility and availability of SRH service providers. Distance and lack of
transportation may severely limit the ability of young people to easily and privately access SRH health services.

**Reducing This Barrier**

Few mHealth programmes have been developed to directly address the barrier of location. Although several programmes use mobile phones to transfer money to pay for transportation to health services or to help women afford transportation to a hospital for delivery or to a surgical centre for fistula surgery, most such programmes typically focus on emergency care or treatment rather than preventive care such as family planning. 16, 17

Alternatively, to reduce the burden of obtaining healthcare services, mobile outreach programmes are used to improve access to healthcare for individuals who live in medically underserved, distant, or hard-to-reach places far from a physical clinic location. Through these mobile outreach programmes, service providers who visit communities to provide SRH counselling and services could potentially be linked with mobile phone programming in several ways to address location issues faced by youth.

- One approach might be to use an Automated Two-Way SMS program allow youth to access information about the time and location of upcoming mobile outreach visits. Youth could send a text to notify the programme of their location and receive a response listing dates and locations of upcoming mobile outreach visits, along with the services that will be offered. This programme could function similarly to existing SMS Clinic Locator programmes, such as those discussed on page 18.

- Information about dates, locations, and services offered via mobile outreach efforts could be distributed through a One-to-Many SMS information service, through which youth could sign up to receive alerts when mobile outreach providers will be in their area. Such a programme could function by providing a number to which young people could text a code word, such as “outreach” and their location, and then receive a message in advance of a mobile outreach visit to their area or reminders of upcoming outreach events.

- Mobile phone programming could be used to determine where to send mobile outreach teams. This could take the form of an SMS-based service request. Such a programme
would provide youth with a number to which they could text information about their location and a request for a mobile outreach team visit to their area. These requests could be monitored on a regional level and used to plan mobile outreach events. Once the programme receives enough requests from a particular area, a mobile outreach team could be sent. This type of programme would help mitigate transportation and clinic location challenges while also improving mobile outreach service delivery by sending service providers to areas where they are most needed and wanted.

These procedures might help young people easily and privately access information about mobile outreach services and plan ahead to access SRH services or better direct mobile outreach services to youth in need.

**Limitations and Opportunities of This mHealth Approach**

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<td>It may be challenging to engage youth with such a service, especially in generating requests for service, because youth may be embarrassed or fearful of admitting a need for SRH services. Using SMS to request a service or to determine outreach sites can work only with significant involvement from users.</td>
<td>Strong outreach efforts through media, peer educators, schools, and CHW could help raise awareness of mHealth programmes among young people and encourage them to utilise a new service. In addition, the use of mobile phones may be effective in generating interest in and of itself, because young people tend to find mobile phone–based programming acceptable and enjoyable.</td>
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**Information Barriers**

Often, the most pervasive barriers to SRH services for young people involve a lack of correct and comprehensive information. To make informed choices, young people need comprehensive information about where, when, and how to access SRH services.

**LACK OF SRH INFORMATION**

**Overview**

Lack of information stands as a near universal barrier to youth accessing SRH services. Young people who lack complete and correct SRH information may be unaware of their need for the services, uncertain about the safety and reliability of services and products and, consequently, unwilling to use them. Young women in Southeast Asia, for example, were significantly less likely than older women to have been exposed
Misinformation about SRH prevents many young people from accessing the services and from using contraceptives correctly and consistently. Adolescent girls in Ghana, the United States, Central America, and South Africa said they did not use modern contraceptives because they believed they caused infertility. They reported further misinformation about the side effects and effectiveness of hormonal and long-acting contraceptives. Young people who lack complete and correct information about SRH and family planning options are less likely to understand their own need for the services and unlikely to seek and utilise them.

Reducing This Barrier

Many SRH programmes have used mHealth interventions to provide information to young people via SMS. These programmes take a number of different formats, including the following:

1. One-to-Many SMS information model: Users agree to receive information on a variety of SRH topics via SMS on a regular basis, including a consistent link to that information. The Hookup (see case study on page 19) is one such example.

2. Automated Two-Way SMS Information Menu model: Users send a request for information via SMS and receive an immediate response. SexInfo, implemented in California, and m4RH, implemented in Kenya and Tanzania (see case study below), both use two-way SMS. These programmes provide a contact telephone number to which users can send an SMS request for information about SRH. Users receive a response message with a menu of codes to text back for information on specific topics (e.g., text “B2” for information on pregnancy or “21” for information on condoms). Users may reply to receive information on the topic of their choice. Through these systems, users are able to access accurate SRH information on demand on specific topics relevant to them.

3. Individual Two-Way SMS Questions model: Users send questions to a service and receive individual responses, usually provided by counsellors or call-centre staff. The Learning About Living: My Questions programme in Nigeria and the BRDSNJBZ (Birds and Bees) programme in North Carolina use this model, thus allowing young people to anonymously send in questions about SRH and receive individualized responses via SMS.

4. SMS Quiz model: Users are encouraged to improve their knowledge of SRH through positive reinforcement and incentives for providing correct answers. SMS quizzes such as the Learning About Living: My Answers programme in Nigeria and an HIV/AIDS-focused SMS programme implemented by Text to Change in Uganda, have also been used to improve knowledge of SRH. Through the Learning About Living: My Answers programme in Nigeria, a monthly question is publicized and young people are encouraged to text in the correct answer for a chance to earn prizes in the form of free air time. Text to Change, in Uganda, distributes several multiple choice quizzes weekly.

‡‡ A more complete description of the models discussed here appears in Appendix 1 (page 41).
to users via SMS, allowing them to test their knowledge and potentially earn free air time for providing correct answers.

A variety of ways exist to deliver SRH information to young people via SMS, each with its own strengths and weaknesses, but all have the goal of improving access to SRH services by improving knowledge of SRH issues.

CASE STUDY 2: Mobile for Reproductive Health (m4RH) from FHI360

Across sub-Saharan Africa, rising rates of mobile phone usage have been followed by the development and implementation of a variety of mobile phone–based health communication programmes. However, in 2008, the organization FHI 360 noted a significant gap in mHealth programming focused on family planning and reproductive health. Through an earlier project in sub-Saharan Africa focused on understanding emergency contraceptive use, FHI 360 received reports from both men and women saying they lacked information about the many contraceptive options available. However, many of those individuals also reported access to a mobile phone, indicating a potential avenue through which to connect them to family planning information.

FHI 360 conducted formative research in Accra, Nairobi, and Dar es Salaam, and found texting to be widely used for communication and an acceptable method for receiving family planning information. Those surveyed also reported being likely to share the information via text with friends, family, and partners.

In response to these findings, FHI 360 launched the Mobile for Reproductive Health (m4RH) project in Kenya and Tanzania in 2010. m4RH is an opt-in, menu-based, two-way SMS programme. Available in both English and Swahili, m4RH can be accessed by texting “m4RH” to a shortened telephone code. The user then receives an SMS response with a menu listing
eight family planning options and the option to respond to receive more information. The information users receive includes a brief description of the method, general directions for use, side effects, method effectiveness, duration of use, and likelihood of returning to fertility. This information is transmitted via SMS and is therefore limited to 160 characters per screen (although information is usually provided in two successive messages). Each message is carefully developed and tested by end users to contain evidence-based content in a comprehensive, brief, and easily understood format. m4RH also provides service location information, searchable by province in Kenya, or ward in Tanzania. The m4RH service is free to users (message costs are paid for by the programme) and promoted through clinics, CHW, peer educators, promotional events, and partner organisations.\textsuperscript{59}

Since 2010, more than 13,000 users have accessed at least 68,000 family planning messages. An initial evaluation of m4RH indicates that the programme is popular among women and men alike, and among young people and CHW. Additionally, data gathered from users indicate a possible positive impact on behaviour change, with users reporting having adopted a variety of family planning methods as a result of the programme. Users find SMS to be an acceptable way to obtain SRH information because it is private and confidential, and relays information in objective and simple language. Overall, the m4RH programme works effectively to reduce barriers to SRH services by providing accurate, trustworthy, and private information on family planning options.

