



White Paper on Strategies for Engaging with HIV at-risk populations in Virtual Spaces



National AIDS Control Organisation

India's Voice against AIDS

Ministry of Health & Family Welfare, Government of India

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White Paper on
Strategies for Engaging with
HIV at-risk populations
in Virtual Spaces



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Foreword



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भारत सरकार

**National AIDS Control Organisation
Ministry of Health & Family Welfare
Government of India**

The National AIDS Control Programme (NACP) is committed to reaching out to at-risk populations both on physical spaces and on virtual platforms. The programme recognises that reaching the at-risk populations on virtual platforms is critical to bridge the gap in first 95. Young individuals are very active on the web as compared to other age groups and naturally, may be exposed to newer risks and vulnerabilities. Hence, it is important to identify these groups as well as the emerging risks and vulnerabilities on the virtual platform so that HIV interventions may be planned, designed and structured in a way to reach these populations as per their convenience.

NACP is evidence led programme. In the recent past, the national programme undertook various pilots and innovations on HIV virtual interventions through its collaborations with various stakeholders, be it on risk perception among virtual populations, awareness generation through virtual platforms, gamification, use of artificial intelligence and PLHIV App. The evidence from all these pilots and innovations helped the national programme to move towards developing the White Paper.

The White Paper on Strategies for engaging with HIV at-risk populations in virtual spaces is NACP's vision on how to reach out to the virtual populations and possible areas for designing a package of service for them. It also provides an operational framework for virtual HIV strategies. It provides a way forward for reaching this critical group amidst issues of ethics, confidentiality and data security.

The White Paper brings together the learnings from all the novel digital interventions done in India on HIV care and prevention and brings together this important evidence from across the spectrum. My heartfelt thanks to all the experts involved in developing this White Paper on Strategies for engaging with HIV at-risk populations in virtual spaces. I hope this body of work benefits and guides in designing HIV interventions for a key group of population on virtual platforms.

(ALOK SAXENA)

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अपनी एचआईवी अवस्था जानें, निकटतम सरकारी अस्पताल में मुफ्त सलाह व जाँच पाएँ

Know your HIV status, go to the nearest Government Hospital for free Voluntary Counselling and Testing



निधि केसरवानी, भा.प्र.से.
निदेशक

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Preface

The National AIDS Control Organisation (NACO) under Ministry of Health & Family Welfare, Government of India, since its inception has continuously evolved itself based on the need of the time. Focus on consolidating gains through innovations, pilots, research outputs have been the focus of the National AIDS Control Programme. In-order to end the epidemic by 2030, the National AIDS Control Programme (NACP) is committed to identify innovative strategies to address the population at risk on virtual platforms.

The White Paper on Engaging with HIV at-risk populations in Virtual Spaces is a result of the need recognised for focussed action for reaching the unreached and at-risk population on virtual platforms. We recognise the rapid usage of virtual platforms by the adolescents and younger populations. There is also growing evidence on the shift in dynamics of solicitation by the high risks groups. It is expected that the White Paper is to serve as a guide for adapting the online strategies in India, keeping the user needs in mind along with important aspects of data security and confidentiality.

The White Paper is a collaborative exercise of experts who have contributed to the paper. All the evidence generated from various settings and pilots on novel digital interventions for HIV care and prevention by different organisations in India have been brought together in this White Paper. I hope this helps in strengthening the new phase of the National AIDS Control Programme and for designing the virtual strategies for at-risk population.

My heartfelt thanks to all those who have been involved in developing this White Paper on Engaging with HIV at-risk populations in Virtual Spaces. I congratulate and extend my best wishes to everyone who were part of this, with a hope that this White Paper will benefit all the users of this document.

(Nidhi Kesarwani)

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Message

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National AIDS Control Programme, India is committed to expanding reach to the general population as well as groups engaging in high-risk behaviors. India has joined a global trend of rapidly expanding internet access, ushering in age of fast-paced, virtual connections. Online platforms are changing how Indians communicate, increasingly using virtual channels to find partners as well as to build and seek information to maintain communities.

Access to technology and online channels remain unequal across demographic groups throughout India. Internet based communication is transforming sexual partner seeking, negotiation of risk behaviours and network dynamics among populations with higher risk behaviours. Better understanding the size and characteristics of internet users can help tailor approaches for effective outreach across various groups and platforms.

Virtual outreach worker can complement digital awareness campaign by acting as intermediaries who connect with online populations in accessible ways to communicate and share information. With increasing ways services can be offered remotely, such as HIV Screening, counselling treatment linkages. Online outreach can facilitate greater access by reaching those who may prefer remote care. Virtual approaches can also facilitate linkage to physical services, such as confirmatory testing, treatment access and long-term care by helping internet users understand their importance and figure out which venue is preferable.

This White Paper emphasises important considerations of virtual approaches for HIV outreach and challenges thereof. It also focuses on the criticality of robust reporting mechanism on digital campaigns to track the engagement and outputs along the HIV cascade as well as to establish a mechanism for linkage and retention to services.

The White Paper also brings together the great learnings towards successful virtual approaches, interventions need to provide person-centered, differentiated approaches to tailor messages to a spectrum of online population groups and risk behaviors.

(Dr Shobini Rajan)

Acknowledgment

The National AIDS Control Programme is committed to expanding reach to the general population as well as group engaging in higher risk behaviour in India, expanding programming to virtual space is critical to saturate services among higher risk population in both physical and virtual space. Outreach over digital space can raise awareness about HIV and generate demand for services, creating an enabling environment for HIV service linkages and mobilisation through virtual interventions. The journey of the White paper on HIV virtual strategies in India has gone through various consultations. The process of series began in 2020-21 under the leadership of Additional Secretary & DG, NACO, Shri Alok Saxena for his vision, constant guidance, and tremendous support in this endeavour. We are also thankful to Ms. Nidhi Kesarwani, Director, NACO and Dr. Shobini Rajan, DDG, NACO for overall support and guidance in the development of the White Paper.

We are grateful to all the technical experts for their invaluable expertise, inputs and technical support at every step of this journey. We are thankful to UNAIDS, USAID, CDC, WHO India, JHU, I-TECH, The Humsafar Trust, and all other experts. The critical insights contributed to drafting and finalization of the White Paper. We thank each member for sharing their experience and knowledge on issues around virtual strategies and digital interventions across India and the globe.

Special thanks to all our partners for contributing to the White Paper on Strategies for Engaging with HIV at-risk populations in Virtual Spaces, in particular to the team of Johns Hopkins University for all the support extended in the development of the White Paper. Special thanks to YRG Care for extending support towards designing and printing of the document.

We would like to thank all Heads of Divisions and officers of other Programme Divisions from the National AIDS Control Organisation and State AIDS Control Societies (SACS) for their active inputs in finalising these strategies, as reflecting in the White Paper. We acknowledge the role of Research and Evaluation Division under Strategic Information in bringing out the White Paper. We are confident that all stakeholders will benefit from this White Paper to reach the unreached population in India through this intervention.

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ABBREVIATIONS

AI	Artificial Intelligence
ART	Antiretroviral Therapy
FSW	Female Sex Workers
HIV	Human Immunodeficiency Virus
HIVST	HIV Self-testing
ICTC	Integrated Counselling and Testing Centre
KP	Key Populations
MPSE	Mapping and Population Size Estimation
MSM	Men who have Sex with Men
NACO	National AIDS Control Organisation
NACP	National AIDS Control Programme
PLHIV	People Living with HIV
PrEP	Pre-Exposure Prophylaxis
PWID	People Who Inject Drugs
STI	Sexually Transmitted Infection
TG	Transgender Persons
TGW	Transgender Women
U=U	Undetectable = Untransmittable
WHO	World Health Organisation

EXECUTIVE SUMMARY

India has joined a global trend of rapidly expanding internet access, ushering in an age of fast-paced, virtual connection. With internet users in India expected to pass 658 million by 2022, online platforms are changing how Indians communicate, seek information and identify sex partners. This shift to digital interactions varies across sub-populations. Younger individuals, between the ages of 16-29, spend the most time on the web in India compared to other age groups. Higher risk groups for HIV, particularly men who have sex with men, transgender individuals, and sex workers, are increasingly using virtual channels to find sex partners as well as to build and maintain communities.

As the National AIDS Control Programme is committed to expanding reach to the general population as well as groups engaging in higher risk behaviours in India, expanding programming to virtual spaces is critical to saturate services among higher risk populations in both physical and virtual spaces. Outreach over digital spaces can raise awareness about HIV and generate demand for services, creating an enabling environment for HIV service linkage and mobilisation through virtual interventions. Increasing online outreach and service provision can increase access to HIV care by decentralising outreach efforts away from saturated physical venues, increase client awareness about personalised needs for HIV prevention and treatment, and overcome barriers to service engagement, in particular the need to initially present in-person. The remote nature of virtual approaches can overcome previously intractable barriers, especially for higher risk and hidden population groups, by preserving anonymity and promoting convenient, confidential ways to learn about HIV and get linked to services.

