Towards the Standardization of Total Market Approach Indicators for Male Condoms

Sarah C. Pallin, MPH [1]

Dominique Meekers, PhD [2]

[1] Louisiana Public Health Institute, New Orleans, LA

[2] Tulane University School of Public Health and Tropical Medicine, New Orleans, LA and Universiteit Gent, Belgium

Corresponding Author: Sarah C. Pallin, 1515 Poydras St, Suite 1200, New Orleans, LA 70112. Phone: 504-609-3939; E-mail: sarah.c.pallin@gmail.com.

Abstract

Background: A Total Market Approach (TMA) can help ensure equity, sustainability, and growth of the male condom market. However, evidence-based TMA is often not feasible because the required market data for condoms are lacking. Hence, there is a need for standardized TMA indicators and for specific guidelines about the data collected by condom distribution programs as well as by major national survey programs.

Methods: This paper reviews the TMA literature to identify indicators for inclusion in a set of standardized indicators. Priority was given to indicators that could be measured with existing standardized tools such as the Demographic and Health Survey and Multiple Indicator Cluster Survey.

Results: Indicators were classified into four categories: market size, market accessibility, market sustainability, and equity. Proposed indicators for market size included universe of need, market volume, and product use. Indicators of market accessibility included knowledge of a condom source, access to condoms as a barrier to use, and product stockouts. Sustainability indicators included market value, brands available on the market, brands entering the market, market share, market subsidy, and supply sources. Equity indicators included condom use and price as a barrier to use by wealth quintile.

Conclusions: TMA analysis requires consistent, high-quality data collected at regular intervals. Standardization of TMA indicators will help stakeholders understand which data to collect for a market assessment and how to report each indicator to ensure comparability of data. All stakeholders must commit to information sharing in order to guarantee high quality, reliable, and consistent data for TMA analysis.

Keywords: Condoms, Social marketing, Public sector, Private sector, Resource allocation

Introduction

Despite successes in the last decade, HIV remains a major problem in many countries.[1] Male condoms offer protection against both HIV and unplanned pregnancy and remain a key component of both HIV prevention and family planning programs.[2-4] However, low levels of condom use, inefficient condom distribution, and inequity in both use and distribution are common problems in many developing countries. Additionally, many condom markets are dominated by the public and social marketing sectors, which has resulted in a heavy reliance on fully or partially subsidized condoms.[5-10] It is increasingly recognized that improving the efficiency, equity, and sustainability of the condom market requires more effective coordination between the public sector, social marketing sector, and commercial sector. The Total Market Approach (TMA) seeks to accomplish this goal. TMA is an approach in which all three sectors work together to provide a health commodity or service in a manner that is efficient, equitable, and sustainable.

In spite of its advantages, evidence-based TMA is often not feasible because the required market data for condoms are lacking. In some cases, data are simply not collected or are collected sporadically. In cases when data are collected regularly, the types of data collected as well as

the methods for collecting this data often differ between sectors and programs. For example, social marketing programs have frequently used couple years of protection (CYP) to measure distribution while the public sector may use importation figures and the commercial sector may use profits. This variation in measurement makes it difficult to synthesize market data for a meaningful analysis of the market and TMA. Hence, there is a need for standardized TMA indicators and for specific guidelines about the data that should be routinely collected by condom distributors and retailers, as well as by major national survey programs such as the Demographic and Health Survey (DHS) and the Multiple Indicator Cluster Survey (MICS).

The purpose of this paper is to propose a series of TMA indicators to serve as a starting point for the development of standardized, universally agreed-upon indicators. A secondary objective is to discuss the data needed to calculate these indicators. The adoption of standardized TMA indicators, supported by increased consistency in the program and survey data that are being collected, will allow policymakers and donors to make better informed decisions about the male condom market, which will ultimately make condom distribution more effective.

Background

In most developing countries, condom distribution occurs through three sectors: the public sector, the commercial sector, and the social marketing

sector. The public, or government, sector often supplies free condoms with the intention of making condoms available to those who cannot

afford to purchase them. The commercial sector, in comparison, consists of companies that aim to sell condoms for a profit. The third sector, social marketing, aims to serve population groups that are not adequately served by the other two sectors, by providing high-quality condoms at a lower cost. Although each sector should ideally be targeting different audiences, there is poor coordination between sectors, leading to inefficiencies in the condom supply.[5-10] This lack of coordination has prompted the development of new approaches that focus on the total market rather than on an individual sector to achieve overall market growth.[11-14] TMA requires that the three market sectors are viewed as a single market, which is then segmented into groups based on ability to pay, willingness to pay, and other factors such as sexual risk behavior. The approach allows each sector to concentrate on segments of the market where they have a greater comparative advantage.[11,12]

While a number of different variants of TMA are being used, there is general agreement that making plans and decisions in the context of the whole market requires having a thorough understanding of that market.[11,12] Specifically, it requires detailed information about the characteristics of the current market as well as the market trends, which may provide useful information about where the market is heading. The Market Development Approaches Working Group of the Reproductive Health Supplies Coalition identified four broad areas of information needed to assess overall market health: 1) market size, 2) market accessibility, 3) market sustainability, and 4) market equity.[15] Information about the number of consumers, the

value of goods sold, the supply environment, and consumer characteristics, preferences, and behavior falls within these four categories.[12,15-17]

Recent TMA analyses for male condoms have attempted to gather and synthesize market information for six countries.[5-10] These analyses revealed major data gaps, as well as differences across countries in the way key indicators were measured.[8,10,11] For example, some years of data on the number of condoms distributed were missing, or were inconsistently reported across sources and the method of collecting retail data varied widely. Currently, routine sharing of data across sectors does not exist. Furthermore, there has been little or no standardization of measurement and reporting tools such that, even when sectors share data, they are not always comparable.