Although this programme was developed to focus on the general population of reproductive age, it has been widely accepted and used by young people. Youth reported enjoying the simple language and non-judgmental nature of the information, and the novelty and privacy of the mobile phone format. Accessing family planning information using a mobile phone also helps young people avoid the stigma they might face in asking for SRH information in a healthcare setting. In response to the popularity of m4RH among youth, FHI 360 is currently working to adapt the programme for youth in Rwanda, testing it among 15- to 24-year-olds and adding new content that might be particularly relevant to this age group around sex and pregnancy, HIV, STIs, and puberty.

For more information: \url{http://m4rh.fhi360.org/}

\textbf{Limitations and Opportunities of This mHealth Approach}

| Limitations                                                                 | Opportunities                                                                 |
|刈 SMS-based information programmes are limited in how much content they are able to disseminate. Character limits and costs associated with SMS drive programmes to pack as much relevant and useful information |
|刈 Many successful programmes have not found character limits to be insurmountable. Taking the time to develop and test messages is essential to ensuring that messages are both effective and comprehensive. It may be useful |

In designing an mHealth programme to increase youth access to SRH services, consider whether the service to which they are being directed is youth-friendly. SMS voucher programmes and service locators that send youth to clinics that are not youth-friendly may backfire if a young person arrives at a clinic only to feel disrespected. For these programmes to truly expand their access to youth, they must do more than get youth in the door; they must link youth to services and providers that are accessible, acceptable, equitable, appropriate, and effective.

**LACK OF LOCATION INFORMATION**

**Overview**

Many young people around the world face a significant barrier in locating SRH services. In a 2007 study conducted in the Balkan nations of Bosnia and Herzegovina, FYR Macedonia, Serbia, and Montenegro, youth cited "not knowing where to go" as one of the primary reasons for not seeking SRH medical advice. Additional studies of youth contraceptive behaviours in Burkina Faso, Ghana, Malawi, Uganda, and the United States have also identified lack of knowledge about service locations and unfamiliarity with the healthcare system as significant barriers to young people who might otherwise make use of SRH services.

**Reducing This Barrier**

The most direct approach to reducing this barrier involves providing young people with easily and privately accessible information about what services are offered and where service facilities are located. Mobile phones present a unique opportunity for providing this information. Through SMS service locators such as GoogleSMS Clinic Finder in Uganda and The Hookup in California, young people can send information about their location to a clinic locator and receive an SMS response that lists service locations in their area. Responses to requests for location information can be automatically generated by a database of all clinics in the area, categorized by location, or transmitted individually by programme staff who review the requests, depending on how the programme is set up and the technology available. By providing location information via SMS, youth can access location information anonymously and avoid stigma.
CASE STUDY 3: The Hookup from the California Family Health Council

In California, nearly all teenagers are eligible to receive free or low-cost SRH services through the Family PACT (Planning, Access, Care and Treatment) programme at hundreds of sites and clinics across the state, but many do not take advantage of this opportunity. Reports from young people indicated that they did not know where to find the services and believed they would not be confidential. In response, the California Family Health Council (CFHC) in association with Internet Sexuality Information Services, Inc. (ISIS), developed a programme to link young people with services in an acceptable and confidential manner and at a relatively low cost through SMS messaging. Given the high penetration of mobile phones among youth in California, especially low-income and minority youth, CFHC conducted focus groups to ensure that receiving sexual health information via SMS would be acceptable to youth, and learned that young people not only found the programming acceptable, but easy to use, informative, and enjoyable. With a clear understanding of the problem and their population, CFHC and ISIS developed The Hookup.

The Hookup, launched in April 2009, is an opt-in SMS service for which users sign up by texting the word "hookup" to a short code. After signing up, users receive a weekly message on one of a variety of sexual health topics including STI testing and prevention, contraceptive options, domestic violence, and healthy relationships. These messages are strategically timed to arrive at 4 pm, after the school day, but before young people would likely be with their parents. This timing respects the privacy concerns of users and improves confidential access to the information. In addition to sexual health messaging, each weekly SMS includes a prompt to text the word "CLINIC" along with a ZIP (postal) code to receive referrals to up to four local clinics. Each weekly message also contains a link to Teensource, a website run by CFHC that provides young people with more detailed SRH information, clinic location information, additional information on the Hookup, and links to other SRH programmes. The three portions of this programme, the clinic locator, the weekly sexual health messaging, and the Teensource website link, were designed to be integrated in a way that would empower young people to take action to improve their SRH.

Overall, CFHC has found the Hookup to be extremely successful. Since its initiation, nearly 8,000 individual subscribers have signed up for the service. The Hookup has provided responses to more than 4,000 clinic location requests across the state of California. A programme evaluation survey sent out via SMS to users in place of the weekly informational message in January 2011 asked about age, sex, location, how users heard about the service, and how the Hookup had changed them. Results from the survey indicated that most users (80%) were female, their age range was 13–24 (87%), and they represented all parts of the state. Additionally, the survey found that users reported changes in sexual behaviours, knowledge and awareness of SRH issues, and utilisation of SRH services, including STI testing and family planning. The Hookup has effectively used mobile phones to engage young people with SRH messages and has improved their knowledge of SRH topics. By linking clinic location information with engaging and informative SRH messages, the Hookup has reduced barriers that limit youth access to SRH services in an innovative and youth-focused manner.

For more information: www.isis-inc.org/hookup.php and www.teensource.org/ts/hookup
### Limitations and Opportunities of This mHealth Approach

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<td>Offering location information may not be enough to make the difference between whether a young person does or does not access SRH services. While providing location information may improve the likelihood that a young person will seek SRH services, it does not address other barriers that may limit their access, such as cost, social stigma, and transportation to the service location.</td>
<td>Clinic location programmes should not be implemented alone, but should instead be developed as part of an integrated programme to improve youth access and knowledge. A clinic location programme could be linked with one that offers referrals to free or low-cost services, or to accurate and relevant information about SRH, or linked in other ways to improve youth-friendly services and reduce the stigma associated with accessing them.</td>
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<td>Gathering evidence on the effectiveness of clinic locator services can be challenging because it is difficult to track how many users who sought location information actually used it to access services. Evidence and data can be essential to garnering future funding and helping others seeking to implement similar programmes justify their efforts.</td>
<td>Mobile phones can be used in programme evaluation by connecting implementers directly with the individuals who seek services. SMS-based surveys can provide data on programme participants, behaviour change, and access to services. Additionally, clinic-based surveys that ask clients how they were referred, or average attendance information from clinics, can be used to estimate the impact of clinic locator programming.</td>
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### Socio-Cultural Barriers

Social norms around youth sexuality play a large role in youth accessibility of SRH services. Many young people face embarrassment, social stigma, and social pressure around contraceptive use, particularly in cultures where conservative norms exist towards sexuality and premarital sex.

#### EMBARRASSMENT AND FEAR OF SOCIAL STIGMA

**Overview**

Young people in China, Burkina Faso, Ghana, Malawi, and Uganda report embarrassment and fear as key barriers to obtaining contraception. In a study of youth sexual behaviour in the Balkans, one-third of sexually active girls and nearly one-fifth of sexually active boys reported refraining from seeking medical advice on SRH on at least one occasion, despite feeling the need for it, because of shame or fear of stigma. Despite cultural differences, youth in disparate regions of the world report similar challenges of overcoming embarrassment and fear of social stigma in accessing SRH services.
Reducing This Barrier

One immediate way to address young people’s embarrassment and fear of social stigma is to offer private and confidential access to SRH information. Mobile phones offer users privacy and anonymity, allowing them to seek SRH information without fear of being identified. For youth too embarrassed to ask for SRH information in person, SMS programmes that allow them to text in questions provide a safe and private space in which to access accurate, relevant and non-judgemental information. In several such programmes, including My Questions in Nigeria and MSI Papua New Guinea’s Yangpela Hotline, users may text in their SRH questions and receive a response either via SMS or a telephone call.

Mobile phones can be used to connect young people with youth-friendly services or private and confidential SRH services through location services and referrals delivered via SMS. The Yangpela Hotline helps youth avoid the stigma associated with accessing SRH information and services by linking them with the “Well Youth Check” programme through their mobile phones. Well Youth Check is an affordable, general preventive healthcare package for youth that includes a wide range of health services. It also provides private access to SRH services by disguising them within the context of a socially acceptable clinic visit. Although mobile phone–based programmes do not directly challenge or seek to change social norms and stigma that limit youth access, they do help mitigate their effects, and they provide youth with the means to access potentially taboo information, particularly in conservative cultures.

