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# A Framework for Health Communication Across the HIV Treatment Continuum

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**Background:** As test and treat rolls out, effective interventions are needed to address the determinants of outcomes across the HIV treatment continuum and ensure that people infected with HIV are promptly tested, initiate treatment early, adhere to treatment, and are virally suppressed. Communication approaches offer viable options for promoting relevant behaviors across the continuum.

**Conceptual Framework:** This article introduces a conceptual framework, which can guide the development of effective health communication interventions and activities that aim to impact behaviors across the HIV treatment continuum in low- and medium-income countries. The framework includes HIV testing and counseling, linkage to care, retention in pre-antiretroviral therapy and antiretroviral therapy initiation in one single-stage linkage to care and treatment, and adherence for viral suppression. The determinants of behaviors vary across the continuum and include both facilitators and barriers with communication interventions designed to focus on specific determinants presented in the model. At each stage, relevant determinants occur at the various levels of the social-ecological model: intrapersonal, interpersonal, health services, community, and policy. Effective health communication interventions have mainly relied on mHealth, interpersonal communication through service providers and peers, community support groups, and treatment supporters.

**Discussion:** The conceptual framework and evidence presented highlight areas across the continuum where health communication can significantly impact treatment outcomes to reach the 90-90-90 goals by strategically addressing key behavioral determinants. As test and treat rolls out, multifaceted health communication approaches will be critical.

**Key Words:** HIV, health communication, treatment continuum, determinants, interventions

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## INTRODUCTION

For antiretroviral therapy (ART) to achieve its maximum benefits at the population level, people living with HIV must be diagnosed early, must initiate treatment, must adhere to their medications, and ultimately must achieve and sustain an undetectable viral load.<sup>1–5</sup> There is considerable attrition at each step, resulting in a cascade of care described by many researchers.<sup>6–11</sup>

Although the UNAIDS 90-90-90 goals [that 90% of all people living with HIV (PLHIV) know their status, 90% of all diagnosed PLHIV receive ART, and 90% of all persons receiving ART achieve viral suppression] are ambitious with the potential<sup>12</sup> to reduce new infections greatly by 2020,<sup>13</sup> few countries are well poised to attain these targets.<sup>11,14</sup> For country-level efforts to make considerable impact on HIV-related outcomes, it is critical to identify and address the factors or determinants that influence desired behaviors at each stage of the continuum. Furthermore, as test and treat (a model promoting targeted testing and initiation of all PLHIV on ART irrespective of the CD4 level) rolls out, the ability to positively influence behavior to test early and engage in care when one still feels well will become even more pressing. The social-ecological model which recognizes multiple levels of influence on behavior provides a useful framework for understanding the factors affecting behaviors across the continuum.<sup>15</sup>

This article builds on prior research in the literature<sup>16–19</sup> and expounds the critical role of strategic health communication to influence behaviors throughout the continuum. We define social and behavioral change communication or health communication as the art and science of promoting and protecting public health. Health communication is a process with multiple functions, including informing people about health-protective behaviors, persuading or motivating people to adopt health-protective behaviors, building social connections, and fostering an enabling environment.<sup>18</sup> Health communication can influence behaviors along the HIV continuum irrespective of where the behavior occurs along the social-ecological model.<sup>15</sup> For example, strategically designed communication can strengthen self-efficacy and motivate individuals to get tested and obtain their results<sup>20,21</sup>; can empower HIV counselors to better engage with

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their clients and address their ART-related concerns to successfully link them to HIV care<sup>22,23</sup>; and can encourage adherence and retention<sup>24</sup> to achieve viral suppression. Communication can also help to strengthen social support for PLHIV and address stigma, a key barrier to ART initiation and adherence.<sup>25,26</sup>

In this article, we review selected literature on the antecedents of behaviors along the continuum, and health communication interventions to address such antecedents. Articles were included that met 7 criteria: (1) geographic focus on low and middle income countries, (2) focus on one or more elements of the HIV continuum of care, (3) focus on behavioral rather than biomedical aspects of care, (4) focus on determinants and/or interventions, (5) based on theoretical or empirical data, (6) be peer reviewed, and (7) be published between 2005 and 2016.

