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Modeling and Reinforcement to Combat HIV: The MARCH Approach to Behavior Change

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Theory and research suggest that behavioral interventions to prevent HIV/AIDS may be most effective when they are personalized and affectively compelling, when they provide models of desired behaviors, and when they are linked to social and cultural narratives. Effective strategies must also take into account the opportunities and obstacles present in the local environment. The Modeling and Reinforcement to Combat HIV (MARCH) projects combine key aspects of individual behavior change with efforts to change social norms.

There are 2 main components to the program: entertainment as a vehicle for education (long-running serialized dramas on radio or television portray role models evolving toward the adoption of positive behaviors) and interpersonal reinforcement at the community level (support from friends, family members, and others can help people initiate behavior changes; support through changes in social norms is necessary for behavioral effects to be sustained over time). Both media and interpersonal intervention activities should be linked to existing resources in the community and, wherever possible, provide increased access to preventive services, supplies, and other supporting elements. (*Am J Public Health.* 2001;91:1602–1607)

The US government has joined the International Partnership against AIDS in Africa to help stop the spread and mitigate the impact of HIV/AIDS. In the winter of 2000, the Leadership and Investment in Fighting an Epidemic (LIFE) Initiative was launched in 14 African countries and India. The United States initially provided $100 million in support and increased that amount in 2001, when 9 nations from Africa, Asia, Latin America, and the Caribbean were added to the initiative. As a partner in this initiative, the US Centers for Disease Control and Prevention (CDC) works with national governments, the US Agency for International Development, and other international organizations to develop HIV/AIDS prevention programs.

The Global AIDS Program, which CDC initiated, seeks to implement projects in primary prevention, improve community- and home-based care and treatment, and develop capacity and infrastructure. In the area of primary prevention, the Global AIDS Program has developed a model strategy for changing behavior that integrates entertainment as a vehicle for education ("entertainment–education") with interpersonal reinforcement. This program strategy is called MARCH: Modeling and Reinforcement to Combat HIV.

BACKGROUND

Jerome Bruner has argued that an endangered society is one whose members can no longer change the stories they tell themselves.[1] The inability to script alternative narratives—to change our stories—can be lethal.

Nowhere is this more apparent than in Africa, where HIV/AIDS took an estimated 2.2 million lives in 1999,[2] and where the reality of having an increasingly infected young adult population threatens the whole fabric of society, with teachers, workers, and parents dying at an unprecedented rate. In Zimbabwe, for example, an estimated 500 000 people have died of AIDS, leaving approximately 543 000 orphans.[3] In Botswana, infection rates among pregnant women attending antenatal clinics average 38%, and rates as high as 50% have been reported.[2] In Ethiopia, a nation plagued by the continent's highest maternal mortality and lowest rates of contraceptive use, an estimated 3 million people are also now infected with HIV.[2]

In the face of these public health threats, women and men in developing countries have a limited ability to imagine other futures and other choices. They are held hostage by a societal narrative in which the cycle of early marriage, unprotected sexual behavior, multiple unplanned births, HIV infection, and early death is seen as unavoidable, and where patterns of personal behavior are thought to be unalterable.

The purpose of MARCH is to intervene in these incapacitating story lines by providing alternative narratives in which individual control over sexual and reproductive behavior is made not only desirable but, more important, possible. MARCH combines 2 key approaches to behavioral change: entertainment–education, through broadcast media, and interpersonal reinforcement at the community level. Evaluation of program implementation and impact is also an integral part of the MARCH strategy; both process and outcome evaluations are critical to understanding not only what effects each program has but how those effects are achieved. This information is essential for dissemination and replication of the program on a broader scale.