CASE STUDY 4: Learning About Living: My Questions and My Answers

Currently, young people 10–24 years old make up nearly one-third of the population of Nigeria; a huge audience in need of SRH information. However, some of the largest barriers facing young people are social taboos against asking questions or openly discussing SRH issues. To address the growing need for SRH education among youth, One World UK worked with partner organisations to develop and implement the Learning about Living project.

Learning about Living was designed to use technology to educate young people on SRH issues and enable them to make healthy and informed decisions. The project consists of two components. The first is an online, E-Learning programme based on the Nigerian Family Life and HIV/AIDS Education Curriculum developed by the national government. The programme is computer-based and used in schools, and offers students an interactive, engaging, and culturally and age-appropriate means of accessing SRH information.

The second component consists of two mobile phone programmes, My Questions and My Answers, implemented in partnership with Education As Vaccine. Through My Questions, young people can ask questions anonymously and confidentially and receive individualized responses.
from trained counsellors by phone, email, or SMS. The service is free. My Answers is a monthly, one-way SMS quiz competition that allows young people to engage further with SRH issues and potentially win free air time. By posing SRH questions as part of a competition, My Answers fosters discussion of SRH issues and encourages young people to seek accurate SRH information. Approximately 70–80% of My Questions and My Answers users are between 14 and 25 years of age. My Questions receives more than 100,000 questions each year, the majority of which are submitted using SMS. Both programmes have been very popular among young people, have been credited with improving knowledge and attitudes around SRH among users, and have had strong support from local organisations, whose involvement has been crucial to their success.

For more information: www.myquestion.org/

**Limitations and Opportunities of This mHealth Approach**

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<th>Limitations</th>
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<td>Mobile phone programmes can be effective in helping young people avoid embarrassment and social stigma by providing SRH information in a private and confidential manner. However, such programming is not very effective at addressing those same issues for young people who wish to access SRH services because they still risk being seen by friends and family.</td>
<td>Coupling a mobile phone programme that allows young people to access information and services privately can help reduce embarrassment and fear.</td>
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<td>Programme staff and counsellors involved in SRH interventions such as My Questions may be subject to the same biases and cultural norms that restrict youth access to SRH information in the first place, and may convey those biases in their answers to requests for SRH information.</td>
<td>Comprehensive and consistent training and retraining for staff can effectively address biases and cultural norms that might negatively affect service delivery. Staff trainings allow counsellors to work together to solve problems that may arise within the programme or discuss common experiences. In addition, building a database of frequently asked questions and providing counsellors with additional information can help improve the quality and consistency of information and reduce biases.</td>
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<tr>
<td>Gathering data on users and the impact of mobile phone–based SRH programmes can be challenging because the programmes themselves are designed to protect users’ privacy. Seeking information on users, even if only for programme evaluation purposes, may cause users to become uncomfortable or</td>
<td>It is important to consider the goals and needs of the programme and the needs and concerns of clients, and to balance the two by limiting the amount of information requested from clients for the purpose of evaluation. However, evaluation is extremely important to ensuring a programme’s effectiveness, and provides</td>
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concerned about confidentiality and wonder how information about them is being used and shared. Asking too many questions may drive users away from a service they sought for its private nature.

guidance for future programming, so it may be necessary to prioritize evaluation and potentially alienate some users. Making it clear to users how information will be stored and used may reduce their concerns about privacy. Furthermore, planning for evaluation from the start of a programme may help to reduce such limitations by allowing evaluation protocols to be built into the programme in a natural and unobtrusive way that may be less likely to alienate users.

SOCIAL PRESSURE AND CULTURAL NORMS

Overview

External pressures from partners, family, religious communities, and the larger society often limit a young person's desire and ability to access and utilise SRH services. Partner opposition to contraception, especially when women lack the power to negotiate contraceptive use, limits many young women from seeking and using SRH services. Studies in Angola, Tanzania, Uganda, and East Asia and the Pacific identified partner opposition to contraception and lack of decision-making power in sexual relationships, especially among young women, as significant barriers to SRH services and use of modern contraceptives. Social norms and family expectations around early childbearing and large family size can also discourage young women from accessing family planning services. In addition, religious opposition to family planning may be a significant barrier to accessing SRH services in Ghana and the Philippines. Overall, cultural and religious norms that condemn youth sexual activity, societal or familial expectations around early childbearing, and partner pressure can all serve to limit young people's ability to access and utilise SRH services.

Reducing This Barrier

Although many mHealth programmes have been developed to improve access to SRH services on an individual level, few have been designed to improve access by creating change on a larger, social level. Many programmes work within the cultural context, rather than seeking to change attitudes and social norms, largely because of the difficulty in effecting such changes, especially using mobile phone technology, which typically functions on an individual level. Although current evidence is lacking, there is potential for mHealth programmes to contribute to changes in social
attitudes and norms by introducing new ideas and concepts and facilitating communication. One-way SMS push programming, such as One-to-Many, may potentially improve attitudes towards SRH services and increase equity in decision-making via the distribution of regular, targeted messages that discuss the value of SRH services and encourage and motivate users to improve gender equity in relationships. m4RH, the SMS-based information program discussed earlier, found that many users share the information they receive via SMS, either by forwarding the message or using it to open a discussion with partners, friends, and family. Using the information provided via SMS to initiate a conversation on a sensitive subject such as SRH can encourage more open communication about SRH issues and potentially reduce stigma and negative attitudes towards SRH services, similar to the way that serial radio programmes on HIV have been able to promote dialogue and reduce stigma around HIV and AIDS. Kakira Sugar Works Text for Health, a workplace-based SMS program in Uganda, has had such an effect, with many users reporting sharing and discussing the messages they receive. The programme works to improve knowledge about HIV prevention and attitudes and social norms around HIV testing and treatment among employees and the larger community. The community-wide, opt-in, weekly SMS programme has contributed to greater uptake of HIV testing and other health services among employees, their families, and members of the community, and it has promoted dialogue among users on issues of HIV prevention and treatment. By reaching out to the larger community, Text for Health could potentially contribute to a shift in community social norms and a reduction in social stigma around HIV testing and treatment.

The community-focused SMS model of Text for Health could be replicated to focus on SRH issues and used to reduce social stigma associated with youth accessing SRH services. However, there is little current evidence to demonstrate the effects of mHealth programmes on larger cultural norms, so mobile phones may not be the best method for addressing this particular barrier on its own. However, SMS and mHealth programmes can complement more interactive, interpersonal, or community-oriented programmes such as group discussions, educational programmes, social marketing, and mass media. Although one may not be able to expect wholesale social change through mHealth programming, there are ways in which it can contribute to organic changes in knowledge and greater dialogue.

**Limitations and Opportunities of This mHealth Approach**

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<tr>
<td>There is currently limited evidence for the potential of mHealth programming to change larger cultural norms. mHealth programmes are typically developed to change individual behaviour, knowledge, and attitudes, and few data are available on their potential to promote larger, societal changes.</td>
<td>Pilot studies, including those performed for the m4RH programme, indicate that users share what they learn through mobile phones with friends, partners, and family members. This sharing indicates that potential exists for mHealth programmes to provide individuals and communities with information to initiate conversations about challenging topics and potentially contribute to changes in social norms and societal attitudes.</td>
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Provider Barriers

Many of the barriers that prevent youth from accessing SRH information and services occur at the individual and community levels. However, for young people who overcome the barriers and do access services, facility-level barriers such as provider and health facility staff bias, lack of training, and poor service delivery may restrict youth from accessing essential SRH services.

PROVIDER BIAS

Overview

Many young people believe they will face judgemental attitudes and bias by service providers and health facility staff, which stands in the way of their receiving SRH information and services, such as contraceptives or safe abortion. In a study in Senegal, young people were asked to pose as clients seeking family planning information and services from local SRH service providers. They reported being mistreated and made to feel embarrassed by staff who lectured them on the dangers of sex before marriage, and failed or refused to provide contraceptives. A study of youth access to SRH services in South Africa found negative attitudes and biases by nurses, stigma towards teenage sexuality, and a failure of providers to acknowledge adolescent experiences in using contraceptives, which combined, significantly undermined young women’s efforts to access SRH services.