Although major international organizations such as the World Health Organization (WHO), the Joint United Nations Programme on HIV/AIDS (UNAIDS), and the United States Agency for International Development (USAID), have long sought the standardization of indicators for several health sectors, a similar standardization has yet to occur for TMA.[18-21] Standardization of TMA indicators is needed to ensure that data are comparable over time and across sources, which will help provide insight on how all key stakeholders can work together to improve the total market. It is our hope that the set of standardized indicators proposed in this paper will serve as a starting point for discussion among stakeholders on how to effectively implement a TMA for male condoms.

Methods

This paper identifies and recommends a set of indicators for inclusion in future TMA analyses. In theory, it should be possible to obtain most of this information from existing health surveys and from program data that are being collected by social marketing programs and the public and commercial sectors. As discussed earlier, however, obtaining data on the total market is not as straightforward in practice.

Selection of Indicators

TMA analysis has occurred in several countries. In some cases, the indicators used to measure the status of the market were described in published reports; in other cases, such information was only available in PowerPoint presentations, or not at all.[22-25] Only a few published documents have proposed indicators to measure the status of the market.[12,15,26] While there appears to be agreement in the published TMA literature about the aspects of the total market that should be monitored, there is considerable variation in the specific indicators used.

As noted by Gertler, indicators should be based on information that can readily be obtained "in a timely fashion, with reasonable frequency, and at a reasonable cost."[27] Inclusion of indicators that would require a totally new type of data collection, such as a survey that would otherwise not be conducted, would increase burden and costs. Therefore, in order to keep the measurement burden at a minimum, we gave priority to indicators that could be measured with existing standardized tools, such as the Multiple Indicator Cluster Survey (MICS), the Demographic and Health Surveys (DHS), or the Service Provision Assessment (SPA) survey. When feasible, we selected standardized indicators that were already being used for monitoring HIV/AIDS prevention, family planning, and reproductive health programs, as these indicators were typically established after years of testing in numerous countries worldwide.[28]

Following review of the various resources (ie, TMA reports and documents, previously recommended indicators, standardized surveys, and health program monitoring indicators), a core set of indicators was identified and classified into the four categories identified by the Market Development Approaches Working Group of the Reproductive Health Supplies Coalition to assess market health: market size, market accessibility, market sustainability, and market equity.[11]

Recommended indicators are discussed below.

Results

Overview of TMA Indicators

Table 1 provides a summary of recommended TMA indicators that can be used to assess a given market. The recommended indicators focus on the market for male condoms only; however, they could easily be adapted to include female condoms. The indicators are classified into four broad topics: 1) market size, 2) market

accessibility, 3) market sustainability, and 4) equity.[15] In this subsection, we provide an overview of the importance of these four broad topics and the indicators reflected by each. In the next section, we discuss each indicator in further detail.

Indicators that measure the size of the market (universe of need, market volume, and condom use) are shown in Table 1. Market size indicators are important for making decisions about distribution and pricing; together they give a picture of market health and provide insights about future market potential (ie, potential profits). In addition, measuring condom use among different regional and demographic groups allows for a more in-depth analysis of where market demand is concentrated, which may allow condom providers to locate market potential and more effectively target certain groups.

Because access to condoms is essential to improve condom use, market accessibility is another important TMA indicator. Table 1 includes three indicators of market accessibility: knowledge of a condom source, lack of access to condoms, and delivery point stockouts (ie, where condom inventory is exhausted). Also included in Table 1 are indicators of market sustainability, which is another main objective of TMA. Market sustainability indicators include market value, brands available, new brands entering the market, the market leader's market share, market subsidy, and supply sources. Together, these indicators enhance our understanding of the challenges facing the market with regard to sustainability. Finally, in addition to growth, accessibility, and sustainability of the market, TMA seeks to improve equity in condom use and to ensure universal access to condoms. Measures of equity, which are shown at the bottom of Table 1, include condom use by wealth quintile and price as a barrier to use. For both of these measures, even distribution across quintiles is a good indicator of market equity.

Data Sources

The data needed to calculate TMA indicators can be obtained from three main sources: 1) population-based surveys, 2) service statistics on the number and types of condom products sold, distributed, or provided, and 3) retail audits. In certain countries, a computerized logistics management information system (CLMIS) may be in place that could supplement service statistics and retail audits.[29] An operational CLMIS can provide information on the stock on hand in the system, rate of consumption of condoms, and losses and adjustments (eg, the number of condoms lost or expired) of the commodity.[29] Use of all three types of data sources, in addition to CLMIS (when available), is recommended to obtain a complete picture of the condom market. For some topics, it may be possible to obtain relevant information from multiple sources, which allows for data verification through triangulation.