To inform optimised approaches for virtual strategies, it is important to understand the size, demographic make-up, behaviours, and preferences of internet users in India across various platforms. To accomplish this, mapping exercises are needed to characterise online users. Many population size estimation techniques can be adapted for virtual environments, including the multiplier method, capture-recapture, census or enumeration approach, network scale-up, and successive sampling. Online surveys are another important tool to characterise how people use different platforms across populations, given the many options available on social media sites, dating applications and messaging channels now available. Better understanding the size and characteristics of internet users can help tailor approaches for effective outreach across various groups and platforms.

Informed by formative activities to find and reach target users, online advertising and messaging campaigns can prove an impactful way to reach large audiences with HIV-related content. Methods including targeted advertising, social media influencers, and game-based interactive content have been used to boost impressions and viewer engagement of online campaigns. Digital awareness campaigns can be a pivotal way to inspire action, and should include links and suggestions for next steps. These can include continued virtual steps, such as taking an online risk assessment, making an appointment for HIV testing or self-testing, or accessing PrEP or ART via an online platform, or going to a physical venue for service provision. Digital awareness campaigns are powerful tools to create continuity between virtual and physical spaces.

Follow-up after initial virtual engagement can replicate in-person outreach methods, incorporating personalised support through online outreach workers. Chat features on social media as well as messaging applications create a way for someone to interact personally with a client and respond to their individual needs, similar to an in-person interaction. Online outreach over social media or dating applications bring the benefits of convenience and privacy, as a way for users of the same platforms to instantly learn about HIV and get linked to services, avoiding uncomfortable environments or unwanted interactions. Virtual outreach workers can complement digital awareness campaigns by acting as intermediaries who connect with online populations in accessible ways to communicate and share information.

Linkage to appropriate services is a necessary component of virtual approaches. With the increasing ways services can be offered remotely, such as telemedicine and HIV self-screening, online outreach can facilitate greater access by reaching those who may prefer remote care. Virtual approaches can also facilitate linkage to physical services, such as confirmatory testing, treatment access and long-term care, by helping internet users understand their importance and figure out which venue is preferable. Online channels can also help reduce disengaged PLHIV and loss to follow-ups, as well as offer more people counselling support, through new communication channels made available through the internet.

Virtual platforms in India must synergistically with existing service environments in India, facilitate linkages to both the public and private sector. These linkages should consider the needs of individuals across the HIV continuum, offering resources for increased HIV awareness, testing and counselling, adherence to treatment, and demand for other services. To facilitate this, the National AIDS Helpline – 1097, can serve an important role in digital approaches as an immediate way for clients to remotely access HIV-related information, counselling, referrals, and provide feedback.

There are many challenges and important considerations of virtual approaches for HIV outreach. First, it is important to build robust reporting mechanisms on digital campaigns, to track engagement and yield of clients along the HIV cascade, as well as to establish a mechanism for service linkage. Without these indicators, the impact at population-level is lost as well as learnings to inform future approaches. Metrics to evaluate the success and impact of virtual interventions should be tailored to the context of web-based interactions, rather than using the same standards as physical interventions. Second, ethical issues of virtual strategies should not be overlooked, particularly considerations of data security, privacy, and confidentiality. Community input on these ethical issues can help increase acceptability and uptake of virtual approaches. It is recommended to involve communities through approaches such as community advisory boards, focus groups with target beneficiary representatives, social media influencers, or message pretesting, to tailor virtual strategies to the preferences and needs of a community of interest. Third, it is critical to ensure that these virtual strategies minimise duplication of activities. There are many existing HIV service virtual platforms in India and ideally, approaches should capitalise upon existing platforms as opposed to developing new ones.

Virtual strategies for HIV care present a critical opportunity to make gains in epidemic control by broadening who is included in service access and adapting to the evolving communication modalities across India. This is particularly important as many of these virtual populations are not reached by traditional programmatic approaches, so virtual approaches can complement the existing services of the National AIDS Programme. For successful virtual approaches, interventions need to provide person centric, differentiated approaches to tailor messages and services to the variety of online behaviours and population groups, and offer seamless service linkage across the entire HIV cascade. Virtual strategies can enable India's National HIV Programme to reach population groups in new ways, thereby working in tandem with physical environments to advance progress towards UNAIDS' 95-95-95 goals.

Table 1: Summary of recommendations for virtual platform development

Principle	Recommendation
Continuity across HIV cascade	Virtual strategies should ensure continuity across the entire HIV cascade, supporting linkage from awareness, to prevention/testing, treatment, and ongoing follow-up for health-promoting behaviours. If the platform itself does not offer services across the cascade, it should integrate referrals to other platforms/resources for service continuity.
Tailored approaches	Messages and services promoted through online channels should be tailored and specific to the population group they are intending to reach. Phased targeted advertising is an approach to help reach the intended audience and retain the maximum number of viewers who are interested to take action.
Promote service linkage	Virtual platforms should work to promote the transition from awareness to action. Online outreach workers can be powerful motivators and tools to support client adoption of health-promoting behaviours and link clients to either online or physical health services.
Community involvement	Engaging representatives from target population groups in the design, implementation, and evaluation of virtual interventions is key to optimize the acceptability and effectiveness of online HIV service approaches. Example community engagement activities include community advisory boards, interviews and focus groups, message pretesting, and engaging social media influencers.
Data monitoring and learning	Robust data capture and analysis is essential to learn from and improve virtual strategies, especially given the changing dynamics of communities and evolving technologies. Data collection and assessments should work to estimate virtual population sizes, understand trends in platform use, identify ways to improve service linkage and follow-up, and provide insights into user acceptability.
Privacy and confidentiality	Programmes should give comprehensive attention to client confidentiality, data privacy, and data security in their virtual strategies. Virtual interventions in India need to ensure the handling of data is in full compliance with the Information Technology Act of India and the HIV/AIDS Prevention and Control Act, 2017.

1. BACKGROUND

1.1 Why go virtual?

The internet and its increasing accessibility are changing how we communicate and consume information. The past decade brought a rapid surge in internet usage across India, positioning the nation as the second largest online market in the world.[3] By 2022, there will be over 658 million internet users in India, which is only expected to increase.[1] Leveraging online social media and dating platforms for HIV interventions can expand reach to a range of population groups in India. Not only can online approaches particularly benefit key populations, namely people who inject drugs (PWID), men who have sex with men (MSM), transgender individuals (TG) and sex workers (SW), but also youth and adolescents who generally have a higher internet fluency and activity compared to older groups. Youth make up the largest age group using the web in India, with 16-29 year-olds being the most frequent internet users.[2] This provides an opportunity to reach younger people with messages they may otherwise not receive, such as information about safer sex practices, reducing HIV stigma, and health services.

Widespread internet access in India has led to skyrocketing social media use in the past decade. Social media platforms are characterised by user-generated content and the ability to reach many people instantaneously. Sites are used for many purposes, including multimedia content sharing, public communication, and private messaging. A wide variety of social media platforms are used in India, particularly Facebook, Instagram and WhatsApp, and at different amounts of use. Also increasing is the use of dating platforms, such as Tinder, Grindr, and PlanetRomeo. A diversity of population groups use the internet for various purposes, so characteristics differ widely across internet users. This includes a wide range of literacy levels and comfort using technology among people who use and rely on the internet in India.

Access to technology and online channels remain unequal across demographic groups throughout India. The amount of people who own smartphones and computers is on the rise in India, but many people with fewer resources have limited access to the internet. Demographics create further divides in internet access in India, particularly by gender, as women make up approximately half of the internet users as compared to men.[4] Programmes need to take into account these divides and should consider targeted approaches to reach those who face technology access barriers when designing virtual approaches.

Internet-based communication is transforming sexual partner-seeking, negotiation of risk behaviours, and network dynamics among populations with higher risk behaviours. There are different hubs for online partner identification across risk groups, with dating applications specific for men who have sex with men and online platforms used by SW to find partners. With the increasing popularity of private messaging on social media applications, partner-seeking has also expanded to mainstream social media sites and messaging applications. Groups engaging in higher risk behaviours may use web-based platforms for sexual solicitation, partner-seeking, socialization, information sharing, or any combination of these. Virtual platforms used for sexual partner-seeking lend themselves to HIV outreach, since they promote convenient, quick access to romantic and

sexual pursuits increasing potential for higher risk sexual behaviours. HIV interventions need to adapt to these changing dynamics and shifting typologies catalysed by widespread internet access in India. Doing so presents a chance to engage more people in HIV-related services, as well as overcome obstacles of traditional care.