Reducing This Barrier

There are two ways to reduce this barrier: client-focused programming and provider-focused programming. Provider-focused programming to address biases is similar to improving provider training, and so will be discussed in the section Lack of Provider Training.

Client-focused programming works to empower clients, particularly young people, to take an active role in accessing SRH information, services, and products in an effort to counteract the effects of negative biases presented by service providers. One approach to empowering youth is to give them objective information and recommendations before engaging with a service provider, so they are better able to represent themselves, their needs, and their preferences. A mobile phone–based or tablet-based contraceptive method selector (see box below) offers young people the ability to access basic information on contraceptive options and receive an objective, individualized recommendation on which method would work best for them. By providing users with an objective, relevant, and
individualized recommendation on the basis of their own answers, this type of programme allows users to actively engage in the decision-making process and discuss their contraceptive options with a service provider on a more equal and informed basis.

Another approach to empowering youth to overcome health facility staff and provider biases is to use a mobile phone–based survey to collect client reviews of local service providers. Marie Stopes Madagascar, for example, is working to acquire client feedback through an SMS-based survey. Clients will complete a satisfaction survey by answering questions sent via SMS and the results will be collated into an on-line reporting system.\(^{36}\) The results of these types of client satisfaction surveys can allow staff to monitor the quality of youth-friendly services, and, if made publicly available, help clients in choosing a provider. Allowing young people to access and utilise this information can empower them to seek providers who offer more youth-friendly or youth-oriented services and avoid providers with poor reviews. This in turn can create greater demand for youth-friendly services and encourage providers to improve their services and attitudes if they wish to attract clients.

**CASE STUDY 5: Contraceptive Method Selector from Public Health Solutions**

Unintended pregnancy is relatively common in the United States, with nearly half of all pregnancies reported as either mistimed or unwanted.\(^ {37} \) Although a variety of modern contraceptive methods are available in the United States, many Americans do not access them. Public Health Solutions, a New York City non-profit dedicated to improving community health through innovative, evidenced-based programming and services, sought to develop a solution to this problem.

Public Health Solutions created a computer-based contraceptive method selector to engage women in the contraceptive decision-making process and encourage the use of highly effective contraceptive methods. The contraceptive method selector is installed on a tablet computer and can be completed by clients while they wait for their clinic appointment. Users answer a series of 50 questions about their preferences, medical history, contraceptive use, and sexual health risk factors. Once the questionnaire is complete, the programme generates tailored contraceptive recommendations on the basis of the user’s answers. Users receive a printed version of their results, which they can share with their provider. The contraceptive method selector includes a touch screen and audio computer-assisted self-interviewing (ACASI) technology, which improves the accessibility of the module to women at all literacy levels. The contraceptive method selector is available in English or Spanish, thereby reducing potential language barriers for users.

Public Health Solutions tested the contraceptive method selector over two years at two publicly funded family planning clinics in New York City. The clinics primarily serve low-income and immigrant populations. They found that women who agreed to participate, even the 15% of participants who had never used a computer before, found the computerized contraceptive method selector to be very acceptable. Participants said the module was easy to use and they enjoyed using it. Clients who used the contraceptive method selector and received a tailored recommendation were significantly more likely to choose an effective contraceptive method at the time of their clinic visit than women who did not use the module.\(^{38} \) In addition, women who used the contraceptive method selector and received a tailored recommendation were more likely to maintain adherence to the contraceptive method of their choice four months after their
Although the programme was not directly developed to address the issue of provider bias, it could help mitigate these effects, it may lead to better access to and utilisation of effective contraceptive methods, and it may potentially reduce barriers to youth access to SRH services.

For more information: [www.healthsolutions.org/documents/pulse/PulseStudy_Vol_10_Num_1.pdf](http://www.healthsolutions.org/documents/pulse/PulseStudy_Vol_10_Num_1.pdf)

### Limitations and Opportunities of This mHealth Approach

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<td>Cultural norms that discourage young people from questioning those in positions of authority may limit the effectiveness of client-focused programming that seeks to empower young people to take a more active role in SRH decision-making and engage in more direct discussions with service providers.</td>
<td>A combination of client- and provider-focused programmes may prove most effective by encouraging young people to be confident in asking for the information, services, and products they need and want while encouraging providers to be more open and objective towards young clients.</td>
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<td>It may be difficult to convince service providers to accept a programme whose goal it is to reduce their bias towards young people. Service providers may be uninterested or unaware of the need to change their attitudes. They may also be resistant to such a programme and resent being treated as part of the problem.</td>
<td>Making it clear to service providers why it is important to improve the services they offer to youth, emphasizing the role and rights of clients, and involving providers in the planning and development of provider-focused programmes may help to make such changes more acceptable. In addition, including service providers in the process may also bring to light additional issues related to bias and encourage them to discuss those issues and develop solutions amongst themselves.</td>
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### LACK OF PROVIDER TRAINING

#### Overview

Many SRH service providers have had little or no specialized training in addressing the unique SRH needs of young people and are uncomfortable or uncertain about how to talk with young people about SRH. In the United States, perceived inadequacies in training on adolescent health topics and lack of self-efficacy in delivering confidential care restrict the ability of some providers to offer SRH services to young people. A lack of training on youth and confidentiality policies, parental consent, and discomfort or uncertainty in providing SRH services to young people effectively limits many providers in meeting the unique SRH needs of young people. A study in South Africa, for example, found that even among providers who knew that there was no legal requirement to obtain parental permission, many did not follow the official policy out of fear that parents or community members would disapprove, and as a result, requested parental consent from some teenage clients.
Reducing This Barrier

Provider-focused programming can help SRH service providers identify and address areas that need improvement. SMS quizzes, such as those used in the Marie Stopes Uganda m4QI programme (see case study below) can be used to educate service providers on a variety of topics, address issues of bias, and reinforce previous training. By testing staff on youth SRH topics or confidentiality policies, staff are given the opportunity to improve their knowledge by receiving the correct answer when they answer incorrectly, or improve their confidence when their correct answer is confirmed. In addition, adding incentives to a quiz programme with benefits afforded those with correct answers, such as free mobile phone air time, staff are encouraged to participate and seek information they may not otherwise have sought. The results of a quiz programme can also reveal where strengths and shortcomings may exist and provide information on what sort of training may be most needed.

One-to-Many SMS information programmes may help improve knowledge and attitudes towards youth among SRH service providers by offering regular reminders and information about topics on youth-friendly services or youth-specific SRH topics. Two-way SMS information programs that offer either automated or individualized responses to providers’ requests for information on youth SRH topics may also be effective in reducing provider concerns about their perceived lack of training or knowledge. txt2medline is one such program, implemented in Botswana by the University of Pennsylvania in collaboration with the National Library of Medicine. txt2medline provides healthcare workers with the ability to access up-to-date medical information and country-specific clinical and treatment guidelines from PubMed via SMS query. A two-way SMS information system can provide service providers with the information and confidence to offer comprehensive SRH services to young people. Additionally, more comprehensive mobile phone programs can provide decision support and client data tracking tools to health care providers, thereby improving healthcare delivery, data collection, and monitoring. CommCare is one such program being used by Pathfinder in Tanzania to support CHW who provide home-based care. The CommCare mobile application guides CHW through a series of questions to ask while working with a client and allows them to input client answers and submit them to a central database via wireless networks. Utilising SMS and other mobile phone programming to reinforce training and connect service providers to information, especially in low-resource settings or where providers are sparsely located, can also improve the efficiency and effectiveness of staff training and potentially reduce the need for costly in-person training while improving the quality and consistency of care.
CASE STUDY 6: Mobiles for Quality Improvement (M4QI) with Marie Stopes Uganda

In many developing countries where a shortage of healthcare workers limits the capacity of the healthcare system, available healthcare providers often have limited access to up-to-date protocols and limited time for face-to-face trainings. These limits may prevent already taxed providers from keeping up with new medical developments or improving their service delivery. To address these limitations and test the potential for alternative approaches to training healthcare providers in low-resource settings, Abt Associates, Jhpiego, and Marie Stopes International worked together to develop and implement the m4QI (Mobiles for Quality Improvement) programme in Uganda at Marie Stopes Uganda family planning clinics.