Nationally representative population-based surveys are ideal for providing detailed information about product and service use, equity in use, and access to products and services. Some of this information is included in the model questionnaires of standardized national surveys, such as the Demographic and Health Surveys (DHS) or Multiple Indicator Cluster Surveys (MICS).[30-36] However, the model questionnaires may change over time, and individual countries do not necessarily include all questions from the model questionnaires. Furthermore, because such large-scale surveys are typically conducted at 5-year intervals, additional ad hoc population-based surveys may need to be implemented in order to obtain timely information. In theory, population-based surveys can also be used to collect information about brand use, which could then be used to estimate market share and market subsidies. However, questions on brand use are not currently included in the core questionnaires for the major survey programs. Consequently, the methodology for collecting reliable information

Table 1. Overview of Recommended TMA Indicators [a]

Indicator	Description	Measurement Tool
Market Size		
Universe of need	Number of products or services needed to reach universal coverage of the current market	Various
Market volume	Number of products or services sold, distributed, or provided	Service statistics
Product use	Percentage of the population in the market who are using the products or services	Population-based survey
Market Accessibility		
Knowledge of source for product/service	Percentage of population in the market who know where product/services can be obtained	Population-based survey
Lack of access	Percentage of non-users of the product/service who report that lack of access is the reason for non-use	Population-based survey
Stockouts	Percentage of product/service delivery points that reported a stockout in the past month	Retail audit (or retail outlet survey)
Market Sustainability		
Market value	Dollar value of the total number of products or services sold, distributed, or provided	Service statistics/ Retail audit
Brands available	Number of distinct products/brands on the market	Retail audit
New brands entering the market	Number of products/brands launched in the past year	Successive retail audits/ Key informants
Market leader's market share	Percentage of total product/services sold, distributed, or provided by the market leader	Service statistics
Market subsidy	Number of unsubsidized brands in the market	Retail audit
	Market share of unsubsidized brands	Service statistics
	Percentage of users who report using an unsubsidized brand	Population-based survey
Supply sources	Number of sources of supply that serve the market	Retail audit/ key informants
Market Equity		
Product use by wealth quintile	Percentage of population in each wealth quintile who are using the product or services	Population-based survey
Price as a barrier to use by wealth quintile	Percentage of population in each wealth quintile who report that price is a barrier to product use	Population-based survey

[a] Table was adapted from several other indicator tables.[12(pp40,41),15(pp19-23),26(pp1,2)]

on brand use through surveys is not well developed.

Program data/service statistics are needed to provide information about market volume, market value, market share, and subsidies. While the public, social marketing, and commercial sectors routinely collect such data, standardization across these sectors has not occurred. Moreover, it is rare for any of these data to be publicly available for analysis. Sharing of data across all three sectors is essential to enable effective TMA analyses. This may require setting up a common database or repository. Furthermore, because TMA analysis requires the pooling of data from the three sectors, such data must be measured in the same manner. Therefore, it is crucial that data collection for key indicators is standardized, preferably through the use of a mutually accepted, data collection protocol or indicator handbook. Indicator handbooks typically provide details about the precise measurement of each indicator, including the unit of measurement, frequency of reporting, data source, data requirements, and a definition of the indicator.[20,37,38]

While population-based surveys and program data/service statistics are the main data sources for TMA analyses, ad hoc retail or distribution surveys are more suitable for collecting information on the number of condom brands in the market, the number of unsubsidized brands, and on the prevalence of stockouts in various types of outlets.[39-41] While the specific methods for collecting retail-level information can vary from country to country, it is important to recognize that implementing a TMA requires analyzing changes in the market over time. Hence, the methodology used, including both the sampling strategy and the data collection instruments, must be comparable over time.

Specific Data Requirements

The next subsections discuss the specific data requirements for each of the recommended TMA indicators.

Indicators of Market Size.
Universe of need. Universe of need, which refers to the number of condoms needed on the market,[42] has two major components: the number of condoms needed to protect against unwanted or unplanned pregnancy and the number of condoms needed to protect against HIV and other STI's. Table 2 presents the indicators specifically needed to measure the universe of need for male condoms (including various sub-indicators required to calculate the universe of need).

Number of condoms needed to protect against HIV and STI infection. Estimating the number of condoms needed per calendar year to provide full protection from HIV and STI infection is complicated because, strictly speaking, a condom is only needed for those sex acts in which one of the partners is infected, which is unknown in the absence of universal and regular HIV testing. Therefore, it may be more feasible to estimate the annual number of condoms needed to provide protection for all risky sex acts. Estimating the number of risky sex acts requires survey data on coital frequency with different types of partners. Specifically, it requires asking men about the frequency of intercourse with their wives, casual partners, sex workers, and any male sex partners during the last month. This information is not collected through most standardized surveys, such as the DHS or MICS, but requires only a few additional questions. Although the accuracy of the results will depend on the reliability of the reported information, there is a precedent for asking coital frequency questions on population-based surveys.[43-46]

Number of condoms needed to protect against unwanted or unplanned pregnancy. To estimate how many condoms are needed to avoid unwanted or unplanned pregnancy in a given calendar year, we need to know how many women would like