In particular, virtual strategies can help overcome limitations of accessing in-person health facilities in India. It has been documented that physical healthcare facilities can present barriers of access to some populations who need HIV prevention and treatment services. Barriers inhibiting engagement include inconvenient facility locations, long waiting times, fear or prior negative experiences at clinics, and lack of awareness about their HIV status. Physical facilities in India have limited outreach capacity to reach groups who do not come to them, heightened by a common challenge of saturated patient load and limited staff capacity.

These challenges of facility access call for expanded approaches to reach all population groups at risk for HIV, especially groups practicing higher risk behaviours. The possibility of remote care through virtual strategies can overcome barriers of social stigmatisation which impede these groups from accessing traditional in-person HIV care. By engaging with online interventions, these groups can learn about HIV, receive services, and get support to stay in care from the convenience of their phone, computer, or laptop, thus avoiding uncomfortable environments or unwanted interactions.

With the sensitive nature of HIV-related topics, online approaches also enable heightened privacy when individuals seek information and services. This can benefit a variety of people who, due to factors such as age, sexual orientation, or gender identity, may not feel comfortable or safe disclosing their behaviours in public or physical settings. For example, adolescents still living at home who are sexually engaged may not be comfortable discussing HIV, STIs, or other sexual health topics with their family, and may not be able to visit a clinic discretely. People practicing discriminated behaviours may also want to avoid in-person services to prevent suspicion from others, for example people with same-sex partners who have not disclosed this to friends or family. Virtual strategies may be the optimal way to reach these populations, enabling them to know their HIV status and how to protect against HIV, all without being seen at a HIV clinic or taking time out of their daily life.

1.2 Global evidence

Public health researchers and implementers worldwide are exploring the impacts of using virtual strategies to deliver HIV education and services. Many studies have documented the potential to reach a large amount of people through online approaches, and the value social media holds to disseminate information and engage with users on sensitive topics surrounding sexual risk-taking and HIV, due to the private and anonymous nature of internet-based interactions.[9]

Many virtual interventions worldwide have leveraged the intersection of online platforms and sexual partner finding to promote engagement in HIV care. Since the early 2000s, researchers have documented the expanding popularity of internet-based dating worldwide and its association with sexual risk behaviours among at-risk populations for HIV. Findings have documented the novel benefits of online dating which users value, including anonymity, affordability, speed and convenience in locating potential partners, and access to a larger pool of potential partners.[10-12]

As of 2017, multiple systematic reviews of global social media HIV interventions report that

Facebook is the most common platform used, followed by population-specific dating apps.[9,13,14] Online interventions promoting HIV care globally have commonly targeted MSM, young adults, and TG persons. Some interventions used social media as an access point for formative investigation, crowdsourcing preferences from target populations to design messaging materials for HIV service demand generation. Others have used online platforms to establish support communities, creating chat rooms and pages for communities to interact organically, sharing thoughts and experiences and providing social support.

Social media has also been used to spread knowledge, raise awareness, and promote direct links to services for HIV. Virtual intervention studies have covered the full HIV care continuum, focusing on the prevention of HIV, improve access to testing, linkage to treatment, and care retention.[15] Strategies for engagement have included promotional banners, news feed pop-ups, broadcast messages, and personal chats. Outreach has been used to engage users with services, most commonly HIV testing.[9] The information and social support offered through social media outreach has been shown to improve ART adherence and uptake of HIV testing, as well as resilience to HIV-related stigma.[14]

A trend in online HIV interventions is to adapt existing in-person, evidence-based interventions to be delivered online. In particular, models which use peer leaders to interact with users to provide information, behavioural motivation, counselling or service navigation support, have been adapted to virtual spaces and found promising results. One of the first trials of such an approach, conducted in 2011 among MSM Facebook users in Taiwan, found that MSM who engaged with peer leaders online were more likely than those in the information-only control group to complete HIV tests within 6 months (43.89% versus 22.31%, $P<.001$) and consistently use condoms during anal sex with online sex partners (34.15% versus 26.19%, $P=.004$).[16] Integrating interactive, peer-led components into online interventions have continued to increase HIV care engagement in programs worldwide.

The array of global evidence documenting the potential for virtual strategies to increase uptake and retention of HIV services lays a groundwork for India's online approaches. Challenges and concerns so far reported should be noted for Indian virtual programmes to address. These include technology barriers and inequity of access, costs associated with internet use, lack of physical interaction to ensure quality service provision, and concerns surrounding privacy and confidentiality.[14] Featured examples of global virtual strategies can be found throughout the following sections.

1.3 India evidence and context

With populations relying more and more on the virtual space for communication, information sharing and partner-finding, Indian interventions have made grounds to engage and link them with HIV services. Studies and virtual programs have helped understand the shift in preferences and online behaviours across population groups in India to reduce sexual risk behaviours and promote HIV management, as well as link online clients to prevention and treatment services.

Similar to the global trend, higher risk groups in India are increasingly finding sexual partners online, placing virtual spaces as an emerging risk environment. A 2015 study conducted in Delhi by the Delhi State AIDS Control Society and the India Health Action Trust explored shifting modalities of


female sex work from in-person venues to digital networks. The study documented female sex workers' reliance on virtual networking to solicit partners, and the resulting increase in number of overall partners and decrease in regular clients.[17] Female sex workers in India, or their pimps/managers, now use virtual platforms, particularly mobile-based applications like WhatsApp and dating platforms, to find clients, negotiate rates, arrange logistics as well as communicate with pimps and other SW.[18]





Studies have also documented the increasing popularity of internet-based communication among MSM and TG women (TGW) in India. A study in Maharashtra reported in 2016 shows how the affordability and access to digital mediums increased the use of online networking applications as a method for MSM and TGW to seek casual sex partners and engaged with community. Participants reported a low level of HIV disclosure to partners found through online platforms, most commonly PlanetRomeo, Grindr, and Gaydar.[19] Further evidence establishes the virtual realm as a viable and popular way for MSM and TGW to maintain community and social support as well as remain sexually active in India. Social media usage is increasing among these groups across all education and income levels, facilitating MSM and TGW to find partners quickly, conveniently, and in larger numbers than in-person dating methods.[20-21]




1.3.1 Virtual strategy advancements in India


Many organizations in India have responded to the increase in digital communication and information sharing through novel digital interventions for HIV care and prevention:

Table 2: Featured Virtual Strategies for HIV Care in India

Intervention Name / Organisation	Population Group	Focus on HIV Continuum	Description	Learnings
Delhi SACS Virtual DIC 	FSW/MSM/TG	Risk awareness, prevention, testing, service linkage	Virtual Drop-in Centre for KPs in Delhi to identify and link the virtual network based HRGs with the service provisions. An interactive web portal managed by the Community and TI team. This allows KPs to log in with their ID and password and seek services/book appointments to seek HIV services as per their choice and time in Delhi <ul style="list-style-type: none"> • Web Page • Virtual Mapping • Training of the TI staff • Online Outreach • Service provision • M&E 	Developing a national strategy to cover MSM population active on virtual platforms for HIV services -Rolling out internet based outreach and promotion activities for virtual intervention -Development of digital IEC material on HIV for general awareness towards behaviour change -Capacity building of staff to strengthen outreach among virtual population

<p>MDACS/HST - ITECH-CDC</p> 	Young MSM		<p>Enhanced Peer Outreach</p> <ul style="list-style-type: none"> – To reach the unreached – Through social media platforms <p>For individuals above 18 years accessed social media platform for sex with a man in last 3 months; had sex with a male in the last one month; not associated with any TI</p>	<p>New clients are available on dating sites who are not aware about HIV services and not part of TI Programme</p> <ul style="list-style-type: none"> –Scaling up of testing and treatment facilities should be planned based on need and accessibility of virtual clients –Linkages to private labs are required as some clients are not ready to go to public facilities –Separate online platform is required for easy tracking and referral services for virtual clients
<p>Maharashtra SACS</p> 	HRGs (FSW)	Knowledge, awareness, feedback, planning	<p>WA group for awareness generation; committee-awareness generation activities-feedback from HRGs</p> <p>Also, Hotspots/Health Facilities Google Map</p> <p>For ease of planning by field workers</p>	<ul style="list-style-type: none"> - Virtual methods important to reach out to hard to reach populations on online platforms - Helps in planning by field staff and feedback from individuals
<p>Love Zodiac – Twistle</p> 		Risk awareness, prevention and treatment support	<p>Risk profiling quiz on safe sex, relationship health, social stigma and HIV testing promoted via targeted advertising on social media. Clients can then opt-in 45-days educational SMS.</p>	<ul style="list-style-type: none"> -Content should be fun and interesting with pictures, memes, & videos -Need to adapt to regional language preferences -Daily SMS messages may be too frequent
<p>Game Set Match - OneKeyCare Ventures</p> 		Prevention, testing, stigma reduction	<p>Incentive-based model rewards dating app users to play short games which promote HIV prevention behaviours and stigma reduction</p>	<ul style="list-style-type: none"> -Gamification is an effective way to engage users with HIV-related content -Dating apps provide access to internet users with high and moderate HIV risk (63% of users fell in these categories)