Here we describe a distinctive theory-based approach to interventions to change behavior in the developing world and report on the status of current projects. Elsewhere in this issue of the Journal, Panford and colleagues describe how this model will be tailored for 2 rural communities in Ghana.[4]

THEORETIC FRAMEWORK AND KEY OPERATIONAL FEATURES

From social cognitive theorists[5,6] to community psychologists,[7,8] many behavioral scientists agree that to be maximally effective, interventions to change behavior must create positive outcome expectations, increase people's sense of self-efficacy, and remove impediments. If these objectives are to be achieved, individual, social, and cultural factors that influence behavior must be addressed and

structural and environmental impediments to behavioral change must be removed.

Most communication strategies to change behavior focus on increasing positive-outcome expectations or on the perceived benefits of behavior change, a process that includes highlighting the negative consequences of not changing. Positive-outcome expectations can include physical or material rewards (e.g., good health or prosperity), social rewards (e.g., recognition or support), or personal rewards (e.g., fulfillment of role of good mother or responsible son). Such strategies are most effective with people who already believe they are capable of changing their behavior.[9]

A more complete behavior change strategy must also focus on a second factor—increasing self-efficacy.[10] That is, if one expects individuals to apply the effort required to change and to persist in the face of obstacles, the individuals need to believe that they are capable of changing their behavior. For people living in developing countries, impediments may be environmental, social, and cultural, including lack of health care services, widespread poverty, the stigma associated with HIV infection, and cultural norms that may constrain certain choices, especially those of women and young people.

An examination of the underlying theoretic mechanisms and strategies emloyed by successful behavioral interventions suggests that 5 features are especially important for promoting behavioral change[5–19] (Table 1). These features guide the development of the 2 principal components of MARCH projects.

Component 1: Modeling Through Entertainment–Education

The first component of MARCH is the use of role models in entertainment that educates. Whether in the form of testimonials by persons living with HIV/AIDS or in the form of peer education strategies, the use of real-life role models such as friends, family members, and opinion leaders can be extremely powerful.[11,20,21] Using role models in the media can also be effective.[22]

Role models can do several things. They can educate by providing basic information on how to change and by modeling the steps. They can also persuade and motivate by altering people's perceptions of the costs and benefits of a behavior. By showing the consequences of specific courses of action, models can illustrate how behavior may result in the achievement of desired goals or rewards and thus can influence people's expectations regarding the likely consequences of a behavior change. Anticipated consequences or outcomes can be powerful motivators.[10]

To successfully change their behavior, people must not only want an outcome the behavior is likely to produce; they must also feel capable of performing the behavior and believe that by doing so they will obtain the desired outcome. Role models are particularly effective at enhancing belief in self-efficacy.[10] When a man or woman sees a role model similar to him- or herself overcome an obstacle and achieve a desired reward, this provides information for social comparison, that is, "If he or she can do that, perhaps I can, too." Role models can demonstrate ways to think about a problem and cope with setbacks, as well as ways to achieve a goal. They can also help create an emotional stake in changing behavior, because we often want to emulate people with whom we have emotional bonds.[23]

Role modeling is accomplished in many ways. In choosing entertainment–education as a major component of our approach, we decided to emphasize its narrative, or storytelling, component. Scholars in disciplines from cognitive and social psychology to literary studies have argued that narrative forms govern thought: we process information by coding it into characters, scenes, and plots. In a sense, the MARCH projects can be thought of as a kind of narrative intervention that permits people "to understand the origins, meanings, and significance of [their] difficulties, and to do so in a way that makes change conceivable and attainable."[1(p113)] One reason serial drama can educate is because it is closely aligned with the customs and norms of its audience and uses narrative forms with which they are familiar. Entertainment focuses on emotional as well as cognitive factors that influence behavior, and thus it keeps the attention of the intended audience.