Table 2. Universe of need indicators for male condoms

Indicator	Description	Measurement Tool
Number of condoms needed to protect against HIV/STIs	Annual number of condoms needed to cover all risky sex acts	Various
Coital frequency: casual partners	Average number of sex acts with casual partners, per man per year	Population-based survey
Coital frequency: sex workers	Average number of sex acts per sex worker per year	Sex worker survey
Coital frequency: MSM	Average number of sex acts with men, per man per year	MSM survey
Number of sex workers	The number of females practicing sex work in a given year	Key informant estimates
Number of MSM	The number of men having sex with men in a given year	Key informant estimates
Number of condoms needed to protect against unplanned pregnancy	Annual number of condoms needed to prevent unwanted/unplanned pregnancy among those who use condoms as their family planning method of choice	Various
Method mix: condoms	Percentage of women currently using a contraceptive method who report that condoms are the type of method used	Population-based survey
Unmet need for family planning	Percentage of women with an unmet need for family planning	Population-based survey
Number of condoms needed to protect against unplanned pregnancy and to protect against HIV/STIs	Annual number of condoms need to prevent unwanted/unplanned pregnancy (among those who use condoms as their family planning method of choice) and to cover all risky sex acts	Various
Condom use for dual protection	Percentage of condom users who report that both HIV prevention and family planning were the reason for using a condom at last sex	Population-based survey

to avoid unwanted or unplanned pregnancy, what percentage of those report using condoms as their method of choice, and how many condoms are needed to provide a full year of protection. The number of women who would like to avoid unwanted or unplanned pregnancy is measured by taking the sum of the number of women who are currently using contraception and the number of women with an unmet need for family planning (ie, women who wish to postpone childbearing or want no more children, but who report that they are not currently using contraception). The percentage of current contraceptive users who use condoms is an acceptable proxy for method of choice. It is generally assumed that 120 male condoms are needed to provide one couple with one year of protection.[47] Thus, the annual number of condoms needed for family planning is equal to the number of women who would like to avoid unwanted or unplanned pregnancy, multiplied by the percentage who are using condoms as their method of choice, multiplied by 120.

Total number of condoms needed to provide protection against unplanned/unwanted pregnancy as well as protection against HIV and STI infection. Because condoms can be used for dual protection, the total number of condoms needed for protection against unplanned/unwanted pregnancy as well as HIV/STI protection cannot be estimated by adding up the number needed for family planning and the number needed for HIV/STI prevention, as it would double-count condoms that are needed for people who use condoms for both purposes (dual protection). Unfortunately, questions on dual protection are not included in the core DHS or MICS questionnaires. Nevertheless, a few countries have included such questions in their DHS questionnaires. For example, the 2005-2006 Zimbabwe DHS asked about the main reason for using a condom at last sex; response categories included: to prevent STD/HIV, prevent pregnancy, both, and other.[48] A similar question would enable us to determine what percentage of all condoms used at last sex were used for dual protection, which is a good proxy for the overall need for dual protection. We recommend that this question be included in all future population-based surveys. The total universe of need reflects the minimum number of condoms needed on the market, assuming that all condoms are used either for family planning or during risky sex acts. Since many people use condoms in low-risk situations, the actual number of condoms needed is higher.

Market volume. Standardized indicators for HIV/AIDS prevention programs as well as family planning and reproductive health programs include an indicator that measures the average number of condoms per adult that are available for nationwide distribution.[18,20,49] However, since that indicator focuses on the number of condoms in stock it is not a good indicator of market volume. Our recommended indicator of market volume is simply the total number of condoms sold, distributed, or provided by all three sectors during a given calendar year (see Table 1).

Measuring market volume requires clear agreement about the service statistics that each of the three sectors should collect and report. Our recommendation is that the public sector reports the volume of condoms that the government has bought or received for free distribution, including any condoms received from social marketing programs. Likewise, we recommend that social marketing programs report the volume of subsidized condoms sold, but exclude any condoms donated to the public sector (even if they are branded condoms). However, if social marketing companies themselves distribute some of their branded condoms for free, then the volume of subsidized and free condoms should be reported separately. Likewise, if a social marketing program were to sell an unsubsidized condom brand, then sales of that brand should also be reported separately in the same way that sales of private sector brands are reported.

Product use. Population-based surveys are the most suitable tool for calculating the percentage of the population who are using condoms. The standardized indicator recommended in the HIV/AIDS Survey Indicators Database is the percentage of respondents aged 15-49 who reported using a condom at last intercourse, among those respondents who reported having intercourse during the previous 12 months.[50] The key survey questions needed to calculate this indicator are "When was the last time you had sexual intercourse?" and "The last time you had sexual intercourse, was a condom used?" which are routinely collected in DHS surveys, UNAIDS General Population Surveys, and FHI Behavioral Surveillance Surveys.[28,31,32,50-52]

Indicators of Market Accessibility.
Knowledge of a condom source. In line with existing standardized indicators, our

recommended indicator for knowledge of a condom source is the percentage of sexually active adults aged 15-49 who report knowing where a person can obtain condoms.[19,20,49] It is recommended that this indicator be based on the question "Do you know of a place where a person can get condoms?," which is included in all recent DHS surveys.[31,32,51]

Access to condoms as a barrier to use. Access to condoms is essential for increased condom use. For this reason, access as a barrier to condom use is a good measure of market accessibility. For this indicator, respondents who reported that they did not use a condom the last time they had sex should then be asked, "What is the main reason you did not use a condom that time?" Response options on this question typically include two key pieces of information that are important for indicator calculations; 1) "not available" and 2) "cost too much." The percentage of respondents who report that lack of "availability" was the reason for nonuse indicates the extent to which access to condoms is a barrier to use. This question has been included in some DHS surveys, but not all.