<p>IRA - Jubi.AI</p> <p>I am IRA, Ask me anything on HIV</p> 		<p>Knowledge, awareness, service linkage</p>	<p>Powered by artificial intelligence, IRA is a one-to-one conversational platform where users can talk to a chat bot offering information and emotional support in response to HIV/AIDS queries</p>	<p>-Top 3 most common inquiries to IRA were about condoms and safe sex, conceptual understanding of HIV, and relationship questions related to HIV</p> <p>-To inspire action, chat bots need to put special emphasis on the transition from awareness to action</p>
<p>Ujwala project - Alliance India</p> 	<p>FSW</p>	<p>Prevention, testing, treatment, and care support</p>	<p>To improve uptake of HIV services among FSW in urban areas in India, Ujwala sends informational videos over smartphone apps with links to a helpline</p>	<p>-Direct targeting to FSW, instead of gatekeepers, takes increased effort</p> <p>-Need to establish gatekeeper buy-in to forward messages to FSW</p> <p>-WhatsApp is most common networking platform among FSW networks, with over 400 groups for gatekeepers</p>
<p>Yes4Me – USAID</p> 	<p>General and Kps</p>	<p>Risk assessment, prevention, testing and service linkage</p>	<p>Yes4Me uses advertising and outreach workers on social media and dating apps to engage users. They are directed to a website with a risk assessment and appointment booking for HIV services</p>	<p>-Need to offer or link to pre-post testing counselling</p> <p>-Must ensure positive clients from online testing are linked to treatment</p> <p>-Need to synchronize service linkage with NACO Programme.</p> <p>-Online platforms are set up well to offer HIV self-testing</p> <p>-Real-time data analysis between geographies can optimize outreach approach</p> <p>-Services should be both paid and free and delivered via both public sector and private sector venues</p> <p>-Platforms should address the entire prevention and treatment cascade</p> <p>-Minimizing the number of clicks required by clients promotes engagement</p>

<p>SafeMasti – Elton John AIDS Foundation</p> 	Young MSM	Awareness, prevention, stigma reduction	Promotion of visuals and videos raising HIV/STI awareness over social media using influencers, links to HIV testing sites, chat-based counselling	<ul style="list-style-type: none"> -Continued online follow-up is essential to ensure conversion from interest to testing -Relatable and fun content increases engagement -Offering free HIV testing is critical for uptake -High value in targeted advertising
<p>Dr Safe Hands</p> 	General and Kps	Awareness, testing, treatment, counselling, retention	Dr Safe Hands is a website promoted through social media offering information, telemedicine counselling, booking support for HIV/STI testing and treatment, as well as free home sample pickup	<ul style="list-style-type: none"> Male internet users are more easily accessible (98% users are male) -Need targeted, tailored engagement and content for women -Mental health services are important part of online HIV programs
<p>Virtual Outreach, Nagaland-ITECH-CDC</p>	MSM and TG	Outreach, awareness messaging on HIV/AIDS, STIs and safe practices, linkage to harm reduction services, HIV testing and treatment services, distribution of commodities	Reaching MSM & TG Population through virtual interventions for harm reduction services and linkage to HIV testing, prevention and treatment services through various social media platforms including Blued, Grindr and Facebook	<ul style="list-style-type: none"> -Clients between 20-30 years old were not aware of HIV prevention services and were previously unreached -The COVID-19 pandemic and subsequent restrictions presented challenges to link clients to physical spaces

Source: As per information available with NACP

1.4 Mapping virtual populations

Findings from virtual strategies so far implemented in India suggest a need to better understand population dynamics and trends of internet users. To maximise the opportunities presented by digital spaces, experience calls for virtual HIV programmes in India to first understand the numbers and needs of who they are targeting. NACO supports the importance of mapping virtual populations, emphasizing its value to adapt HIV programmes to the digital era in a 2019 publication, White Paper on Mapping and Population Size Estimation of High-Risk Groups for HIV.

The developments of online communication and partner-finding constrain the application of traditional mapping and population size estimation (MPSE) methods are mostly venue-based and require in-person interaction. Alternative methods should be developed or adopted by programmes to map virtual populations, offering an important chance to uncover and map new groups

previously unreachable. MPSE can inform interventions by providing insight into the size, characteristics, preferences and context of various population groups engaged online.

Options for MPSE methods in virtual spaces include the multiplier method, capture-recapture, census or enumeration approach, network scale-up, and successive sampling. These are probability-based sampling designs. There are also non-probability-based sampling designs, which include self-selection (commonly involving banner clicks), mass emails to potential participants, and snowball sampling methods where participants refer other potential respondents. Triangulating methods for virtual size estimation, i.e., using multiple approaches, can enable data comparison across approaches as well as more robust estimates. Using a combination of probability and non-probability sampling, as well as demographic stratification, are also recommended. It should be noted that best practices are still evolving to adapt these and other methods to virtual size estimation, as more countries venture to map the users of digital spaces. The following table summarizes methods that have so far been adapted for virtual MPSE by re-framing physical venues as online spaces.

Table 3: MPSE Methods for Virtual Spaces

Method	Description
Multiplier	Applies a multiplier (e.g., an object, service, or event) derived from two overlapping sources of data from the same target population. A mathematical formula is applied using the overlapping information to estimate the size of the total population.
Capture-recapture	Compares two independent samples by tagging individuals of a target population present in a space on separate occasions, then comparing the number tagged and retagged. Populations are then estimated using log-linear models, Bayesian model averaging, or Bayesian latent class analysis. Having at least three capture samples accounts for heterogeneity among captures and produces more robust and accurate estimates. Sampling techniques can combine online sources (e.g., social media apps) and physical sources (e.g., line lists, hotspots).
Reverse Tracking	Compares the observed number of target population members in a given space with the estimated number (i.e., compares “observed size” with “estimated size” for a selected site) to calculate a correction factor, which can be applied to the total sampling frame to estimate population size.
Network scale-up	This indirect estimation method uses general population surveys to estimate risk groups through self-report of personal network size of individuals practicing certain behaviours. Questions can be adapted to capture online platform use among target populations.
Successive Sampling	Relies on a Bayesian model using prior knowledge from experts or size estimates from previous studies, in conjunction with observed data from a respondent driven sampling (RDS) study to estimate population size.
Census enumeration	Nationally representative surveys such as NHFS and surveillance studies such as IBBS could incorporate questions relating to virtual platform use. Responses from these surveys could also be used to arrive at a virtual population estimate.

As the penetration of the internet in India is widespread across demographics and regions, incorporation of questions on the use of internet and/or social media in nationally representative surveys and or other surveys implemented among key populations would also provide us with an estimate of the online populations' size.

While MPSE methods can help achieve more accurate measures and deeper understanding, they do not come without challenges and ethical considerations. Appropriate protection of identifying information should be a priority when collecting individual level data. It is the responsibility of programs running MPSE activities to be open with respondents about the purpose of the activity and procedures, as well as how their information will be used and kept safe. Potential biases and representation issues also need to be considered. Like other surveys and estimation methods, social desirability bias is a threat in virtual MPSE surveys. Poor response rates may also be a challenge, which can be mitigated by awareness generation efforts and participant mobilization prior to surveys. Specific to virtual methods, duplication of records is a challenge as internet users frequently have multiple virtual identities, presenting a barrier for accurate estimations per digital platform. Care should be taken to identify and rectify the extent of overlap between records from virtual and physical spaces to reduce duplication. Fraudulent data and inaccurate assumptions of geographic locations are further challenges to virtual MPSE. Geographical location of respondents may be challenging to verify since participants can claim to be in a different sampling area from where they actually are located. These hurdles should be considered when exploring suitable methods to estimate the size of risk groups on virtual platforms.

Feature Density mapping of online MSM in India [25]

To understand the patterns of online behaviour among MSM operating in virtual spaces, FHI 360 under its LINKAGES Programme conducted a density mapping assessment in Mumbai, Pune and Vijayawada. They collected data through built-in GPS features of MSM dating apps such as Grindr, Hornet, Scruff and Blued, to measure the density of app use and map it across different times of the day and week. Results help inform outreach workers where and when to set their phone's GPS location to find high number of dating app users for peer-assisted virtual outreach. This method also improves the efficiency of targeting advertising, as messages and ads can be posted online during times of high frequency and in high density pockets nearby existing HIV campaigns and events.