The basic idea of entertainment–education is not new. For centuries, societies have informally used poetry, plays, puppet shows, and drama to inform and enlighten as well as to entertain.[24] As Panford et al. suggest, enter-

TABLE 1—Key Features of Successful Behavioral Interventions

Feature	Contribution to Behavior Change	Key References
Use of role models	Provides examples of how to change.	10, 11, 20
	Increases confidence in ability to change behavior.	
	Persuades audience of positive benefits of change.	
Affective impact	Affective/emotional responses encourage attention to and retention of information.	12, 13, 14
	Emotions create opportunities for identification.	
Links to social and cultural narratives	Information can be easily integrated into social expectations, norms, values, and political and economic culture of affected audience.	1, 6, 15
	Intervention is applicable to audience's everyday lives.	
	Intervention is presented in a narrative form familiar to audience.	
Personalization	Message is reinforced interpersonally.	7, 11, 16, 17
	Attention is individualized.	
	Messages are developed with issues and concerns of affected population in mind.	
Cognizance of impediments and facilitators	Links program to services or supplies.	7, 8, 18, 19
	Reflects infrastructure accurately.	
	Capitalizes on formal and informal supporting norms and structures.	

tainment–education has deep roots in many parts of the world, including Africa.[4] Now, however, instead of tribal elders passing down stories, or the traveling storyteller spreading stories across the countryside, mass media, both print and broadcast, carry these messages to the community.

One approach to entertainment–education shown to be effective in changing audience behavior was developed in the 1970s by Mexican playwright and television producer Miguel Sabido.[25] Sabido applies social cognitive theories of modeling in highly entertaining, long-running soap operas with characters who become role models and attract a huge audience in the process. There are "good guys," who are consistently rewarded, and "bad guys," who are consistently punished. There are also "identification" characters, designed to be most like the audience (neither consistently good nor consistently bad). These identification characters are influenced by the positive and negative role model characters and evolve over time to change their attitudes and behaviors so as to reach their goals.

In dramas like Sabido's, behavior change occurs at a realistic pace, over hundreds of episodes, and within the complexity of issues that audience members confront in their own lives. For example, this method could be used to portray characters coping with the consequences of HIV infection or an AIDS diagnosis or resisting behaviors that put them at risk for sexually transmitted diseases. Characters could depict affected family members, neighbors, and caregivers, who could model attitudes and behaviors that promote compassion, appropriate care, and reduction of stigmatizing attitudes toward people with HIV/AIDS.

An evaluation of a Sabido-style radio serial drama was conducted in Tanzania.[26,27] In 1993, Radio Tanzania began airing a radio soap opera called *Twende Na Wakati*, or *Let's Go With the Times*. The goals were to promote reproductive health, family planning, and HIV prevention. For 2 years this drama played twice weekly in all of Tanzania, except in a region surrounding the city of Dodoma, which at that time was broadcasting a locally produced music program. Conditions were ideal for a quasi experiment to assess the impact of this soap opera on behavior. In comparison with the Dodoma-area residents, survey respondents in areas receiving the Radio Tanzania broadcast reported greater commitment to use family planning and higher adoption rates of sexual and reproductive health practices to prevent HIV. Attendance at family planning clinics grew more in the broadcast area than in the nonbroadcast area.

Component 2: Interpersonal Reinforcement Through Community-Level Support

Consistent with cognitive scientists' focus on narrative forms and with the importance of cultural representations of accepted behavior, social and community psychologists have long maintained that individual behavior responds to and is constrained by the interpersonal, social, and environmental contexts in which it occurs.[8,18,19,28,29] HIV prevention approaches that modify social and cultural norms in at-risk populations are essential to stemming the tide of the epidemic in Africa. Accordingly, MARCH's interpersonal reinforcement component is as important as role modeling. MARCH projects seek to involve credible members of the affected community and mobilize them to endorse and support behavior changes among members of their own peer, family, and social networks.