Product stockouts. An existing standardized indicator of product stockouts is the "percentage of facilities that experience a stockout at any point during a given time period."[20,49] Our recommended indicator is the percentage of condom delivery points that reported having one or more condom stockouts in the past month. Given that outlets carry many products, limiting the reference period to one month will help minimize recall error. This indicator requires two types of information: a question to ascertain whether the outlet sells condoms, which provides information for the denominator, and a question on recent stockouts, which provides data for the numerator. Unfortunately, most facility/outlet surveys normally do not collect all of this information. We propose that retail survey questionnaires ask whether the outlet has carried

condoms in the past month. If so, it should be ascertained which brands the outlet carried during that time period. The list of possible brands should be read out loud, and should include unbranded public sector condoms as well as commercial and social marketing brands. For each brand that was carried during the past month, it should be determined whether that brand is currently in stock, and whether the brand was unavailable or out of stock at any time during the past month.

Indicators of market sustainability.
Market value. Market value refers to the total amount of money that consumers are spending on condoms during a given time period. Specifically, it is the total dollar amount spent by consumers on condoms sold, distributed, or provided by all three sectors during the course of a calendar year. To calculate market value information, both the market volume (see above) and the retail price (see above) for each brand are needed. The retail price of commercial brands and social marketing sector condoms can be obtained through a retail audit. A representative sample of outlets is needed because the retail price depends on product demand, which may vary across outlets. Moreover, the per-condom retail price can vary depending on the number of condoms in the package.[53] While social marketing condoms often have a fixed retail price, retailers do not always adhere to this price. For example, a report on condom use in Uganda found that the social marketing condom brand Lifeguard (Marie Stopes International) was often sold at a higher price than the recommended consumer price.[12] For this reason, the average retail price should be used for calculating market value for each brand. The same is true for different brand extensions, such as Trust and Trust Studded (Population Services International), as well as for different package sizes (3-pack of Lovers Plus vs. 12-pack of Lovers Plus; Population Services International). Free condoms, by definition, have no market value, as consumers are not spending any money on them.

Brands available on the market. In most countries, there are no formal, publicly accessible records of the number of condom "brands" on the market. Hence, it is likely that information about brands on the market will need to be collected through a retail audit of a representative sample of outlets.

Brands entering the market. The number of new products, in this case, condoms, on the market gives an indication of whether the market is growing and attracting new brands. In this context, we use the terms "brands" not only to refer to commercial brands, but also social marketing brands. The best way to determine the number of new brands is to compare the number of condom brands on the market in two successive retail surveys. Although information on new condom brands on the market can also be obtained from key informants, such information is likely to be much less reliable, in part because key informants may not be familiar with the entire market (nationwide), and because it is difficult for informants to remember when exactly each brand came on the market.

Market leader's share. One way of measuring market sustainability is to assess the dominance of the market leader, or the entity that accounts for the largest number of condoms available on the market. A very dominant market leader implies the market depends heavily on a single source of supply, which is problematic, particularly if that source is subsidized.[15] The indicator of the leader's market share is the percentage of the total condom market volume that is sold, distributed, or provided by the market leader. The market leader may sell or distribute more than one condom brand. For example, in many countries Ansell distributes several different condom brands, such as Manix, LifeStyles, and Contempo.

Market subsidy. The number of unsubsidized brands on the market is one simple indicator

of market subsidies obtainable using a retail audit. Another indicator of market subsidy is the market share of fully or partially subsidized condom brands, which can be calculated using service statistics. In theory, population-based surveys also provide a good opportunity to obtain estimates of the level market subsidies. Mali and Uganda, for example, experimented with asking DHS questions about the condom brand the respondent used at last intercourse.[30,54,55] Unfortunately, preliminary analyses by the authors demonstrated that the survey results were inconsistent with data on the number of condoms distributed. Specifically, the two data sources gave very different results about the market share of the public and social marketing sectors.

We suspect that these inconsistencies may be due to a number of factors, including the fact that condom distribution data often refer to sales to the trade (rather than consumers). It is also possible that survey data on the condom brand used at last intercourse are not reliable, either because of recall problems or due to misreporting of the brand name. The latter is particularly likely to occur in countries where a condom brand name has become the generic word for condoms.[56] A number of studies on exposure to health communication materials have sought to reduce recall errors by showing respondents visual cues, such as a brochure showing photographs of the packaging of different brands.[30,54] Therefore, to minimize these types of errors, we recommend that population-based surveys only include questions on brand use when such questions are accompanied by visual cues (ie, pictures showing what the packages of different condom brands on the market look like).

Supply sources. The number of supply sources refers to the number of sources supplying condoms to the market. The government may be one supply source and non-governmental organizations (NGOs) that distribute condoms

may make up one or more sources. For the commercial sector, a source of supply could be the condom company itself, if it has an in-country presence. If a party other than the condom company imports commercially branded condoms, the importer would be the source of supply. Retail audits and key informant interviews help to identify the number of sources supplying the market with condoms. Key informants may include the government entity that coordinates condom imports (eg, a condom coordination unit or national HIV and AIDS coordination agency), NGOs that distribute or sell condoms, and key players in the country's commercial condom sector.