M4QI, a quiz-based mobile phone programme, was developed through collaboration with Frontline SMS and Appfrica. The programme was designed to provide a low-cost and accessible method of reinforcing training and improving behaviours of healthcare providers and staff at medical facilities. M4QI focused on four training areas: hand-washing, sharps disposal, instrument decontamination, and pain management techniques. M4QI consisted of two SMS-based components: SMS reminders, or informational messages; and SMS assessment questions. Four messages were developed and tested for each topic; two SMS reminders and two SMS assessment questions and responses. The SMS reminders functioned as one-way SMS push messages and were designed to reinforce positive behaviours among staff. The SMS assessment questions and responses functioned as a two-way automated quiz and were intended to trigger and test staff knowledge of the given topic, thereby reinforcing training and identifying gaps where follow-up may be needed.

M4QI was piloted for one year, from September 2010 to August 2011, at six Marie Stopes Uganda clinics among 34 staff members. Staff members were scheduled to receive one message a day, four times a week, over an eight-week period. The topic of messages changed day to day and staff members at the same site received different messages to keep them engaged with each topic and encourage individual learning.

The programme experienced a number of challenges in implementation, specifically related to technical problems with the automated delivery of messages, a lack of air time resulting in messages failing to be sent, and a low response rate. Despite these issues, 86% of the messages were successfully delivered, and users reported high acceptability of the professional development messages delivered to their personal phones. In addition, participants reported positive improvements in all the target behaviours. The programme further contributed to greater staff discussion and consultation around topics, and it encouraged team learning and greater use of training reference manuals and clinical guideline documents. Overall, despite a number of challenges, the m4QI programme contributed to positive self-reported behaviour change among clinical staff, encouraged greater discussion and exploration of the topics addressed, and did so at a relatively low cost.

This pilot also helped to make clear the steps and resources that should be included in future efforts, including better technical and troubleshooting resources, additional planning, greater communication with stakeholders, inclusion of orientation and training for participants, and the addition of air time subsidies for users.

Although this programme was not directly focused on issues of SRH services for youth, it illustrates the potential for an SMS-based training programme for clinical staff and provides a framework that could be adapted to address issues of youth-friendly services, SRH issues specific to youth, and privacy and confidentiality. For more information: www.shopsproject.org/sites/default/files/resources/SHOPS%20m4QI%20Uganda%20Pilot%20Report.pdf
### Limitations and Opportunities of This mHealth Approach

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<td>Healthcare providers may not be open to a mobile phone–based training programme for a variety of reasons; they may not see the need for such programming, they may not find mobile phone–based programming acceptable, and they may not understand the programme and how it works.</td>
<td>Including healthcare providers in programme planning and development may help mitigate some of the issues that providers may have with this type of programming. Incorporating their input and offering an orientation and training on how to use the programme may result in a more acceptable programme and greater participation. In addition, providing incentives and reimbursing participants for incurred costs, and seeking buy-in and support from senior management, can improve acceptability and participation.</td>
</tr>
<tr>
<td>The evidence of the impact of text messages on behaviour change and attitude change is limited. The m4QI pilot conducted a process evaluation that pointed to high user acceptability but it did not evaluate the level or longevity of measurable changes in provider knowledge, attitudes, or behaviour.</td>
<td>Future interventions using mobile messages to strengthen providers' ability to offer youth SRH services should incorporate rigorous impact evaluations using experimental design. Research questions should focus on the correlation between programme design (such as message frequency, motivational content, air time incentives) and programme results.</td>
</tr>
</tbody>
</table>

### SERVICE DELIVERY MANAGEMENT

**Overview**

A variety of structural and operational factors may limit the ability of a service provider to adequately and efficiently deliver SRH services to young people and, in turn, discourage young people from accessing them. Commodity unavailability, for example, can limit the ability of service providers to meet the needs of their clients. Youth may develop a preference for a particular contraceptive brand as information becomes available to them or when a new contraceptive method or brand is introduced in their community. A limited selection of contraceptives can discourage youth from seeking service from providers who offer limited choices and reduce the likelihood that they will utilise other contraceptive options. Crowded waiting rooms may discourage young people from accessing SRH services because of the stigma or embarrassment associated with being seen waiting in a clinic. Additionally, limited or inconvenient hours and lack of walk-in appointments may restrict the times at which young people can access services, as they may be limited by school and family.

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**Although these barriers do not solely affect young people and do not fit as neatly into clear-cut categories as those discussed above, they can each significantly limit access to SRH services. In addition, these barriers present opportunities for intervention and improvement via the use of mobile phone technology that this report would be remiss to ignore.**
Finally, poor clinic management that leads to long wait times, higher costs, difficulty obtaining an appointment, and a paucity of service providers can prevent young people from making an initial visit or returning for subsequent visits.\textsuperscript{14}

\textbf{Reducing These Barriers}

To improve the availability of commodities, SMS-based tracking and request programmes have been piloted for use by SRH service providers. The Mozcommunicator system, implemented by Population Services Pilipinas Inc (PSPI; the local Marie Stopes International affiliate) in the Philippines, facilitates communication between PSPI and members of the BlueStar franchise.\textsuperscript{46} Through this system, BlueStar members can report service data, submit stock orders, and confirm receipt of commodities using SMS. This system and others like it can improve the availability of commodities, expand contraceptive options offered to clients, and provide guidance to organisations and commodity providers about the commodity preferences and needs of the populations they serve. Whereas lack of commodities is a barrier not specific to youth, the other limitations that restrict youth access make it all the more important that when youth are able to consult with a service provider and afford a contraceptive method, that their preferred method be available.

Barriers such as crowded waiting rooms, lack of walk-in appointments, and limited clinic hours could be mitigated by improving appointment-booking systems. Several programmes allow clients to make and confirm appointments via SMS. Marie Stopes International UK’s OneCall Call Centre uses SMS to confirm appointments for those clients who choose to communicate via mobile phone and/or consent to receiving appointment reminders. Clients may also receive SMS with information about how to prepare for a particular procedure. SMS offers clients better privacy protection over other methods of appointment confirmation and information delivery such as via telephone call or mail (post). In addition, by reminding clients about their appointment using SMS, Marie Stopes International in the United Kingdom has been able to reduce the percentage of clients who fail to show up for appointments. Furthermore, by providing information via SMS about what to bring to an appointment or steps to take before the appointment, these programmes can reduce the number of individuals who are unable to complete an appointment.
A variety of barriers such as not enough service providers, higher costs and longer wait times, and difficulty obtaining an appointment potentially can be addressed via mobile phone–based programs. One effective approach is the delivery of test results via One-to-One SMS information programming. The delivery of STI test results via SMS rather than over the telephone or in-person at a second appointment was tested by the Genitourinary Clinic at Leicester Royal Infirmary.\(^48\) The goal of the programme was to address the interconnected issues of patient wait times, reaching the clinic by telephone to obtain appointment information or test results, and staff stress. The programme addressed these issues by reducing the clinic’s telephone call volume by delivering STI test results via SMS. As a result, the clinic was able to significantly reduce the amount of time staff spent calling clients and answering calls related to test results. The reduced call volume contributed to lower costs and better use of staff time, which allowed staff to better serve clients both in the clinic and over the telephone. Because youth are particularly concerned about privacy and confidentiality, and because SMS is perceived as a private means of communication, SMS delivery of test results or other private information may help reduce the stigma or embarrassment associated with attending a clinic in person. Furthermore, because SMS is generally cheaper and faster than a telephone call, receiving important information from a service provider via SMS could decrease the burdens associated with returning in person (e.g., transportation costs, timing, etc).