Feature Population size estimation of MSM on social media in Vietnam [26]

To generate a national population estimate of MSM in Vietnam, the Vietnam Authority of HIV/AIDS Control, Ministry of Health, used a social app multiplier method. Conducted in 12 provinces of Vietnam, the activity counted users over one month on a social app called Jack'd popular with MSM in Vietnam as the first data source. A questionnaire propagated through the MSM community using respondent-driven sampling was used as the second data source. Comparing results from both methods enabled the first comprehensive national estimation of the MSM population size enabled through virtual spaces.

Feature Estimated MSM dating application users 2016 [27]

Researchers compared the number of registered users of Hornet, a popular MSM dating application, from 29 countries in 2016 with UNAIDS national MSM estimates from 2013-2016. They applied an algorithm that uses device, location, usage, and registration information to ensure that only unique individual dating application users were counted. 15 countries had UNAIDS or other MSM population estimates publicly available. In 9 countries, the number of dating application users were above the UNAIDS estimate, and in 9 other countries, the UNAIDS estimates were larger than the dating application user numbers. This study highlights significant discrepancies between official estimates of MSM and the number of individual users of dating applications.

1.5 Virtual strategies to increase awareness

1.5.1 Online demand generation

Virtual strategies provide access to large audiences and facilitate rapid information flow – features that are well-suited to raise awareness about HIV prevention and treatment as well as to increase interest in accessing HIV services. Shared over platforms where viewers are already consuming audio-visual content, internet-based media campaigns designed to grab attention can prove a powerful HIV awareness generation tool. Added to this, the near saturation of physical health care spaces in India lead to limited capacity of facilities to offer targeted outreach and demand generation initiatives outside of clinical practice and service delivery. Virtual outreach can fill this gap, expanding the amount of people in India who are exposed to HIV-related information, receive behaviour change messaging, and are aware of prevention and treatment services.

Online spaces allow for diverse, cost-efficient approaches to promote demand generation and increased awareness about HIV-related topics. Content examples include photos, GIFs, interactive written content, and videos. The ability to share videos is a particular strength of digital demand generation, as videos featuring relatable characters and storylines can prove especially persuasive. Digital communication content can present a more cost-effective option than print media. Although there may be start-up costs to establish an online platform to promote content or pay for advertising channels, virtual communication materials do not have the recurring cost of printing, which physical materials incur.

Online content can be shared with many people in a short amount of time, since virtual communication channels promote rapid information sharing, elevating the potential reach and influence of a demand generation or awareness campaign. Social media sites involving walls or news feeds where a user reviews recently published posts is one entry point to access virtual populations. Publishing messages on these feeds, either through targeted advertising or by gathering followers of campaign pages, can put content in view of online users.

Another use of virtual platforms and applications is messaging, either with one person directly or in messaging groups. Chat features are now an integrated part of most online platforms, including social media as well as dating applications. WhatsApp for example, a vastly popular messaging application in India with over 400 million users [28], can be a powerful tool for HIV programmes to raise awareness and increase demand for services. Broadcasting messages on group chats or having

online outreach workers engage and follow-up with individuals over WhatsApp can promote HIV prevention and care in a convenient and easy way for beneficiaries.

1.5.2 Digital outreach approaches

Ways to reach at-risk populations with HIV awareness messages have evolved along with technology and online behaviours. Extending from physical approaches where outreach workers go to locations to contact and engage individuals, an adapted social network approach was developed as a viable alternative.[29] Still using a peer-based, one-to-one approach, outreach workers can engage with target populations over virtual spaces, targeting higher risk groups based on the sites they use, and conversing over chats. The next evolution incorporates a broader audience, reaching many people at once with advertisements or messaging campaigns over digital communication platforms.

Awareness and demand generation campaigns often include a call to action, or link to further resources. This allows viewers to instantly take advantage of the newly acquired information, motivation, or behavioural cue which they gained from seeing the original message with only a click or tap. For example, a video promoting the benefits of HIV testing can end with a link to a website with resources to book and complete HIV testing at a convenient clinic.

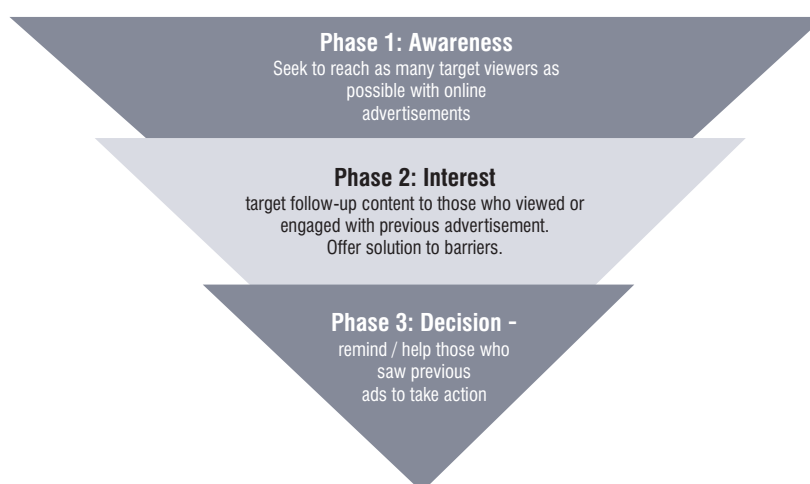
Another valuable resource to link online users to, acting as an intermediary step between HIV awareness and service engagement, is an online HIV risk assessment. A digital survey can walk users through sexual and other risk behaviours to determine their sexual health service needs, offer appropriate recommendations, and facilitate linkage to services. A benefit of online risk assessments is that users lead the process, self-navigating and completing the assessment on their personal device without provider interaction. This may be especially appealing for populations who value anonymity or autonomy, presenting an appealing low-risk first step to service linkage.

Another approach which has gained traction in virtual demand generation campaigns is targeted advertising. This involves directing certain postings to certain viewers, based on traits and preferences available through online data. Targeted advertisements are often based on interest, pulled from information people have added to timelines, previous advertisements they have clicked on or keywords associated with pages they frequent. It can also be based on publicly available demographics, or connections, pulled from who people are friends with, follow, or interact with through posts and chats.

Targeted advertising can be part of an adaptive, funnel-based approach to drive online marketing for awareness campaigns. HIV communication campaigns can use a phased approach to maximise engagement by advertising to those who are most likely to view and interact with the content. Users who interact with previous content can be the target for the next phase of messaging. An Organisation in Australia, called ACON, ran a series of targeted advertisements over Facebook under their "Ending HIV" campaign to encourage gay men and other MSM to visit their website to book a test for HIV. ACON used interest-based targeting to reach their audience with a three-phased approach. First, they posted a video aimed at reaching as many MSM as possible. Then they targeted those who engaged with the video, sending them another ad addressing barriers to testing. The last ad was sent to those who saw both previous messages but had not visited the website, as a reminder to take action. During the promotional period, a total of 1065 people visited the website

as a result of the targeted advertising campaign.[30] Such an approach can help retain the maximum amount of viewers who are interested to take action by clicking on a link or engaging with an outreach worker (see Image 1).

Image 1: Targeted approach for online marketing



Social media influencers are another way to promote the spread of information to large audiences over social media. This method involves collaborating with a popular person or brand who maintains a large following, or has established credibility among target audiences. This influencer can work to attract attention, inspire and sway opinions more than an account or person a viewer has never heard of. Social media influencers can use their popularity and established follower base to help explain complex topics for broad audiences, promote an HIV programme's messages and goals in creative and engaging ways, and use their credibility to persuade and motivate action.[31]

To capitalize on the reach social media influencers have established, programmes should first research who influences the target population groups of interest. Surveys and focus groups can support this goal. Collaboration can entail influencers posting about resources already developed by the programme, or being personally involved in media content, such as being featured in a video or photo-based campaign. To support influencers, programmes should consider preparing accurate responses to frequently asked questions related to the messages or promoted action.[31] Programmes should clearly lay out expectations surrounding the content and links which should be included in posts from influencers.

Feature: LINKAGES in Jakarta – Social Influencer Outreach

Since July 2018, the LINKAGES Programme in Jakarta uses social media influencers to promote an online reservation system that helps link clients to HIV services. Influencer promotions have helped establish the online presence of the campaign and reach people at high risk for HIV, especially after launch events with the social media influencers. There was a 58% increase in HIV case-finding among participating clinics in Q4 of FY18 during the time of influencer promotions





Source: LINKAGES in Jakarta – Social Influencer Outreach

1.6 Virtual strategies for service linkage

While virtual strategies can reach large audiences with information and behavioural messaging, it is critical they also facilitate service linkage. Epidemic control in India will require more individuals to engage with services at various steps along the cascade, from HIV prevention to treatment to long-term care. Internet-based HIV programs should help online users access these needs, including HIV/STI testing, counselling, longstanding ART access, clinical care and wraparound services. It is important for programmes to effectively track and monitor the exchange of online clients to service linkage, to assess results and make improvements over time (see Section 2.4 Monitoring and Reporting).