Indicators of market equity.
Equity in condom use and price as a barrier

to use. Two of the survey questions described earlier (condom use and barriers to condom use) can be used to measure equity in condom use and price as a barrier to use, provided that they are calculated separately for each wealth quintile. Condom use, as stated earlier, is included on most standard surveys, while the question about barriers to use has only been included in some surveys. The percentage of respondents who report that condoms "cost too much" as the primary reason for not using a condom at last sex indicates the extent to which price is a barrier to condom use. All recent DHS datasets already include the wealth quintile variable. For consistency, it is recommended that wealth quintiles for other nationally representative surveys are calculated using the same methodology.[57]

Discussion

Our review of existing TMA metrics and data collection instruments has highlighted the need for standardization of TMA indicators. Because there are many aspects of the total market, this standardization has implications for several data sources, including population-based surveys, retail audits, and service statistics. For example, having a standardized indicator of the universe of need will require adding questions on coital frequency and on dual protection to population-based surveys. Estimating market value and retail prices will require retail audits that collect information on the price to consumers for each package size of each brand and brand extension on the market. Retail audits should also include questions about stockouts in order to assess market accessibility and identify weaknesses in supply or distribution. Finally, service statistics on the market volume of products sold, distributed, or provided for each package size of

each brand or brand extension are necessary to calculate the value of the total market as well as brand share. Service statistics should be collected on an ongoing basis.

While a snapshot of the market is helpful for those considering a TMA, the true value of the data analysis comes from analyzing trends in the market. This requires consistent, high-quality data collected at regular intervals. Population-based surveys conducted at 5-year intervals are not frequent enough to capture changes in the market in a timely manner. For this reason, additional surveys may be required to supplement these surveys. Similarly, an effective TMA requires that retail audits be conducted at regular intervals.

In addition to the indicators recommended in this study, several others may be useful for planning

and assessing a TMA. For example, because the male condom market in many countries is heavily influenced by political, economic, and social factors, it may be helpful to develop country-specific TMA indicators, such as indicators of the government's commitment to improving the total market.[22,23,25] Additionally, because a successful TMA is dependent upon collaboration between market stakeholders, indicators that measure the amount of stakeholder interaction could be helpful. One example of such an indicator might be the number of meetings held with stakeholders from all three sectors present. Finally, after all three sectors agree upon the standardized indicators, it will be necessary to draft data sharing agreements and assign roles and responsibilities to all players involved in the TMA implementation process.

Conclusions

As donors increasingly recognize that subsidized health service delivery systems (including both free distribution and social marketing) cannot be sustained indefinitely, it will be necessary to find approaches that allow for market growth while decreasing reliance on donor funding. The TMA provides a framework within which all sectors can improve the health of the population while working towards their existing unique goals.

Standardization, and subsequent sharing, of data would be beneficial to all market stakeholders. The public and social marketing sectors will be able to use the data to make decisions about targeting and distribution of free and subsidized condoms ensuring that the market is equitable. The private sector will be able to efficiently target consumers that are able and willing to pay for condoms. All sectors will have more information about needed improvements with regard to condom distribution, branding and marketing, and pricing.

To successfully implement and maintain a TMA for male condoms, it is essential that the key actors in the public, social marketing, and commercial sectors coordinate with one another. A commitment to information-sharing among all stakeholders is essential to guarantee high-quality, reliable, and consistent data for analysis. Standardization of TMA indicators will help each sector to understand which data need to be collected to assess market health as well as how to report each indicator to ensure comparability of data. An indicator handbook for TMA would be useful for assuring consistency in data collection and reporting across sectors. We recommend a common data repository in order to share information easily among all groups.

Acknowledgements

References

1. UNAIDS. *Global Report: UNAIDS Report on the Global AIDS Epidemic 2013*. Geneva, Switzerland: UNAIDS; 2013.
2. Chikamata DM, Chinganya O, Jones H, RamaRao S. Dual needs: contraceptive and sexually transmitted infection protection in Lusaka, Zambia. *Int Fam Plan Perspect*. 2002;28(2):96-104.
3. Kleinschmidt I, Maggwa BN, Smit J, Beksinska ME, Rees H. Dual protection in sexually active women. *S Afr Med J*. 2003;93(11):854-857.
4. UNAIDS. Condoms and HIV prevention: Position statement by UNAIDS, UNFPA and WHO. http://www.unaids.org/en/resources/presscentre/featurestories/2009/march/20090319preventionposition/. Published 2004. Updated March 19, 2009. Accessed March 2, 2014.
5. Pallin SC, Meekers D, Lupu O, Longfield K. *A Total Market Approach for Male Condoms: Lesotho*. Washington, DC: Population Services International and United Nations Fund for Population Activities; 2013.
6. Pallin SC, Meekers D, Longfield K, Lupu O. *A Total Market Approach for Male Condoms: Uganda*. Washington, DC: Population Services International and United Nations Fund for Population Activities; 2013.
7. Pallin SC, Meekers D, Lupu O, Longfield K. *A Total Market Approach for Male Condoms: Swaziland*. Washington, DC: Population Services International and United Nations Fund for Population Activities; 2013.
8. Pallin SC, Meekers D, Lupu O, Longfield K. *A Total Market Approach for Male Condoms: South Africa*. Washington, DC: Population Services International and United Nations Fund for Population Activities; 2013.
9. Pallin SC, Meekers D, Lupu O, Longfield K. *A Total Market Approach for Male Condoms: Botswana*. Washington, DC: Population Services International and United Nations Fund for Population Activities; 2013.
10. Pallin SC, Meekers D, Lupu O, Longfield K. *A Total Market Approach for Male Condoms: Mali*. Washington, DC: Population Services International and United Nations Fund for Population Activities; 2013.
11. Honeyman S. One size doesn't fit all (Presentation 2): Total Market Approach (TMA): A Brief Overview. Paper presented at: PSP-*One* Online Social Marketing Conference; March 2008. http://shopsproject.org/sites/default/files/resources/5010_file_Total_Market_Approach_honeymanp3.pdf. Accessed March 2, 2014.
12. Gardiner E, Schwanenflugel D, Grace C. *Market Development Approaches Scoping Report*. London, UK: HLSP; 2006.
13. Pollard R. Social Marketing. An introduction to the Total Market Approach to commodities and services supply in low-income countries. Paper presented at: The George Washington University Conversations on Social Marketing Conference; November 6, 2007; Washington, DC.
14. Dougherty C, Chapman S. Broadening the bottom line. *Impact - The Magazine of PSI*. January 13, 2011;5:10-12. Washington, DC: Population Services International. http://psiimpact.com/wp-content/uploads/2014/10/Impact-Issue-5.pdf. Accessed July 1, 2013.
15. Barnes J, Vail J, Crosby D. *Total Market Initiatives for Reproductive Health*. Bethesda, MD: Strenghtening Health Outcomes through the Private Sector Project, Abt Associates; 2012.