### Limitations and Opportunities of This mHealth Approach

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sending STI test results via SMS rather than conveying them via telephone call or in-person appointment may result in lack of follow-up and treatment, especially with youth who may be less likely to complete referrals or return for follow-up visits. It may be more difficult to ensure that those who test positive for an STI make an appointment and return for treatment if communication is primarily conducted via SMS. In addition, privacy may be a concern when sending sensitive, personal information via SMS, especially if that information might be accessible to others using the telephone.</td>
<td>It may be necessary to develop different protocols to notify clients of negative or positive test results via SMS and request, via text, that clients whose test results are positive telephone the clinic to receive their results. In addition, linking this type of programmatic information with the making and confirmation of appointments can improve follow-up and ensure treatment.</td>
</tr>
<tr>
<td>The use of mobile phone–based systems such as SMS to improve commodity requests or to make voucher verification and reimbursement more efficient may be subject to technical difficulties with the system, power outages, and service disruptions. These types of issues may reduce efficiency and even disrupt services.</td>
<td></td>
</tr>
</tbody>
</table>
Lessons Learned

The lessons outlined here were gleaned through a review of past and existing mHealth programmes and interviews with mHealth programme managers and staff from a number of organisations including Marie Stopes International, FHI 360, California Family Health Council, Internet Sexuality Service Inc., OneWorld UK, and Public Health Solutions. Programme managers intending to introduce mHealth applications focused on youth, and specifically SMS programmes, should consider the following lessons that have been learned through the process of planning, implementing, and evaluating mHealth programmes.

1. **Understand the Audience.** Understanding the audience is essential, both before and throughout the development of mHealth programming. Identifying the intended audience and understanding their use of mobile technology is crucial in determining whether mHealth programming is appropriate, and if so, what type. Assess the mobile phone penetration among youth and consider the demographic profile of young people who have access to mobile phones. Factors such as location, sex, age, language, and literacy can influence how effective an mHealth programme may be and must be considered when assessing whether an mHealth programme will effectively and equitably reach the target population. Additional planning and development may be necessary to improve accessibility depending on these factors.

2. **Develop Strong Community Partnerships.** Community partnership and buy-in can facilitate the development and implementation of effective mHealth programming. Gaining buy-in from the community is one key to ensuring that a programme is acceptable and appropriate among the intended audience. Including youth in the development process ensures that their voices and perspectives have been considered, making it more likely they will find the final product to be relevant and appealing. It will also give them a sense of involvement and responsibility for the programme. Developing relationships with community organisations, schools, SRH service providers, and local governments can help build support for an mHealth programme and expand its potential reach.

3. **Technology Firms Can Be Valuable Partners.** Collaboration with technology firms and mobile application developers will lead to a better mHealth programme because they may be able to create or adapt a specific programme that effectively meets the needs and goals of the organisation. Rather than using a one-size-fits-all program, technology firms, mobile phone service providers, and others can help reduce the technical issues associated with implementation and facilitate smooth interactions with mobile phone users.

4. **SMS Character Limits Can Be a Challenge.** SMS limits of 160 characters per message also limits the delivery of comprehensive SRH information. There simply may not be enough space to convey a complex or sensitive SRH message. Therefore, message development and testing are critical, as is carefully testing of them with the intended audience to ensure that messages are acceptable, understandable, accurate, and effective. Using messages and materials that have been developed, tested, and utilised in other mHealth programmes can save time and money.

5. **Innovative and Collaborative Marketing Strategies Can Help Stretch Limited Programme Marketing Budgets.** Effectively marketing mHealth programmes with limited resources can be challenging. However, many of the programmes illustrated here (service
locator programmes, SRH information programmes, etc.) that are not directly associated with service delivery are necessary for raising awareness and developing a user base. Engaging community partners such as local service providers, schools, and community youth organisations to help market and raise awareness about the programme with youth can help reduce costs. Providing partners with hard copies and digital copies of marketing materials and strategies can help reduce printing costs and improve distribution. Additionally, using innovative, low-cost, online, and youth-oriented marketing techniques can help create buzz about a programme and encourage youth to share it with peers.

6. **Think About Incentives and Costs to Participants.** Consider how incentives and costs may encourage or discourage users from participating or using a programme. Incentives such as free air time or SMS money transfer can effectively encourage individuals to use or participate in mHealth programmes. However, offering incentives may not be a sustainable way of maintaining users because lower incentives will likely result in lower participation. Offering an mHealth programme for free via an agreement with a mobile phone service provider to pay for incoming and outgoing messages, for example, might encourage lower-income and youth users to participate. However, providing a service with a cost, even a low cost, may give users a stronger sense of the value of the service. How to organise incentives and costs to users is highly dependent on the audience and context.

7. **Be Aware of Hidden Program Costs.** mHealth programming is typically considered to be low-cost or cost-effective, but there are hidden costs. In many locations, communication via SMS is much cheaper than via telephone call or in-person meetings, so SMS-based mHealth programmes can reduce healthcare delivery costs. In addition, SMS programming can free up service providers, allowing them to use their time more efficiently, and also thereby improve cost-effectiveness. However, as usage and users increase, the costs of an mHealth programme may increase, especially when the costs of all messages sent and received are subsidized (and the service is offered free to users). In addition, ongoing training and technology updates to sustain an mHealth programme over time may also result in additional costs.

8. **Privacy and Confidentiality Are Essential.** Privacy and confidentiality are extremely important to young people, especially in the context of SRH. Privacy and confidentiality can be strengths or weaknesses of mobile technology depending on the audience and their use of the technology. Many people consider SMS and other mobile phone functions to be private and are therefore more open to mHealth programmes. However, depending on the context and norms of mobile phone ownership, mobile phones may not be private for some users. mHealth programmes should be developed with the privacy concerns of youth in mind, such as through opt-in rather than opt-out services or by appropriately timing the delivery of messages. It is extremely important to ensure that mHealth programmes protect the privacy and confidentiality of their users, especially when a stigma may be attached to the topic.

9. **Knowledge Does Not Always Translate into Behaviour Change.** Although lack of knowledge can be a significant barrier to behaviour change, there is little evidence to suggest that simply providing information and improving knowledge through mHealth programming results in an immediate, positive change in behaviour. Better evaluation is needed to examine the impact of mHealth information on behaviour change. Changing behaviour and expanding the utilisation of SRH services is dependent on addressing a
broad range of barriers, including lack of knowledge; mHealth programming should not be limited to providing information but should attempt to mitigate additional barriers.

10. **Incorporate Evaluation from the Beginning.** Evaluation of mHealth programming can be challenging, but using mobile phone technology can improve data collection. In addition, balancing the need for information for evaluation purposes with user privacy can be a challenge and may require compromise. For these reasons, planning for programme evaluation should be incorporated from the start of the development process. SMS surveys and quizzes can be used to gather demographic data from users and evaluate self-reported changes in knowledge and behaviour.

11. **Share with the Larger mHealth Community.** Collaborating and sharing information, materials, and outcomes with other organisations working on mHealth can help ensure that progress and lessons are shared and incorporated into new programmes, thus contributing to more effective, evidence-based SRH programming and better outcomes across the field of mHealth.

12. **mHealth On its Own Is Not a Guaranteed Solution to the Barriers Faced by Youth.** Whereas mHealth is promising and has already contributed to better access to information and services, it is not enough on its own to address the barriers to youth access. mHealth programmes appear to work well in providing information and linkages to services, and to better services, but they require that strong services and programming exist in the first place. mHealth programmes seem to work best as part of a larger, multipronged effort to improve access to services and information for youth, which may include low-cost services, youth-friendly services, youth outreach, and youth educational programming. mHealth should not be looked on as a silver bullet, but instead as a new and useful tool in a larger toolkit to help engage and inform youth and connect them to comprehensive, youth-friendly services.
Conclusion

As mobile phone penetration expands across the globe, mobile technology is offering new and exciting ways to reach people with essential health information and services. For young people who are strongly engaged with mobile phone technology, mHealth programming has promising potential as a key method for conveying SRH information. Understanding the barriers that young people face in accessing SRH information and services can help determine whether and what type of mHealth intervention could be most effective. Developing effective mHealth interventions requires knowledge of audience needs, wants, and limitations, all of which can affect their ability or desire to engage with mHealth programmes. When developed and implemented with the audience in mind, mHealth programmes can be extremely useful in reducing barriers and connecting people to essential information and services in an innovative, private, and acceptable manner. However, mHealth programmes are not silver bullets. They have their limitations and may not be appropriate in all situations, or to address all issues. Most importantly, mHealth interventions appear to be most effective when complemented by wider initiatives or strong service delivery. By combining evidence, innovation, and collaboration, mHealth can be an effective tool for improving youth sexual and reproductive health around the world.
References:


††† MSI Internal Information Portal- Not accessible to the public.