Virtual strategies can help people reach online followers, and ensure they follow through with HIV service uptake in a variety of ways. Follow-up approaches should be designed to meet clients where they are in the HIV cascade. Online outreach workers who engage with individuals over chats can offer to meet them in-person to continue the conversation, answer questions, offer counselling, and help them with next steps for their needs. Digital referral or booking websites are another service linkage tool which can decrease logistical barriers for clients interested in seeing a service provider. These involve sending a provider or facility the details of the client for them to follow-up on, or having the client choose a booking window up-front to appear at a facility for a service. Different options for service delivery may appeal to different people. Thus, it can be beneficial for virtual outreach strategies to provide multiple options and avenues for service linkage to those reached online.

As a medium of direct communication, digital approaches can help reach out to people who previously engaged in care to offer reminders, motivation and follow-through for re-engagement in care. Virtual follow-up can help a person carry out testing who booked an appointment but never went, or help a person who stopped picking up ART re-engage and adhere to treatment. If possible to reach clients who have been lost to follow-up virtually, outreach workers can get in touch with them online and help address their personal barriers to ease re-entry with services.

Feature Samarth social media campaign for HIV service linkage [32-33]

The Samarth project developed a social media messaging campaign promoting the benefits of early HIV testing and treatment titled “Pata Lagao” meaning “know your status.” The project worked to ensure service linkage across the entire HIV continuum. Samarth posted Pata Lagao messages on selected social media platforms to target MSM and TG social media in 7 urban areas across India, mobilizing viewers to seek HIV rapid screening at community-led Samarth clinics. 742 people were screened for HIV using this approach in Phase I of the campaign. Support continued to refer positive clients to government testing centres, government ART centres for treatment, and care and support centres to enhance adherence and quality of life.

Feature Virtual to physical – PATH's models for service linkage in Vietnam [34]

PATH in Vietnam launched a project through its Healthy Markets initiative to use new media, messages and models to increase HIV service uptake in Vietnam. In response to low HIV testing uptake among MSM, PATH first segmented their target population based on types of online media use through community insights, then defined online outreach goals to increase HIV awareness, generate trust, and motivate action. PATH led online promotion of HIV services through Facebook, Google Ads, and dating apps popular with MSM, integrating a chat bot focused on PrEP and HIV testing. The project also used online peers to screen social media users on HIV risk, refer and provide follow-up for HIV test, PrEP and ART. From 2016-2019, PATH reached 7,490 clients with HIV counselling through online outreach. 5,938 were referred for HIV testing, and 95.3% of them completed testing. Of those, 528 were confirmed positive, with 99.7% enrolling in ART. PATH found that online outreach through multiple platforms is essential to ensure wider engagement of MSM and TGW in need of HIV services.

2. WAY FORWARD

2.1 Virtual strategies for India

India's AIDS Control Programme has made tremendous progress through adaptive efforts in response to the evolving epidemic and network dynamics. Incorporating virtual strategies in to the national agenda is necessary to continue this adaptive approach. With a focused effort to reach populations with higher risk behaviours under the National AIDS Control Programme (NACP) Phase IV, going virtual can further this goal to effectively reach groups with higher risk as they transition from, and move between, physical to virtual spaces – populations who are not routinely reached by the national AIDS Programme currently. This changing dynamic was noted in the mid-term appraisal of NACP IV, paving the way to use internet-based approaches. The NACP IV mid-term appraisal report recommends using virtual or technology-based outreach strategies to propel population awareness about HIV risk reduction and effective management, stigma reduction, behaviour change, and service uptake in India.[35]

Recognizing the shifting typologies from offline to online spaces and resulting intersecting HIV risk behaviours, the national AIDS response has been exploring ways to integrate virtual strategies to deliver a comprehensive package of services and support along the entire HIV continuum. Online approaches in India focused on holistic care to provide end-to-end HIV services can bring vast gains in epidemic control. The next phase of the National Programme (NACP V, 2021 onwards) will work to incorporate online communication-based strategies, considering evolutions in the technology industry and digital platforms in India.

It is recommended that virtual strategies in India be tailored and specific to the population group they are intending to reach. Population groups in India use virtual spaces differently with various preferences on which channels to use and how. Understanding these dynamics can inform how best to reach the target group.

Table 4: Opportunities for online outreach across population groups in India

Youth	SW	MSM / TGW	PVID	PLHIV	General Population
As the newest generation leading technology use and trends, youth and adolescents in India generally have high internet literacy. H I V programmes should leverage online outreach strategies to reach youth and adolescents with sexual and reproductive health messaging, as adolescence is a critical intervention point to promote safe sexual practices to prevent HIV	HIV interventions should engage sex workers as they transition from and balance between physical and virtual communication methods for networking, partner-finding, and engagement in sex work. Channels such as WhatsApp and dating applications can be used to spread HIV-related messages to S W and stakeholders. O n l i n e communication dynamics between S W and gatekeepers/pimps should be considered. Intermediary network operators who communicate online on behalf of a SW network should also be targeted.	M S M and TGW are going online to find partners and build community, giving programmes an opportunity to reach new MSM/TGW clients with HIV messages and services. These clients may appreciate virtual engagement to avoid negative facility-based experiences.	PWID may use online platforms to communicate, build community, or gather and share information. This presents a critical opportunity to increase awareness and engagement among PWID through virtual channels about harm reduction, and services such as opioid substitution therapy, syringe service programmes, and ART.	V i r t u a l strategies can help reach new and unengaged PLHIV in India who remain inaccessible to facility outreach efforts to receive treatment, stay on treatment, and maintain the clinical care they need.	Internet access and use is exploding across all of India. Through digital outreach campaigns, H I V programmes can reach more of the general population to increase HIV awareness, improve testing and reduce society-level stigma.

Virtual HIV interventions in India should take into consideration the existing service environments and work for congruous integration with existing interventions. Digital strategies should ensure continuity across the entire HIV cascade, supporting linkage from awareness, to prevention/testing, treatment, and ongoing follow-up for health-promoting behaviours. Online to offline service linkages should encompass both public and private facility networks, offering digital clients the range of health care environments in India to find what works for them to promote successful linkage. Lastly, there needs to be a well-defined reporting system, where de-duplicated populations reached via these various platforms could be accounted for, when examining progress towards the 95-95-95 targets in India.

Table 5 : Opportunities for virtual approaches in India

Awareness	<ul style="list-style-type: none"> • Online information, education and communication campaigns using multi-media content shared over social media sites, chat platforms, and dating applications. These can include infographics, pictures, GIFs or videos. • Online risk assessments • Online outreach workers or chat bots offering personal messaging to answer questions and provide information • Sharing information on comprehensive prevention services available and where to go for services <p>Awareness campaigns can have more robust impact through:</p> <ul style="list-style-type: none"> -Consistent messages and branding -Targeted advertising -Promotion via social media influencers -Gamification of incentive-based interactions -Virtual outreach counselling through chat, calls, or video chat
Testing/ Prevention	<ul style="list-style-type: none"> • Outreach workers can provide online counselling to clients about prevention behaviours such as condom use, PrEP, or harm reduction strategies • Online awareness campaigns promoting testing as important prevention tool • Linking online clients to range of testing options (i.e., assisted HIV screening, unassisted HIV self-screening, confirmatory testing) • Offering support to find convenient testing locations (through location lists or peer-to-peer communication) • Links to online booking platforms for testing appointments • Offer to transition from online to in-person logistical or counselling support for testing process • Linkage to in-person testing services, both public ICTCs as well as private facilities, with information for online clients to understand their differences • Linkage to STI testing, diagnosis, and treatment services • Linkage to PrEP, condoms, opioid substitution therapy, or syringe service programmes

Treatment	<ul style="list-style-type: none"> • Digital awareness campaigns to promote why ART adherence is important and to increase treatment literacy on concepts such as U=U, viral load, and CD4 counts • Online outreach workers trained to help identify and overcome barriers of PLHIV to access and stay on ART • Help for clients to access ART and other commodities conveniently (arranging home delivery, courier, or pick-up locations through web-based technologies) • Virtual follow-up methods (ex. phone calls, messages over SMS or social media chat application) to help/remind PLHIV to maintain ART stores and overcome barriers to adherence • Linkage to in-person facilities for ART initiation and long-term access - both public ART centres and private facilities, with information to understand their differences • Linkage to online pharmacies to receive ART for private sector clients • Telemedicine: delivery of health care services by health care professionals using web-based communication technologies for the exchange of information and discussion related to the diagnosis, treatment and management of diseases and health-related concerns
Follow-up	<p>Who:</p> <ul style="list-style-type: none"> • Online outreach workers • Community health workers • Peers • Counsellors/psychiatrists • Clinicians/doctors • Chat bots <p>How:</p> <ul style="list-style-type: none"> • Internet-based messaging platforms (ex. WhatsApp) • Social media/dating application chat functions • SMS messages • Remote video communication • Automatic message reminders
Cross-cutting	<ul style="list-style-type: none"> • Connect online clients to National 1097 Helpline • Offer linkage to telemedicine opportunities and remote counselling • Offer options for public as well as private providers • Chat bots/automated systems to help online users access information quickly, know where to navigate next, schedule or reschedule appointments, and offer a low-risk way to offer feedback (See Section 2.3, Artificial Intelligence.) <p>Robust monitoring and reporting mechanisms to track impact and learnings (see Section 2.4, Monitoring and Reporting)</p>