16. PATH. Enhancing Equity and Sustainability of Public-Sector Family Planning. Project Brief: A Total Market Approach. http://www.path.org/publications/files/RH_enh_equity_fam_plan_overview.pdf. Published July 2013. Accessed September 1, 2013.

17. Vail J. Enhancing Equity and Sustainability of Public-Sector Family Planning. Seattle, WA: PATH. http://www.path.org/publications/files/RH_enh_equity_fam_plan_overview.pdf. Published October 2011. Accessed July 1, 2013.

18. Joint United Nations Programme on HIV/AIDS. *National AIDS Programmes: A Guide to Monitoring and Evaluation*. Geneva, Switzerland: UNAIDS; 2000.

19. World Health Organization. *Evaluation of a National AIDS Programme: A Methods Package. 1. Prevention of HIV Infection*. Geneva, Switzerland: World Health Organization; 1994.

20. Bertrand J, Escudero G. *Compendium of Indicators for Evaluating Reproductive Health Programs*. Chapel Hill, NC: MEASURE Evaluation, Carolina Population Center, University of North Carolina at Chapel Hill; 2002.

21. MEASURE Evaluation, World Health Organization, Population Services International. *MEASURE Evaluation/WHO/PSI Compiled Condom Availability and Quality Protocol*. Chapel Hill, NC: MEASURE Evaluation, Carolina Population Center, University of North Carolina; 2000.

22. Population Services International. *Total Market Approach to Family Planning in Cambodia: A Case Study*. Washington, DC: Population Services International; 2012.

23. Marie Stopes International, Futures Group, and UNFPA/Madagascar. Increasing participation from all family planning sectors in Madagascar. Total Market Initiative. Madagscar Info Sheet. Brussels, Belgium: Reproductive Health Supplies Coalition; 2010. http://www.rhsupplies.org/fileadmin/user_upload/MDA_Documents/TMI_Madagascar_info_sheet.pdf. Accessed July 5, 2014.

24. Drake JK. *Developing Total Market Strategies for Family Planning in Nicaragu*a. Seattle, WA: PATH; 2013.

25. UNFPA and PATH. *Road-Mapping a Total Market Approach: Eastern Europe and Central Asia Workshops, April 2013*. Seattle, WA: PATH; 2013.

26. Population Services International. *Table of Metrics*. Washington, DC: Population Services International; 2012. http://www.psi.org/resources/research-metrics/publications/table-tma-metrics Updated December 3, 2013. Accessed January 5, 2014.

27. Gertler P, World Bank. *Impact evaluation in practice*. Washington, DC: World Bank; 2011.

28. Amon J, Brown T, Hogle J, et al. *Behavioral Surveillance Surveys: Guidelines for Repeated Behavioral Surveys in Populations at Risk of HIV*. Arlington, VA: Family Health International; 2000.

29. John Snow International. *Guidelines for Implementing Computerized Logistics Management Information Systems (LMIS)*. 2nd ed. Arlington, VA: DELIVER Project, John Snow International; 2006.

30. Uganda Bureau of Statistics (UBOS), ICF International Inc. *Uganda Demographic and Health Survey 2011*. Kampala, Uganda and Calverton, MD: UBOS and ICF International Inc; 2012.

31. MEASURE DHS. *Demographic and Health Surveys*. Model Man's Questionnaire with HIV/AIDS Module. Calverton, MD: Measure DHS; 2008.

32. MEASURE DHS. *Demographic and Health Surveys*. Model Woman's Questionnaire with HIV/AIDS and Malaria Modules. Calverton, MD: Measure DHS; 2008.

33. UNICEF. MICS-4 Questionnaire for Individual Women (Without Birth History).

UNICEF Multiple Indicator Cluster Surveys Questionnaires and Indicator List. http://www.childinfo.org/mics4_questionnaire.html. Updated March, 2013. Accessed July 1, 2014.

34. UNICEF. MICS-4 Questionnaire for Individual Men. UNICEF Multiple Indicator Cluster Surveys Questionnaires and Indicator List. http://www.childinfo.org/mics4_questionnaire.html. Updated March, 2013. Accessed July 1, 2014.

35. UNICEF. MICS-5 Questionnaire for Individual Women. UNICEF Multiple Indicator Cluster Surveys Questionnaires and Indicator List. http://www.childinfo.org/mics5_questionnaire.html. Updated September 2014. Accessed July 1, 2014.