### CONCEPTUAL FRAMEWORK FOR THE ROLE OF HEALTH COMMUNICATION IN HIV TREATMENT CONTINUUM

This article introduces a conceptual framework (Fig. 1), informed by a social-ecological perspective,<sup>15,27</sup> to guide the development of effective health communication interventions that have been shown to impact behaviors across the HIV treatment continuum. Consistent with the World Health Organization's (WHO) guidelines on HIV treatment and the current focus on test and treat,<sup>28</sup> the framework includes linkage to care, retention in pre-ART and ART initiation in 1 single-stage linkage to care, and treatment. Our hope is that the framework helps to increase the success of test and treat efforts and positively impacts treatment outcomes. The top row in the model presents the desired behaviors at each of these 3 key stages of the continuum. The determinants of behavior operate at multiple levels. From top to bottom, these levels include national

policy, community, services, interpersonal, and intrapersonal levels. At each level and for each behavior, determinants include both facilitators and barriers with communication interventions designed to focus on specific determinants presented in the model. The last row of the model presents health communication interventions found in the articles reviewed, as well as the suggested approaches that address the identified determinants (see Supplemental Digital Content 1, <http://links.lww.com/QAI/A942> for more information on the included interventions).

A more detailed description of the framework for each of the behaviors across the continuum is provided below. We do not specifically describe the policy level determinants as these are similar across the continuum and include national policies related to testing, timing of ART initiation, cost of ART, task shifting, treatment regimens, and response monitoring for various population groups. Driving these policies is the WHO guidance on HIV prevention and ART<sup>28</sup> with countries differing in the pace at which they adopt the most recent WHO guidance.<sup>29,30</sup>

### HIV TESTING AND COUNSELING

#### Determinants

To meet the 90-90-90 targets, the first step in the continuum of ensuring that 90% of PLHIV know their HIV status is especially critical. Not only is HIV testing and counseling (HTC) the gateway to the clinical cascade, it is currently also a significant gap in uptake of services by some key groups including men. As countries move to test and treat policies, reframing HTC as an opportunity for early diagnosis and treatment to prevent illness and transmission is needed to encourage those most at risk to get tested when they do not feel sick. Although knowing one's status can lead to multiple health benefits, it can also be an extremely

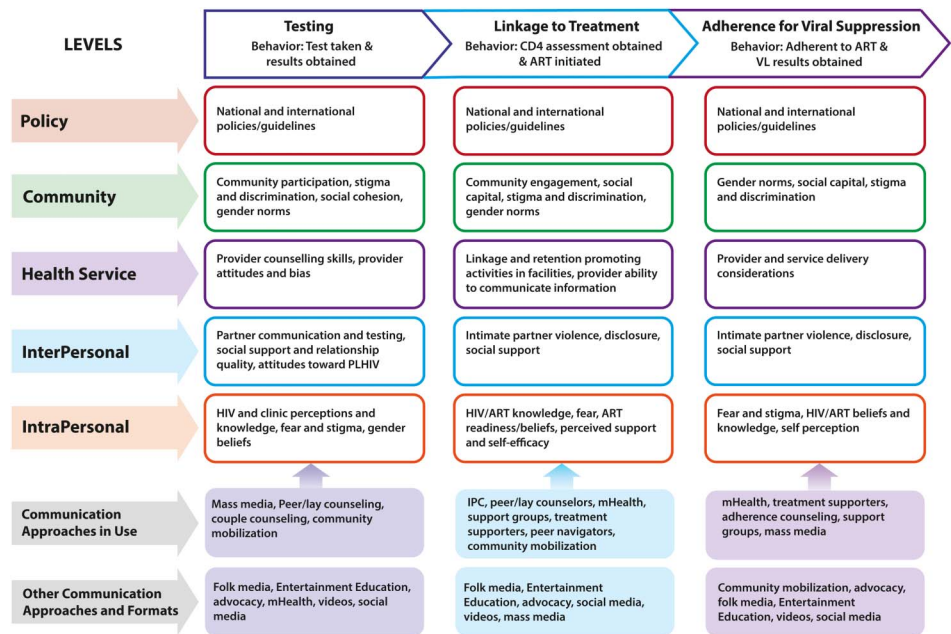


FIGURE 1. Framework for the role of health communication in HIV treatment continuum.

difficult process that many find frightening and undesirable.<sup>31</sup> Promoting HTC as a positive behavior where the benefits of knowing one's status outweighs the potential negative consequences requires an understanding of the determinants influencing the behavior.