2.2 Scaling up National HIV/AIDS Helpline and mobile apps



Progress under India's National AIDS Control Programme (NACP) IV to develop systems that support seamless HIV service linkage offer opportunities for integration with virtual strategies. In particular, the National Toll-Free AIDS Helpline – 1097, is a resource that can offer clients immediate access to comprehensive information related to HIV/AIDS, counselling and referral services by dialling the toll-free number. The Helpline 1097, established in 2014, renders professional counselling in 16 languages available 24/7, as a platform to expand awareness and service linkage for HIV/AIDS in India. There are currently four hubs with 51 counsellors that are located in Hyderabad, Jaipur, Guwahati and Solan, with a disaster recovery site to support uninterrupted data and voice services to all operation centres.

Counsellors remotely provide information and guidance to callers over the phone, or through SMS support on request, by listening and responding to questions, and connecting them to social protection schemes relevant to HIV/AIDS that can be availed by various beneficiary groups. The Helpline has worked to overcome challenges in other call centre programs, such as ensuring quality monitoring systems, offering diverse language options, and having ample call times available. The helpline emphasizes anonymity and confidentiality of callers.

Since its launch in 2014, the National Helpline has received the highest call volume from callers in the age group of 25-39 years (58% of callers in 2021), followed by the age group 15-24 years (29% of callers in 2021). The proportion of calls which result in service provision or linkage to social protection schemes has been increasing yearly, with 48% of calls in 2021 involving service provision. 98% of calls involve answering common questions about HIV/AIDS, sexual encounters, care facilities, and availability of ART or PrEP. Other services provided over the Helpline involve linkage to testing, treatment, labs, and tuberculosis services; as well as services to support condom access and experience of stigma and discrimination.

The Helpline is an accessible tool apt for integration with the growing range of digital outreach campaigns in India. Apart from providing education and counselling, the call centre is also enabling people to register their grievances and unique perspectives on services in India. Counsellors are trained to make callers feel understood and validated in their experiences and perspectives, promoting authentic viewpoints. Grievance reporting and adaptive responses helps ensure that youth, key populations, PLHIV and the general population of India have access to quality care and are treated with dignity in health care environments. This mechanism helps the National Programme respond and optimize the network of referral services in India to support effective HIV prevention, care and treatment.

With the challenge to ensure service delivery and counselling through virtual interventions, directing online clients to NACO's Helpline can offer a quick way to boost client linkage to the health care they need. The Helpline feeds into similar benefits of remote service delivery supported by virtual strategies, including anonymity, convenience and speed. The utility of the Helpline comes with its multi-purpose design to provide information, counselling, referrals as well as a space for feedback, all possible through virtual channels. In response to the pattern of queries and feedback from callers, the Helpline is continually updating its services and counselling areas to keep up with public awareness, sensitivities, and needs.

To expand its utility and impact, the Helpline is undergoing expansions and improvements. Work is being done to reduce the waiting time for callers. Helpline counsellors are being trained on details of more healthcare schemes, including tertiary care centres in India, to facilitate specialised service linkages. Counsellors are also being trained to provide adherence counselling to support clients on ART, particularly for those missing two or more doses per month. Helpline workers will be able to provide these clients personalised behavioural counselling and facilitate follow up from ART centres. Also in development is increasing the Helpline's capacity to serve as a resource hub for new prevention approaches like PrEP and HIV self-testing. Callers will be able to learn more about these technologies, understand their benefits and limitations to consider if they are right for them, and learn how to access them. The Helpline will continue to adapt to support virtual strategies to link digital users to counselling and services, an essential service in an era where technology-based information sharing and remote services will continue to expand.

NACO has developed a mobile app for healthcare staff at field level to perform outreach activities. This mobile app enables outreach staff to perform risk assessment and screening of beneficiaries and have easy access to the HRG list. Outreach workers also utilise mobile apps for commodity distribution such as needles, syringes and condoms, etc. which further enables to keep real time tracking of the inventory.

NACO has also developed a beneficiary mobile app for PLHIVs to allow beneficiaries to quickly schedule appointments as per their convenience and providing easy access to their medical record history. It gives beneficiaries greater involvement in their own conditions, through better education and understanding of opportunistic infections such as STIs and Tuberculosis. It also improves the medication adherence through automated pill reminder feature. These could also be potential platforms where virtual HIV interventions could be positioned and scaled-up.

2.3 Artificial Intelligence

Artificial intelligence, commonly called "AI", is revolutionising the possibilities of virtual interventions to improve health. The technology develops automated platforms trained to execute a specified task which are responsive to user inputs. Artificial intelligence often uses a knowledge base and a given series of rules which help it approximate how a human would respond or problem solve. AI technologies can leverage advanced machine learning to adapt over time, learning from the emerging patterns in data analyses.

AI offers opportunities to support and optimise health care activities, including enhancement of virtual strategies promoting HIV awareness, service demand generation and linkage. Aspects of online outreach incorporating AI can help personalise outreach strategies and messages, a valuable feature since virtual interventions lack in-person relatability. Firstly, AI technology can offer insights about behaviours of virtual populations using big data predictive approaches. For example, AI can help predict which segments of target groups will be online when, on what app, and what kinds of messages they will respond to, helping programmes increase yields from virtual campaigns. Secondly, AI presents opportunities for automated interactions with online users, through the use of chat bots. Chat bots can utilise voice or text responses in a messaging tool designed to mimic a one-to-one conversation. Outreach worker roles can be programmed into interactive chat characters which provide requested information to clients on demand, and offer tailored motivational

messaging based on what they input. There are many ways AI can be leveraged for digital HIV strategies, and the possibilities will only increase as technology advances.

However, the opportunities from AI do not come without challenges. AI technology is only as robust as the data used in its development, so an adequate knowledge base is required to build a reliable and representative AI system. Programmes need high-quality, substantially large data sets to train algorithms and programme systems, which can be difficult to collect. This can lead to ethical barriers of AI. Lack of representation in data sets across socio-demographic characteristics or behaviours can build bias and blind spots into AI systems, perpetuating prejudice and inequities of society. It is important to consider that AI technologies are only approximations of human interactions, leaving room for error and inaccuracies, which could undermine client trust. Further challenges with AI systems include privacy, confidentiality, data security, informed consent and data ownership. These challenges need to be considered in the design and use of AI systems in virtual strategies to ethically progress India's HIV response. Ongoing feedback and input from target communities and beneficiaries about AI approaches can help optimize their acceptability and impact.

2.4 Monitoring and reporting

Like all HIV programmes, online HIV interventions necessitate tracking results and documenting user experience. Data collection and timely analyses of data from virtual strategies is essential to understand outcomes as well as impact, improve inefficiencies and close existing gaps. Before implementation begins, mapping exercises and population size estimates can help define target group sizes and generate denominators (see Section 1.4). Throughout implementation, the immediacy of digital data and large data sets can be rapidly accessed from backend analytics of websites, social media platforms, and applications. Big data sets up big possibilities for insight. Tracking web analytics such as viewer impressions, click patterns, and bounce rates can help programmes understand trends in how viewers are accessing and interacting with their content. Digital metrics allows programmes to rapidly aggregate and review data, enabling real-time efficiency to improve outreach strategies for optimised reach and yield.

Capturing data on conversion rates and linkage from one step to the next in an online outreach flow is important to characterize impact along the HIV continuum. Effective cascade monitoring at a population-level depends on effective reporting embedded in systems linked across the entire cascade. This can prove challenging in virtual interventions. Without in-person interactions, it can be difficult to track what people do after they engage online with an advertisement or outreach worker. This barrier calls for innovative ways to encourage reporting on service seeking behaviour in virtual strategies to document impact on service referrals, uptake of services, and re-engagement. Robust reporting mechanisms incorporating a range of metrics which take into consideration the dynamic nature of online-offline behaviours will facilitate understanding of the saturation and coverage of virtual interventions across target populations.