Appendix 1: mHealth Programme Models

One-To-Many SMS Information

The One-To-Many SMS information model involves a programme pushing information to users via SMS. This model typically functions as an opt-in programme through which users may sign up by sending an SMS to the programme. It may also function as an opt-out programme in which individual phone numbers are collected and enrolled, after which users can request exclusion. SMS messages are sent to users regularly (daily, weekly, monthly) to provide information on a particular topic. With this model messages are one-way, initiated by the programme, and require no response from users.

Examples: The Hookup, m4QI

One-to-One SMS Information

The One-to-One SMS information model is typically used in a clinical setting and allows a service provider to contact individual clients with information relevant to their healthcare. Once the client has agreed or requested to receive information via SMS, the service provider may send appointment reminders, information about how to prepare for an appointment or procedure, or test result information. This model may involve one-way communication, allowing information to be sent to clients, or two-way communication, allowing clients to respond to messages.

Example: MSI UK OneCall Call Centre

SMS Quiz

The SMS Quiz model has a variety of functions and may allow a programme to evaluate user knowledge and behaviours or changes in knowledge and behaviour, educate and inform users, or gather user information (e.g., satisfaction survey, client data collection).

This model generally functions either as a one-way submission of answers from the user to the programme, or as a two-way exchange between the programme and the user.

- The one-way answer submission format generally involves a “many-to-one” model, in which the question is publicized, usually through the media, and users submit their answers to an established number via SMS. Users
may then receive a response confirming receipt and providing the correct answer.

- The two-way exchange format often involves a programme-initiated SMS question. Users then respond to the programme via SMS and in return receive a confirmation of their response as either correct or incorrect, usually with some information on the correct answer. The delivery of questions and answers can be automated or manual, with questions and answers either prepared in advance or individually by programme staff.

Both models may involve incentives to encourage users to submit the correct answer, often in the form of air time given to a few users who submitted the correct answer.

Examples: Learning About Living: My Answers, m4QI, Text To Change

Automated Two-Way SMS Information Menu

The automated two-way SMS information menu model allows users to access information on a variety of topics. This model is user-initiated and typically involves interactive, two-way communication between users and the programme. Typically, a user sends an SMS to the programme to request information and receives in return a menu of the available topics. The menu may take the form of a list of topic options with a code for each option (e.g., 11 for condoms, 22 for contraceptive pills). The user then responds with the topic code and receives a message with more information. This type of programme may also be key word–based rather than menu-based, allowing users to text in requests for information and receive automated SMS responses on the basis of key words in the initial text. This model is not limited to SMS and may involve unstructured supplementary service data instead.

Examples: m4RH, SexInfo, GoogleSMS Tips

Individual Two-Way SMS Questions

The individual two-way SMS questions model allows individuals to ask relevant, personal questions via SMS and receive a personalized response directly to their mobile phone. Users initiate the interaction by submitting a question to the programme via SMS. Users then receive an individualized SMS response, typically generated by a counsellor or medical professional. This model of individual two-way SMS questions often functions in conjunction with existing call centres, providing
users with an additional, alternative means of accessing information. This model is also sometimes referred to as a “warm line.”

Examples: Learning About Learning: My Questions, Yangpela Hotline

**SMS Service Locator**

The SMS Service Locator or Clinic Finder model allows individuals to use their mobile phones to access information about the location of service providers. This user-initiated model helps users identify, locate, and utilise local or conveniently located service providers. With this model, a user sends an SMS with their location (a postal code, city, county, province, etc.) to the programme and receives an automated response listing one or more service providers in the requested area.

Examples: GoogleSMS Clinic Locator, The Hookup, m4RH

**Table 1: Model Advantages and Disadvantages**

<table>
<thead>
<tr>
<th>Programme Model</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>One-to-Many SMS Information</td>
<td>- Regular, consistent contact with users</td>
<td>- Less private (message may arrive at inconvenient time)</td>
</tr>
<tr>
<td></td>
<td>- May function as a reminder because messages are “pushed” to users</td>
<td>- No back and forth communication between user and programme</td>
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<td></td>
<td>- Pushing information may introduce users to new information or topics they would not have accessed on their own</td>
<td>- Information may not always be relevant to users</td>
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<tr>
<td></td>
<td>- Planned, intentional scheduling of messages can improve impact and privacy</td>
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<tr>
<td></td>
<td>- May encourage communication/sharing of information</td>
<td></td>
</tr>
<tr>
<td>One-to-One SMS Information</td>
<td>- Improves efficiency in clinical settings</td>
<td>- May be more difficult to follow up with patients about test results delivered via SMS</td>
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<td></td>
<td>- Reduces the amount of time staff need to spend on the phone</td>
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<td></td>
<td>- May reduce missed appointments</td>
<td></td>
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<td></td>
<td>- Improves service delivery</td>
<td></td>
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<td></td>
<td>- May be tailored to individual</td>
<td></td>
</tr>
<tr>
<td>SMS Service Locator</td>
<td>client needs</td>
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<tr>
<td>---------------------</td>
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<td></td>
</tr>
</tbody>
</table>
| **SMS Quiz (One-Way and Two-Way)** | - Encourages users to seek information on a given topic  
- May correct misinformation or reinforce correct information or positive behaviours  
- May be used for assessment and evaluation  
- May encourage sharing of information  
- Motivational and engaging | - Often includes incentives that require sustained funding  
- Software should include response to users affirming correct answers or correcting incorrect answers, or it risks missing an opportunity to provide correct and complete information |
| **Automated Two-Way SMS Information Menu** | - Specific information relevant to users  
- May be accessed at any time  
- Response are automated, so they are received immediately  
- Perceived as private  
- May encourage sharing of information with others | - Provides only information the user requests  
- May require extensive message development and pretesting  
- Limitation of 160 characters may limit potential to provide complete information  
- Requires greater effort on the part of users  
- Software development is complex |
| **Individual Two-Way SMS Questions** | - May improve accessibility of call centres  
- Generally viewed as private by users  
- Low cost (compared with telephone calls)  
- Individually tailored responses may meet the precise needs of users | - Users may have to wait for answer because the system is not automated  
- Potential for counsellor bias in individually generated answers  
- Requires regular training and access to informational resources for counsellors |

<table>
<thead>
<tr>
<th><strong>SMS Service Locator</strong></th>
<th>client needs</th>
</tr>
</thead>
</table>
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- Requires regular training and access to informational resources for counsellors |
## Appendix 2: SMS 4 SRH Cheat Sheet

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Programme Solutions</th>
<th>Programme Examples</th>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location/Distance from Services</td>
<td>SMS Service Locator</td>
<td>The Hookup m4RH</td>
<td>Potential for innovation</td>
<td>Little evidence currently</td>
</tr>
<tr>
<td></td>
<td>SMS Service Requests*</td>
<td>GoogleSMS Clinic Finder</td>
<td>May strengthen existing mobile outreach</td>
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</tr>
<tr>
<td></td>
<td>SMS Money Transfer for Transportation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>SMS eVouchers</td>
<td>Marie Stopes International Ethiopia eVoucher Programme</td>
<td>Accessible, secure; strengthens existing voucher efforts</td>
<td>May not reduce cost enough for some</td>
</tr>
<tr>
<td>Lack of Location Information</td>
<td>SMS Service Locator</td>
<td>The Hookup m4RH</td>
<td>Complements other mHealth programmes</td>
<td>Location may not be enough</td>
</tr>
<tr>
<td></td>
<td>Automated Two-Way SMS Info Menu</td>
<td>GoogleSMS Clinic Finder</td>
<td></td>
<td>Difficult to collect data</td>
</tr>
<tr>
<td></td>
<td>Individual Two-Way SMS Questions</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>SMS Quiz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of SRH Information</td>
<td>One-to-Many SMS Info</td>
<td>The Hookup m4RH</td>
<td>Many existing programmes</td>
<td>Limited impact on behaviour change</td>
</tr>
<tr>
<td></td>
<td>Automated Two-Way SMS Info Menu</td>
<td>GoogleSMS Health Tips</td>
<td>Private</td>
<td>160 character limit</td>
</tr>
<tr>
<td></td>
<td>Individual Two-Way SMS Questions</td>
<td>SexInfo</td>
<td>Convenient and accessible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SMS Quiz</td>
<td>Text To Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embarrassment and Fear of Social Stigma</td>
<td>One-to-Many SMS Info</td>
<td>Learning about Living: My Questions and My Answers</td>
<td>Private and confidential</td>
<td>May not improve access to services</td>
</tr>
<tr>
<td></td>
<td>Automated Two-Way SMS Info Menu</td>
<td>Yangpela Hotline</td>
<td>Low cost (compared with call centre phone calls)</td>
<td>Potential counsellor bias</td>
</tr>
<tr>
<td></td>
<td>Individual Two-Way SMS Questions</td>
<td></td>
<td></td>
<td>Data collection vs. privacy</td>
</tr>
<tr>
<td></td>
<td>SMS Quiz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner Pressure and Cultural Norms</td>
<td>One-to-Many SMS Info</td>
<td>Text For Health Uganda</td>
<td>SMS may encourage communication and information sharing</td>
<td>Little evidence and few examples</td>
</tr>
<tr>
<td></td>
<td>Community-based communication or mobile mass media**</td>
<td></td>
<td></td>
<td>SMS is more individual-focused</td>
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<tr>
<td></td>
<td>Individual Two-Way SMS Questions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provider Bias</td>
<td>Client focused: SMS client reviews, contraceptive</td>
<td>Contraceptive method selector</td>
<td>May empower clients in decision-making process</td>
<td>Cultural norms may limit client ability to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACE contraceptive</td>
<td></td>
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</tr>
</tbody>
</table>