At the intrapersonal level, studies have emphasized the importance of psychosocial (ideational) determinants, including cognitive (knowledge, beliefs, and attitudes), emotional, and social interaction determinants. Both perceived/anticipated stigma and personal stigmatizing attitudes toward PLHIV negatively affects testing.<sup>32–40</sup> Fear of a positive HIV result and its consequences is another barrier.<sup>38,41–43</sup> Limited HIV-related knowledge, the misconception that testing is only for people with symptoms and low risk perception remain important challenges to HTC.<sup>31,34,37,44–49</sup> By contrast, knowing about antiretroviral (ARV) treatment tends to allay fears about HIV and increase testing.<sup>32,45,46,50</sup> Inequitable gender attitudes and personal tolerance of gender-based violence are also important deterrents.<sup>35</sup>

At the interpersonal level, partner communication can support or inhibit testing. Testing is higher when one's spouse has tested or when one has the intention to disclose to a spouse or sex partner.<sup>42,51</sup> Having family or friends living with HIV and discussing HIV with people in one's network are positively associated with testing.<sup>34,45,46,50,52</sup> Mistrust in marriage inhibits HTC as some men may not want to engage in couples' testing, given their extramarital affairs coupled with the fear of being blamed for a positive result.<sup>49,53</sup> The lack of support from friends and family also inhibits HTC.<sup>32,33,46</sup>

The health service-level determinants include lack of confidentiality from providers and provider behaviors that sometimes leave clients feeling uncomfortable and embarrassed.<sup>38,49</sup> Provider lack of connectedness to patients and provision of inadequate information are other barriers.<sup>31</sup>

At the community level, stigma and discrimination, and lack of social cohesion lead to lower levels of HTC.<sup>36,54–56</sup> Similarly, gender inequality results in compromised decision-making autonomy for women and undermines testing.<sup>32,35</sup>

## Documented Interventions Promoting HTC

Health communication interventions that have successfully addressed the determinants outlined above include those implemented at the intrapersonal level: the use of mass media to promote HTC<sup>57</sup>; and the interpersonal level: peer support and counseling for male partners of pregnant women;<sup>58,59</sup> and couple-oriented counseling.<sup>60,61</sup> Successful approaches at the community level include utilization of existing socially accepted community-based infrastructure (eg, churches)<sup>62</sup> and the use of lay counselors<sup>21,63–65</sup> to build trust and acceptability, mitigate stigma, and serve as an acceptable entry point into the HIV continuum. Other community-level interventions, including availability of counseling resources in the community and the provision of community-based testing services with or without peer or lay counselors (including door-to-door, self-testing, mobile-testing, workplace-based, school-based, church-based, etc.)<sup>66–68</sup> increase testing.

## LINKAGE TO CARE AND TREATMENT

### Determinants

Linkage to care and treatment, including pre-ART care and treatment initiation, will ideally immediately follow an HIV-positive diagnosis. Often, however, clients choose to delay seeking care or initiating treatment after diagnosis, resulting in high mortality rates in resource-limited settings.<sup>69–72</sup>

At the intrapersonal level, ideational barriers to enrolling in care include limited HIV or ART-related knowledge,<sup>73–75</sup> internalized stigma;<sup>73</sup> fear in many forms, including fear of a partner's reaction,<sup>73</sup> fear of potential side effects,<sup>75</sup> fear of losing employment or social status by attending appointments;<sup>75,76</sup> and the negative attitudes and beliefs about ARVs.<sup>72,77–79</sup> Furthermore, feeling healthy or being asymptomatic<sup>72,80–86</sup> and belief in divine healing<sup>81</sup> decrease linkage to care and treatment. By contrast, treatment readiness, resulting from understanding the benefits of ART, and perceived availability of social support during treatment fosters the decision to engage in care and treatment.<sup>73,74</sup>

Psychosocial support is a strong interpersonal level determinant of whether a person will link to care or initiate treatment.<sup>16,73,75,76,87–90</sup> Before support can be received though, disclosure must occur and disclosure has been found to be a major barrier to ART initiation.<sup>77,82,85,91,92</sup> Disclosure to friends and family enables patients to access the psychosocial and material support crucial for initiating and staying on treatment.<sup>78,85,88,91,92</sup>

At the health service level, often clients are unwilling to link to care and treatment if they experience negative interactions with clinic staff or inadequate patient-provider communication, receive poor counseling when testing, are made to feel as though they are a child, or fear that the staff will disclose their status.<sup>74,75,77,81,88,93</sup> Other studies have found negative provider attitudes and lack of confidentiality to be barriers to initiation.<sup>77,78,88,91</sup>

Barriers at the community level include stigma and discrimination,<sup>16,74–76,81,89,94–97</sup> limited ART knowledge within the community, lack of community involvement in program planning, and lack of community mobilization around ART.<sup>74,78,94,96</sup> Inequitable gender norms, including community stereotypes of masculinity and femininity are key determinants of delayed linkage to care and treatment.<sup>94</sup> By contrast, the presence of retention support groups<sup>90,98</sup> and involvement of community-based organizations<sup>99</sup> help to facilitate linkage.