2.5 Community involvement

Information to inform virtual strategies should reach beyond indicators, to individual perspectives of target communities. Community-oriented, formative activities can be important steps for digital campaigns, as preferences and perceptions may not be the same for online services compared to in-

person. Communities involved in the process should include the intended beneficiaries of virtual interventions, i.e., representatives of population groups who use web-based platforms who may be engaging in higher risk HIV behaviours. As youth and younger populations maintain a strong online presence in India, younger populations may be a critical group to target to gather feedback and input on virtual strategies.

Community engagement activities can include community advisory boards, focus groups with representatives, or message pretesting, and can take place in-person or virtually. Engaging social media influencers in a virtual campaign who are well-connected to a network of target beneficiaries is another way to ensure community involvement and acceptability of messages. Tailoring messages to reflect realistic entry points for services, messaging preferences, and behavioural dynamics of target online groups is important to optimize the design of a digital intervention. Pretesting messages and advertisements with community representatives to gather feedback can improve relatability and reveal preferred mediums of communication. Additionally, it is important to involve communities to appropriately adapt virtual strategies to the preferences and needs of confidentiality and data security. These considerations will be different between risk groups, ages, and contextual environments.

It is important to invest in a user-centred approach for online approaches since social media and virtual communication channels are already saturated with content. Programs can establish custom indicators which track feedback activities conducted with target beneficiaries and acceptability of strategies. Community involvement can help increase the persuasion power of virtual strategies to prove noticeable and memorable amid the myriad of online content seen daily.

2.6 COVID-19 and remote service

Virtual strategies are set up well to promote and enable the increasing amount of HIV services which can be offered remotely, such as information-sharing, HIV self-testing, linkage to services, and telemedicine counselling. Remote services enable those digitally engaged to access health care without needing to go to a new location, change their communication channel or interact in-person with anyone else. This is a potentially life-saving feature of remote service linkage in the times of COVID-19 by limiting the need for travel, especially use of public transport.[37] Virtual outreach approaches which offer or link people to remote care can help those access HIV services without exposing themselves to environments where they may be exposed to COVID-19. Online services offer an alternative to facility-based care, which can maintain essential access to HIV services when in-person care is disrupted or not preferred.

2.7 Ethical considerations

Internet-based systems collect a generous amount of information from people who use them. Programmes and interventions therefore need to give comprehensive attention to data privacy and data security in virtual strategies. Programmes should be open to clients as much as possible about what personal information is gathered when engaging with online interventions and how it will be used, offering clients the chance to opt-out. Programmes should also ensure that online platforms they use protect against vulnerabilities for unauthorised access and use of information being

collected from clients. It is the responsibility of programmes to use data secure systems at all stages of the intervention, from data collection, transfer, and storage. Virtual interventions in India need to ensure the handling of data is in full compliance with the Information Technology Act of India and the HIV/AIDS Prevention and Control Act, 2017. Programs should establish standard operating procedures outlining how strategies and staff will remain in compliance and maintain the privacy of clients.

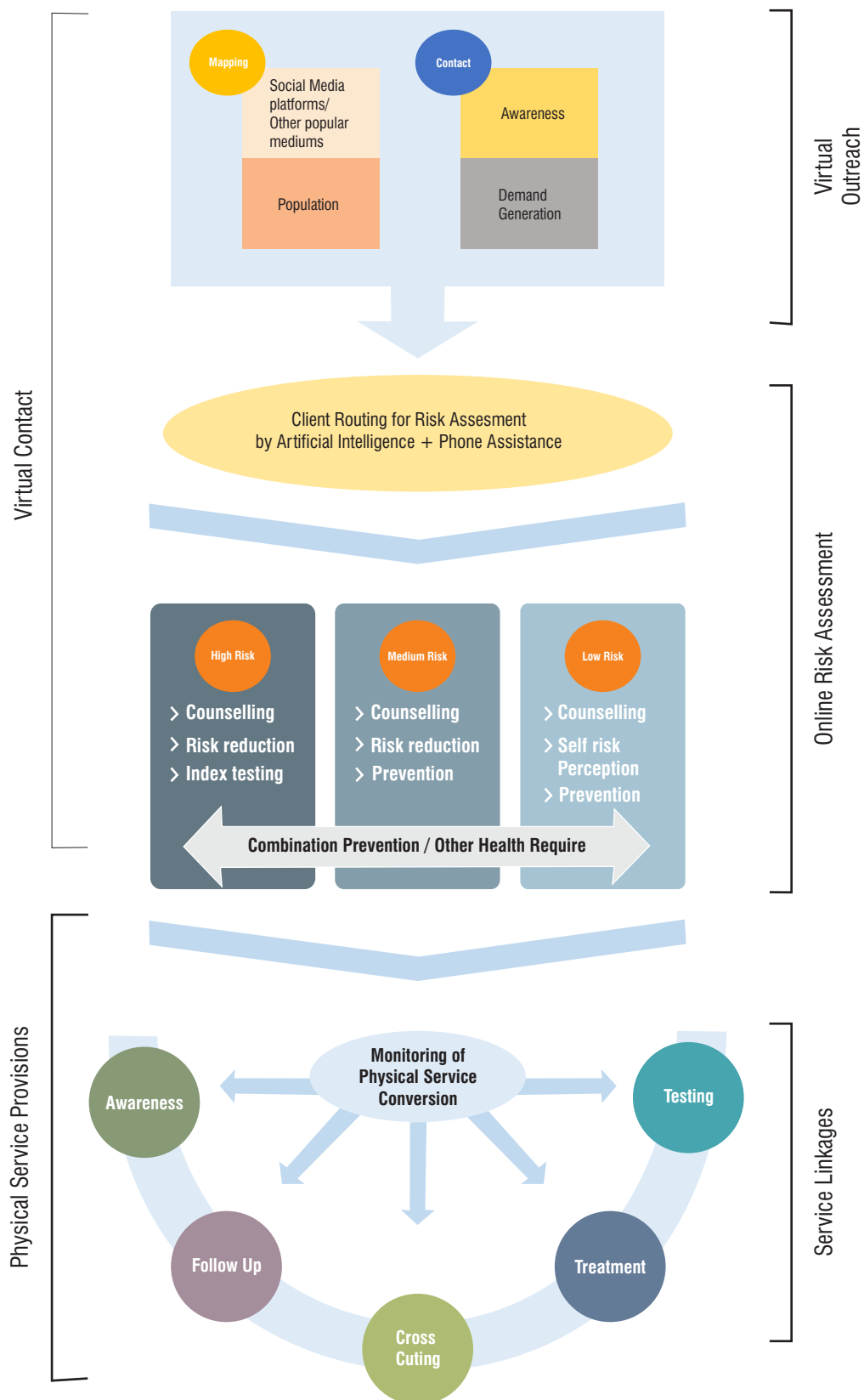
With the sensitive nature of HIV-related behaviours, programmes should consider how to ensure the confidentiality of clients engaging with virtual strategies. Programmes should build in ways to ensure confidentiality to any extent possible, working to protect identities and ensure that client information shared online will remain confidential. Online outreach workers should be trained on client confidentiality, emphasising the sensitivity of their role given HIV-related stigma and discrimination which clients may experience. For people practicing risky behaviours or PLHIV, willingness to participate in an online intervention may depend on their perception of privacy protections and level of precautions to maintain confidentiality.[38] Informed consent procedures for virtual approaches should include clear explanation of confidentiality protections.

In considering targeted advertising, programmes running HIV-related advertisements should be aware of the implications and potential risk given the stigmatised identities of targeted groups with higher risk behaviours. For people who have not disclosed to various people that they engage in higher risk behaviours or that they are living with HIV, receiving an HIV-related advertisement or message online could risk suspicion or unwanted disclosure if family, roommates or friends see the content. HIV targeted advertisements could therefore, have potentially dangerous consequences, especially for individuals living in crowded living environments or who share internet devices with others. Programmes should recognise these implications when carrying out targeted advertising campaigns, and consider only running ads within the same platform or application they drew user information from. A closed-environment targeting approach can help preserve client privacy and confidentiality, as it makes assumptions only from a person's use on a single application, and leaves less room to reach unintended viewers.

3. CONCLUSION

The next phase of the National AIDS Control Programme (NACP V, 2021 onwards) will work to incorporate online communication-based strategies, considering evolutions in the technology industry and digital platforms in India. It is essential that online strategies in India remain adaptive to user needs while ensuring data security and confidentiality. HIV programmes in India should strive to understand the size of target virtual population; explore differences among users in demographics, preferences and context to facilitate tailored virtual approaches; design effective online messages to generate awareness about HIV prevention, care and service options; and link virtual populations to comprehensive HIV services tailored to the needs of communities. Programmes should consider the changing dynamics of communities along with evolving technology for adaptive approaches.

The operational framework that may be considered as way forward is presented below:



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