Several HIV prevention interventions have successfully coordinated a broad range of media, interpersonal reinforcement, and community mobilization strategies.[30–32] An early example was the CDC-sponsored AIDS Community Demonstration Projects, an innovative 5-city trial to evaluate the effects of a community intervention on HIV risk behavior in selected populations at increased risk.[33] This intervention was explicitly modeled after other health promotion community trials,[34] but it incorporated additional theoretic elements, such as the theory of reasoned action[35] and stages of change.[36]

The intervention's key components were (1) creation of small media materials (flyers, brochures, pamphlets), specifically stories depicting role models progressing through stages of behavior change for key risk behaviors; (2) mobilization of members of the affected community to distribute small media materials and verbally reinforce the prevention messages; and (3) increased availability of condoms and (for injection drug users) bleach kits. An evaluation demonstrated that community-level interventions can modify HIV risk behaviors among populations at risk.[33]

MARCH builds on these experiences as well as on the many important program strategies used by our global partners, which demonstrate their vast experience with participatory research methods, community mobilization, and use of innovative communications for behavioral change.[37–40] Many of the indigenous programs are not well documented in the literature, and that is one of the important reasons for this special issue of the Journal.

In MARCH, the serial drama is used as a vehicle for integrating a wide range of interpersonal reinforcement activities. During the period of the drama broadcast, interpersonal and community communication networks can encourage and reinforce attention to the drama, endorse and support the goals and behaviors of specific characters, distribute health-related materials, link people to community services, and advocate other community-level changes. In addition to helping individuals initiate behavioral changes, community-level interventions support broader social normative changes necessary for sustaining personal behavioral change.

We believe that a behavioral change approach integrating key aspects of individual behavior change with social normative change, using entertainment–education and interpersonal and community reinforcement strategies, can be effective in reducing HIV risk behaviors on a large scale. To be effective, however, this approach requires extensive groundwork and preparation, including a period of formative evaluation that assesses resources in the community, the cultural influences on target behaviors, and local practices and customs. In addition, careful coordination among stakeholders and administrators at every level is important, and ongoing formative, process, and outcome evaluations are necessary to ensure adherence to the principles of both drama and behavior change and to capitalize on opportunities for community participation and reinforcement.

PROGRESS REPORT

In the MARCH approach, behavioral change is accomplished by going far beyond

TABLE 2—Formative Evaluation Techniques and Purposes

Technique	Purpose
Media assessment	Identifies mass media consumption patterns of affected population.
	Describes the impact of the media on sexual and reproductive behavior.
Health infrastructure assessment	Identifies and describes available medical and social services dealing with reproductive health and sexual risk reduction.
Literature review	Identifies research on topics related to epidemiology and psychosocial factors related to reproductive health and HIV/AIDS and other sexually transmitted diseases.
	Identifies humanistic theory and cultural reports, specifically on topics such as how health, sexuality, and gender roles are expressed in the culture.
Community infrastructure and network assessment	Reviews community-based activities.
	Identifies points of entry and opportunities for community mobilization.
	Assesses social and structural barriers to community involvement.
Qualitative assessment	Summarizes behavior and attitudes of affected population with regard to relevant topics, including barriers to and facilitators of sexual and reproductive health behavior change.
	Investigates personal, social, and cultural ways in which people understand their health and behavior, including the discursive and symbolic practices, specifically (1) parts of stories that people use to make sense of situations (e.g., culturally common characters, relationships, scenes, and scenarios) and (2) rhetorical means used to link parts into larger units (e.g., culturally common causal explanations, inferences, and justifications for HIV-related behaviors).
	Identifies and elucidates the settings, situations, and material conditions that provide the context for reproductive health behaviors of young men and women.
	Describes people's perception of the relevance, accessibility, and quality of services that exist at the local level.
	Identifies people and groups who interact with members of the affected populations and who are seen as credible sources of information and influence by young men and women.

the traditional method of promoting the benefits of adopting the desired risk reduction behaviors. Affected populations are helped to identify with new role models, acquire new ways of thinking about and reaching goals, and increase their confidence that they can attain and maintain the behaviors they have been persuaded are necessary for avoiding HIV infection. The foundation for accomplishing these objectives occurs during the formative evaluation process, in which specific techniques (Table 2) are used to elicit the information necessary to create a culturally relevant serial drama and corresponding community reinforcement activities.