**Note:** These solutions and examples are illustrative and do not represent all available options.
Provider-focused: one-way SMS tips, SMS quiz

<table>
<thead>
<tr>
<th>method selector</th>
<th>eligibility</th>
<th>question service provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSI Madagascar SMS Client Surveys m4QI</td>
<td>May improve provider knowledge and attitudes</td>
<td>Service providers may not be open to these programmes</td>
</tr>
</tbody>
</table>

Lack of Provider Training

| One-to-Many SMS Info SMS Quiz Automated Two-Way SMS Info Menu | m4QI CommCare txt2medline | Encourages communication and independent learning | May not be acceptable Limited-evidence for behaviour change |

* Theoretical programme model proposed on page 13.
** See Abt mBCC Guide pg. 33 for examples.
Appendix 3: Additional Resources

Technology Tools

**Grameen Foundation AppLab**
The Grameen Foundation AppLab is a mobile phone application developer focused on alleviating poverty through mobile solutions in the areas of agriculture, health, money, and microfinance. Grameen Foundation AppLabs are located in Colombia, Ghana, Indonesia, and Uganda.

http://www.grameenfoundation.applab.org/

**Apposite: appropriate technology**
Apposite is an information technology development company, working to create appropriate technology solutions for business and development in Africa.

http://www.apposit.com/content/our-work

**ASHOKA Changemakers Quick Start Guide to SMS**
This quick start guide provides a brief overview of SMS and an introduction to how SMS programming works to help individuals and organizations quickly set up SMS programmes.


**Text to Change**
Text to Change (TTC) is a technology developer that has created a flexible and scalable mobile platform that can be used in SMS-based mHealth programming. TTC also assists with content development, analysis and interpretation of data.

http://www.texttochange.org/

**Frontline SMS Learn**
Frontline SMS Learn uses SMS to provide learning and evaluation support to educators and development programmes all over the world. This platform was used in the M4QI project discussed on page 29.

http://learn.frontlinesms.com/

**CommCare**
A free, open-source mobile application that functions as a job aid for community health workers and as a tool for collecting and tracking client data.

http://www.commcarehq.org/home/

mHealth Resources

**Barriers and Gaps Affecting mHealth in Low and Middle Income Countries: Policy White Paper**
The goal of this paper is to synthesize what is known in the mHealth evidence base, identify gaps in knowledge, and profile risks and barriers that hamper mHealth scale up and sustainability.
Health Unbound
Health Unbound is an online information resource centre and interactive network run by the mHealth alliance to support communication and knowledge sharing among the mobile health community.
http://www.healthunbound.org/about-hub

K4Health mHealth Toolkit
Prepared by the mHealth Working Group, the mHealth Tool Kit contains information on opportunities and limitations of mHealth programming. Selected resources are presented to provide evidence of the potential for mHealth.
http://www.k4health.org/toolkits/mhealth

mHealth: New horizons for health through mobile technologies
This paper details the results of the World Health Organization’s Global Observatory for eHealth (GOe) 2009 global survey, which contained a section specifically devoted to mHealth. Completed by 114 member states, the survey documented for analysis four aspects of mHealth: adoption of initiatives, types of initiatives, status of evaluation, and barriers to implementation.
http://www.who.int/goe/publications/goe_mhealth_web.pdf

Mobiles in-a-box
Mobiles in-a-box, a project of the Tactical Technology Collective, is a compilation of tools, tactics, how-to guides, and case studies to assist advocacy and activist organizations in incorporating mobile technology into their work.
http://mobiles.tacticaltech.org/

www.mobilehealthlive.org/mhealth-tracker/
This tool tracks and organizes deployments of mobile health services and products around the globe.
http://www.mobileworldlive.com/mhealth-tracker

Communications for change: How to use text messaging as an effective behavior change campaigning tool
This guide, developed by Frontline SMS and Text to Change, introduces some key points to think about when planning to use SMS for behavioural change campaigns.

mBCC Field Guide
Compiled by Abt Associates, this guide contains an overview of current knowledge on the power of mobile communication tools to influence health behaviours.
http://www.mbccfieldguide.com/

The Use of Information and Communication Technology in Family Planning, Reproductive Health, and Other Health Programs: A Review of Trends and Evidence
This paper, produced by the AIDSTAR-Two project, examines the current use of information and communication technologies to advance family planning, reproductive health, and other health programs, and identifies the enabling conditions for further scale up.


mHealth Programs and Profiles

The Hookup
Weekly Text Messaging Service Enhances Access to Local Clinics and Accurate Information on Sexual Health for Teens and Young Adults
Published by the U.S. Department of Health and Human Services Agency for Healthcare Research and Quality, this page contains a detailed summary of The Hookup programme, how it worked, and considerations for adapting the programme to new settings.
http://www.innovations.ahrq.gov/content.aspx?id=3139

m4RH: Mobile for Reproductive Health
m4RH Program Demo
This website contains a simulation and evaluation of how the m4RH project is currently working in Kenya.
http://www.fhi360.com/sites/default/files/webpages/Mobile_Reproductive_Health/index.html

Learning about Living: Nigeria
www.learningaboutliving.org/south
This HIV prevention programme for Nigerian youth hosts a website that provides information on HIV and other STIs through a series of educational modules. Young people can also anonymously contact the programme’s health educators and ask questions.

SEXINFO
Text Messaging Program Increases Awareness and Concern About Sexually Transmitted Diseases Among At-Risk Youth, Particularly African Americans
This U.S. Department of Health and Human Services Agency for Healthcare Research and Quality website contains a detailed summary of the SEXINFO programme, how it worked, and considerations for adapting the programme to new settings.
http://www.innovations.ahrq.gov/content.aspx?id=2531

Youth SRH

TechSex USA: Youth Sexuality and Reproductive Health in the Digital Age
This white paper, prepared by ISIS and funded by the Ford Foundation, contains an overview of the current youth sexual health and digital landscapes in the United States.
It also contains insight into how youth and young adults, particularly youth of colour, use technology to learn, communicate, and discuss sexual and reproductive health. [http://www.isis-inc.org/ISISpaper_techsx_usa.pdf](http://www.isis-inc.org/ISISpaper_techsx_usa.pdf)

**mHealth Data**

AudienceScapes is an online tool and research programme providing essential media use and communication information on developing countries from a bottom-up perspective, on the basis of an in-depth analysis by the AudienceScapes research team.

[http://mobileactive.org/mobiledata](http://mobileactive.org/mobiledata)
Data about mobile use, communication costs, mobile coverage, and operators by country.

**Use of Information and Communication Technology by the World’s Children and Youth.**
A 2008 report compiled by the International Telecommunications Union containing statistical information on children and youth access to and use of information and communication technologies around the world. [http://www.isis-inc.org/ISISpaper_techsx_usa.pdf](http://www.isis-inc.org/ISISpaper_techsx_usa.pdf)