### Documented Interventions Promoting Linkage to Care and Treatment

Successful interventions using various counseling and psychosocial support strategies, including peer support, information, and education; identifying and addressing clients' barriers to service use; and providing help with appointment coordination<sup>100</sup> have been documented. Training counselors on post-test counseling (including emphasizing disclosure and the importance of pre-ART care),<sup>23</sup> provision of social and psychological support,<sup>101</sup> mobile health reminders,<sup>70</sup> patient-selected care buddies,<sup>102</sup> and peer

navigators<sup>73</sup> increase linkage to care and treatment. Successful interventions at the health services level highlight the importance of coordination between facility-based and community-based activities by health personnel,<sup>99,103</sup> retention-promoting activities by health facilities,<sup>103,104</sup> and the provision of outreach services.<sup>90,103</sup>

At the community level, support groups and strong networks, where home-based care organizations, community volunteers, and HIV education programs are in place, reduce stigma and discrimination, improve linkage and retention in pre-ART care and increase early ART initiation.<sup>16,25,81,87,89,97,105–110</sup> Interventions engaging traditional practitioners and faith healers yielded mixed results. Although 1 study<sup>111</sup> demonstrated that training traditional healers led to increased referral rates in Mozambique, others<sup>112–114</sup> did not find such an effect.

## ADHERENCE

### Determinants

Adherence to ART is critical for achieving viral suppression, improved immune function, reduced risks of HIV-related morbidity and mortality, and reduced HIV transmission.<sup>1,115</sup> The determinants of ARV adherence have been well documented and span across the social-ecological model.

At the intrapersonal level, treatment regimen characteristics, including the type of medication, drug toxicity, and pill burden have been found to be associated with adherence.<sup>115–119</sup> Asymptomatic patients may be less likely to adhere to ART if they have even minor side effects. Forgetfulness was also frequently provided for missing doses.<sup>115,119–123</sup> Studies have also emphasized the importance of ideational determinants. People are more likely to adhere to ART if they are knowledgeable about HIV and ART,<sup>124–126</sup> have positive attitudes toward ART,<sup>127</sup> perceive few constraints to ART use,<sup>128</sup> perceive the benefits of ART,<sup>119,129,130</sup> and have come to terms with their illness.<sup>131</sup> Perceived or anticipated HIV-related stigma<sup>132–134</sup> and belief in divine healing and the power of prayers are associated with poor adherence.<sup>127,134–136</sup> Similar to HTC, fear may inhibit treatment adherence. In particular, fear of being recognized or of accidental disclosure, and fear of gender-based violence prevent some from visiting health facilities or taking their medications.<sup>96,123,137–143</sup> Similarly, internalized stigma and negative self-image negatively impact adherence.<sup>126,132,133,140,144</sup> On the other hand, perceived self-efficacy for adherence and for coping with the challenges of ART, self-esteem, and perceived support from family and friends foster adherence.<sup>129,133,145–147</sup>

At the interpersonal level, assurance of psychosocial support, disclosure, and having a spouse or friend who is HIV positive were key predictors of adherence.<sup>104,117,122,133,145,148–153</sup> In general, patients who share their status with a significant other are more likely to adhere to treatment.<sup>125,127,154–156</sup> By contrast, experience of intimate partner violence may deter adherence.<sup>151</sup>

At the health services level, determinants include patient-provider communication, patient-provider relation-

ship, quality of ART adherence counseling, consultation time, and provider confidentiality issues. Quality patient-provider communication skills enhance ARV adherence.<sup>125,157–160</sup> Of importance is a provider's ability to communicate complex terminologies linked to the disease (including CD4 and viral load) and challenges connected with communicating treatment instructions to patients.<sup>158,161,162</sup> The lack of or poor adherence counseling hinders adherence; conversely, comprehensive adherence counseling fosters adherence.<sup>152,163,164</sup> Time spent in consultation with patients is consistently associated with ARV adherence,<sup>131,154,165,166</sup> whereas positive patient-provider relationship (including issues related to trust and provider negative attitudes toward patients) is often<sup>122,124,131</sup> but not always<sup>149</sup> linked to adherence. A few studies have emphasized lack of confidentiality as a hindrance to adherence.<sup>154,166</sup>

Stigma and discrimination are the most commonly reported community-level negative predictors of ART adherence,<sup>127,132,138,142,144,156,167,168</sup> although at least 1 study demonstrated that stigma could facilitate adherence (as it helps motivate patients to take their medications regularly to avoid the physical signs and symptoms).<sup>131</sup> Social capital and community engagement in the care and support of PLHIV may also foster adherence.<sup>154,169</sup>