A primary aim of the formative evaluation is to enable a local production team (i.e., producers and scriptwriters) to create an entertaining, believable, and effective serial drama focusing on HIV/AIDS prevention and coping strategies. Ultimately, the drama should help the audience make positive decisions about safeguarding their health (or about coping with their HIV-positive status or with AIDS) while creating a social climate in which threats to reproductive health are treated with both vigilance and compassion.

The formative evaluation includes extensive collection of qualitative data to help ensure that the production team, in collaboration with other stakeholders in the community, can do the following:

- Create believable characters that illustrate positive and negative role models and transitional characters
- Provide story lines, plots, and subplots that integrate reproductive health issues with social situations that the audience finds authentic and engaging[41]
- Correctly identify the principal obstacles to reproductive health and identify the means by which such obstacles can be overcome
- Motivate the audience to change risky behaviors and negative attitudes
- Direct the audience to the resources and services that enable such change
- Form a local advisory committee
- Design an interpersonal reinforcement–community intervention protocol
- Develop plans for coordinating the serial drama with HIV-related health services and with community intervention activities
- Develop training programs for community networkers (persons who might distribute materials, convene listening or viewing groups, and provide support in other relevant areas)
- Develop program monitoring and feedback mechanisms.

Important secondary applications of the formative evaluation will include helping to monitor the success of the serial drama and providing some baseline information for the outcome evaluation. The outcome evaluation design will vary in each country, depending on the availability of data (e.g., clinic utilization data, population-based survey data), in-country resources for conducting the evaluation, and other factors. At a minimum, pre- and postintervention measures of exposure to the program and key psychosocial and behavioral indicators will be assessed to determine whether the program is having the intended effects.

Methods for assessing change in these indicators may consist of periodic collection of self-reported data in sentinel sites, including through interviews and focus groups with samples of audience and community members. Clinic utilization data may be reviewed for increases in service use, and intake interviews at selected clinic sites may be conducted to identify referral sources and reasons clients give for seeking services (e.g., heard something on the radio, was referred by community member).

Finally, a guiding principle of the MARCH approach is that any behavioral change intervention must be rooted in local realities, and thus collaboration is essential. Participation and collaboration at all levels is sought (faith- and community-based organizations, ministries of health, other governmental and nongovernmental organizations, United Nations agencies, and other local, regional, and international partners). CDC provides extensive technical assistance to these partners in several ways (e.g., through the CARE–CDC Health Initiative, the Global AIDS Program,

TABLE 3—Status of MARCH Projects to Change HIV/AIDS Risk Behavior in Africa: June 2001

Country	Stage[a]	Affected Population	Key Outcome Measures	Special Circumstances
Botswana	5	Setswana-speaking, aged ≥15 y	Use of VCT, PMTCT, other services; HIV/STD risk behavior change	Excellent infrastructure, small population and thus a shortage of skilled workers
Ethiopia	3	Amharic- and Oromiffa- speaking, aged ≥15 y	Use of VCT services; stigma reduction; attitude and HIV/STD risk behavior change	Lack of infrastructure, extreme poverty, low status of women
Ghana	3	Persons aged 15–50 y in Wassa West and Adansi West mining districts	HIV/STD risk behavior change	Isolated mining communities, transient workers
Zimbabwe	3	Shona- and Ndebele-speaking, aged 15–29 y	Use of VCT, PMTCT, home and community care services; HIV/STD risk behavior change; living positively, planning for children's welfare	Declining economy, civil unrest

Note. VCT= voluntary HIV counseling and testing; PMTCT= prevention of mother-to-child transmission; STD = sexually transmitted disease.
[a]Stage 1: Conduct needs assessment and establish ties with in-country partners.
Stage 2: Develop protocols and instruments for formative evaluation.
Stage 3: Implement formative evaluation.
Stage 4: Analyze formative evaluation, develop and pilot serial dramas, develop activities for interpersonal reinforcement component.
Stage 5: Implement entertainment–education and interpersonal reinforcement components.
Stage 6: Conduct process and outcome evaluation and disseminate lessons learned.

interagency agreements with the World Health Organization's African Region) and tries to ensure that activities and messages are tailored to each country's needs. Specific activities are designed jointly with each participating country, taking into consideration institutional interest and capacity as well as existing partnerships and ongoing activities. The status of MARCH activities in several countries is described in Table 3.