36. UNICEF. MICS-5 Questionnaire for Individual Men. UNICEF Multiple Indicator Cluster Surveys Questionnaires and Indicator List. http://www.childinfo.org/mics5_questionnaire.html. Updated September 2014. Accessed July 1, 2014.

37. U.S. Government's Global Hunger and Food Security Initiative. Feed the Future Indicator Handbook: Definition Sheets. http://www.icarda.org/wli/pdfs/FTF_indicator_definitions.pdf. Updated October 3, 2011. Accessed July 1, 2013.

38. STOP TB Partnership. *Compendium of Indicators for Monitoring and Evaluating National Tuberculosis Programs*. Geneva, Switzerland: World Health Organization; 2004.

39. Andreasen AR. *Conducting an Effective Retail Audit*. Washington, DC: SOMARC/The Futures Group; 1988.

40. Berman J, Musembi B, Agha A. *Monitoring Tools for Social Marketing Projects: The Distribution Survey*. Washington, DC: Research Division, Population Services International; 1997.

41. Richter K, Meekers D. *The Distribution Survey (DS). Tool Kits for Social Marketing Research*. Washington DC: Research

Division, Population Services International; 2000.

42. Population Services International. Universe of Need: Methodology Overview. Washington, DC: Population Services International; 2013.

43. Central Statistical Office (Zimbabwe), Macro International Inc. *Zimbabwe Demographic and Health Survey 1994*. Calverton, MD: Central Statistical Office and Macro International, Inc; 1995.

44. Segamba Lo, Burundi Dpdlp, Institute for Resource Development/Westinghouse DaHS. *Enquête démographique et de santé au Burundi, 1987*. Gitega, Burundi and Columbia, MD: République du Burundi, Ministère de l'intérieur, and Institute for Resource Development/Westinghouse; 1988.

45. National Council for Population and Development (Kenya), Macro Systems. Institute for Resource Development. *Kenya Demographic and Health Survey, 1989*. Nairobi, Kenya and Columbia, MD: National Council for Population and Development, and Institute for Resource Development/Macro Systems; 1989.

46. Ghana Statistical Service, Macro Systems. Institute for Resource Development, Noguchi Memorial Institute for Medical Research, ORC Macro. *Ghana Demographic and Health Survey 1988*. Accra, Ghana and Columbia, MD: Ghana Statistical Service and Institute for Resource Development/Macro Systems; 1989.

47. USAID. Couple Years of Protection. http://www.usaid.gov/what-we-do/global-health/family-planning/couple-years-protection-cyp. Updated April 9, 2014. Accessed July 1, 2014.

48. Central Statistical Office (Zimbabwe), Macro International Inc. *Zimbabwe Demographic and Health Survey 2005-06*. Calverton, MD: CSO and Macro International Inc; 2007.

49. MEASURE Evaluation. Family Planning and Reproductive Health Indicators Database; 2013. www.cpc.unc.edu/measure/prh/rh_

indicators. Accessed July 2, 2013.

50. MEASURE DHS. HIV/AIDS Survey Indicators Database; 2013. http://hivdata.measuredhs.com/ind_detl.cfm?ind_id=50&prog_area_id=8. Accessed January 14, 2014.

51. ICF International Inc. Demographic and Health Surveys Methodology - Questionnaires: Household, Woman's, and Man's. MEASURE DHS Phase III. Calverton, MD: ICF International Inc; 2011. http://www.measuredhs.com/publications/publication-DHSQ6-DHS-Questionnaires-and-Manuals.cfm. Accessed December 1, 2012.

52. World Health Organization. *Guidelines for measuring national HIV prevalence in population-based surveys*. Geneva, Switzerland: UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance; 2005.

53. Weissman E. *The Cost of Family Planning in Mali*. Washington, DC: United States Agency for International Development (USAID); 2009.

54. Uganda Bureau of Statistics (UBOS) MII. *Uganda Demographic and Health Survey 2006*. Calverton, MD: Uganda Bureau of Statistics (UBOS) and Macro International Inc; 2007.

55. Samaké S, Traoré SM, Ba S, et al. *Enquête Démographique et de Santé du Mali 2006*. Bamako, Mali, and Calverton, MD: Cellule de Planification et de Statistique du Ministère de la Santé (CPS/MS), Direction Nationale de la Statistique et de l'Informatique du Ministère de l'Économie, de l'Industrie et du Commerce (DNSI/MEIC), and Macro International Inc; 2007.

56. Harvey PD. *Let Every Child Be Wanted. How Social Marketing is Revolutionizing Contraceptive Use Around the World*. Westport, CT: Auburn House; 1999.

57. Rutstein SO, Johnson K. *The DHS Wealth Index*. Calverton, MD: ORC Macro; 2004. Demographic and Health Surveys (DHS) Comparative Reports, No. 6.

Author Information

Sarah Cary Pallin holds a Masters in Public Health degree from the Tulane School of Public Health and Tropical Medicine and currently works for the Louisiana Public Health Institute. Her recent work focuses on domestic violence in Bolivia and TMA for male condoms in six African countries.

Dominique Meekers, PhD, is a Professor at the Tulane School of Public Health and a Visiting Professor at Ghent University in Belgium. He has published numerous journal articles on the impact of health communication and social marketing campaigns.

Both authors made substantial contributions to the literature review and identification of indicators, drafted and revised the article, and approved the final version for publication.