### Interventions to Promote Adherence

Most interventions using elements of health communication to promote adherence targeted determinants operating at the intrapersonal level. For example, mHealth programs using short message service or interactive voice responses implemented as a stand-alone intervention or as part of a more comprehensive strategy are common and have targeted forgetfulness, reminding patients to take their medications, and provided remote psychosocial support. Interventions have often<sup>24,170–174</sup> but not always<sup>175,176</sup> been effective. It appears that effectiveness depends on the duration, frequency of the messages (less may be better), the extent to which the intervention provides psychosocial support and facilitates 2-way communication between patients and providers.<sup>170–172,175</sup>

At the interpersonal level, treatment supporters, or companion or buddy strategies have often been used to promote adherence.<sup>177–181</sup> These strategies strengthen social connection by facilitating disclosure and providing one-on-one adherence and psychosocial support. Results have been mixed.<sup>177–181</sup> Furthermore, in some cases, the initial benefits were not sustained over time,<sup>178</sup> whereas in others, benefits were only seen after about 2 years on ART.<sup>182</sup> At the health services level, repeated adherence counseling has shown promising results for adherence and viral suppression.<sup>174,183</sup>

Effective interventions at the community level include peer adherence support groups or adherence clubs,<sup>184–187</sup> although 1 study did not demonstrate a positive result and attributed inadequate facilitation skills of the lay health workers.<sup>188</sup> Other interventions addressing stigma and discrimination were implemented at single or multiple levels of the social-ecological model and targeting one or more dimensions of stigma,<sup>189–194</sup> although relatively few were

rigorously evaluated for their effects on HIV treatment outcomes.<sup>189–191,195,196</sup>

## DISCUSSION

The conceptual framework and evidence presented highlight areas across the continuum where health communication can impact treatment outcomes to reach the 90-90-90 goals by strategically addressing key behavioral determinants. The evidence from extant literature shows that interventions that include health communication components have been successful in addressing the determinants of the behaviors along the HIV treatment continuum. Most interventions reviewed relied on interpersonal communication through peers, community support groups, and home visits. This mode of communication through social networks is of utmost importance, as it relies on relationships and social bonds to help HIV-positive individuals navigate hurdles across the continuum. Counseling through community volunteers and lay counselors is also an effective approach, specifically when counselors received training on interpersonal communication skills for post-test counseling and psychological support for disclosure and treatment uptake. Furthermore, mHealth interventions promoting linkage to treatment or adherence have yielded promising results.

Limited evidence in the literature reviewed was found on the use of multimedia health communication campaigns that combine 2 or more approaches and delivery channels, including, interpersonal communication, mass media, educational entertainment, folk media, mobile devices, social media, and advocacy to promote behaviors along the continuum. The synergistic effects of combining various media have been well documented in other health areas.<sup>20,197–201</sup>

As test and treat rolls out, multifaceted health communication approaches will be critical in successfully addressing the determinants of testing, early initiation of ART, and adherence. For example, provider counseling skills and their ability to communicate complex information related to treatment can be enhanced through skills building interventions on interpersonal communication that rely on the use of analogy, visualization, and practice with feedback. Partner communication and social support can be enhanced through role modeling via community radio, mass media, or small group interventions. Quality, accessibility, and availability of services, which are shown in the framework as key determinants for adherence, can be enhanced by strategic communication approaches focused on in-service communication and counseling.<sup>202</sup> Gender-based violence, disclosure, and positive partner communication are addressed through facilitated community discussion and the dissemination of positive deviant role models, changing attitudes, individual self-efficacy, and positive prevention behaviors.<sup>203</sup> ART literacy, to better understand the negative association between CD4 (high is good) and viral load (high is bad) and appreciate the need for repeated viral load testing could be successfully addressed by combining interpersonal approaches at the facility and community levels with mass media, providing the added benefit of disseminating consistent information to

multiple audiences at a large scale and in a cost-effective manner.<sup>204</sup> A multifaceted approach can also be used to address HIV-related stigma through messages that are educational, persuasive, and destigmatizing. For the policy level, communication interventions focused on advocacy support updating, implementation, and dissemination of such policies.

The complexity of the behaviors and determinants required to fulfill the 90-90-90 goals requires a combination of communication approaches for synergistic effects. Strategic, multiphase, multifaceted communication interventions are needed to inform individuals about services, remove misconceptions about testing and treatment, further reduce stigma, improve couple's communication and support, and help communities create supportive environments where PLHIV can successfully manage HIV and enjoy a quality life.

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