DISCUSSION

Although the MARCH approach shares many features with other approaches to using entertainment–education for achieving behavioral change, it is distinct in several important ways. First, the approach focuses as much on enabling men and women to enact and maintain new cognitive and behavioral patterns as on promoting the behaviors themselves. Thus, the approach seeks to enhance self-efficacy and reduce social and physical impediments in the environment, as well as to alter the perceived costs and benefits of adopting a new behavior. It does this through the extensive use of role models with whom the audience can identify as well as by creating opportunities for reinforcement and social support and by facilitating access to services in the community. Because action is initially shaped in thought, the presentation of alternative narratives in serial drama aims to open up new possibilities for making health-promoting choices. And, by contributing to the creation of a more hospitable normative environment, MARCH hopes to help young men and women find opportunities to attempt and succeed in adopting new behaviors.

A second distinction of MARCH is that the goal is long-term rather than short-term change. MARCH attempts to do nothing less than change personal, social, and cultural views of sexual and reproductive health behavior, as well as the behaviors themselves, in individual men and women and in their communities. This approach may not demonstrate dramatic short-term increases in, for example, sales of condoms, but it should, over time, change the patterns of sexual communication, interaction, and negotiation in the society. These changes will be slow and initially, perhaps, imperceptible, but ultimately change at this deeper level is essential to stopping the HIV/AIDS epidemic.

Finally, MARCH has a theory-refining objective, because there are key theoretic questions that may have important implications for public health practice. One question of great interest, on both theoretic and practical levels, is how identification with role models in the media really works to influence behavior. Theory provides many clues, and the mechanisms of attribution, social learning, and parasocial interaction have been extensively investigated.[5,23,42]

Identification with role models in the media may take several forms, however.[22] It may be that popular characters in a serial drama actually serve not as behavioral models but rather as admired, sympathetic, or desirable personae in ways that may or may not induce behavior change. Thus, it is important to ask several questions: (1) Under what conditions is identification with media role models effective in inducing behavior change? (2) How closely must a person identify with the model for social comparison processes to result in enhanced self-efficacy and thus prompt attempts at behavior change? (3) Can program planners adapt programs produced elsewhere, or is it critical that the models in the drama reflect the exact settings, customs, practices, and personalities of the society? (4) How much impact would be lost if, for example, soap operas developed in Botswana were translated into local languages and broadcast in Zimbabwe?

By adapting dramas created in one country and broadcasting them elsewhere, perhaps in parallel with a locally produced program, we may be able to detect differential effects and thereby contribute to the understanding of how entertainment–education works. Current theory strongly suggests that models should be as similar to the audience as possible. If, in fact, programs maintain their effectiveness across settings when small adaptations are made, MARCH projects could be implemented at a lower cost on a

much broader scale. If, on the other hand, there are significant reductions in impact, by carefully delineating the ways in which audiences identify with favorite characters and by investigating associations between types of identification and actual behavior change, we might still assist program planners in streamlining the process of program development and implementation.

CONCLUSIONS

As Bruner and others have argued, stories are how we make sense of everyday events; the scripts we have collected over a lifetime give shape to our experience and help us anticipate and act upon current situations. For many in sub-Saharan Africa, the story of HIV and other threats to reproductive health is essentially a story of isolation, stigmatization, and social paralysis. We can do much to help change that story. By combining the reach of radio or television with the power of narrative, and by providing supporting elements in the environment, we may equip young women and men with the resources necessary to rewrite the script. ■

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