We conducted a systematic review and meta-analysis, searching six databases and including original research manuscripts comparing testing outside clinics with conventional testing. Main outcomes were test uptake and linkage to care, delivery models and adverse outcomes.

We identified 76 studies which were included. Data from 18 studies were pooled in meta-analyses. Studies focused on HIV (48), chlamydia (8), and multiple diseases (20). HIV self-testing increased test uptake compared with facility-based testing (nine studies, pooled OR 2.59, 95%CI = 1.06–6.29, moderate quality). STI self-sampling increased test uptake compared with facility-based testing (seven studies, pooled OR 1.74 95% CI=0.97 – 3.12, moderate quality). Innovative and other digital test delivery services improved test uptake compared with facility-based testing services. We defined digital as emails, websites, instant messaging, or related internet approaches.

Our work shows testing outside of clinics increased test uptake without significant adverse outcomes. These testing approaches provide an opportunity to expand access and empower patients through innovative delivery models. From the policy viewpoint, this work demonstrates that the use of digital technology in testing outside clinics is a useful strategy for improving infectious diseases screening and linkage to care, and policies that aim to promote the use of these strategies are needed. These models may be especially useful for diseases associated with stigmatization such as HIV and other STIs in LMICs. However, inherent challenges include ensuring linkage to care continuum, quality assured testing and getting the right tests to the right people. Further implementation research and scale-up of effective decentralized models in LMIC settings is needed.

S08.2 SELF-TESTING AND E-STI: THE DUTCH EXPERIENCE WITH HOME-BASED AND INTERNET-BASED SERVICES AND TRANSFORMATION INTO EFFECTIVE IMPLEMENTATION

E Op de Coul*, R. Rimm, Bilthoven, The Netherlands

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The main STI-healthcare providers in the Netherlands are GPs and sexual health clinics (SHCs). SHCs offer free-of-charge STI-care for key-populations. At the same time, Internet-based STI-test and home-sampling offers increase, offering new opportunities for a blended, more efficient, low threshold service. Currently, SHCs and national partners are reshaping sexual healthcare for young people and other key-populations, using a stepped-care model (SCM). The SCM is based on the principal that not all individuals need the same level of STI-care: some may be helped by online self-assessment tools (sense.info, Advies.chat) and a home sampling-kit and others need support by a professional.

NoMoreC and Limburg4zero are regional e-STI services for MSM, developed by SHCs, and co-created with MSM communities, healthcare professionals and other stakeholders, based on a scientific/theoretical framework. NoMoreC targets high-risk MSM for HCV-prevention and offers anonymous, low cost, home-sampled HCV-testing. Limburg4zero provides home-sampling for HIV/STI testing as an extension of regular STI-care including peer-to-peer sharing, and e-counselling on e.g. chemsex and PrEP.

Opportunities

- Community involvement is essential to reach the right target groups
- Personalized e-STI advice and test-options provide a viable alternative for those preferring autonomic testing, and can save costs
- The HCV-test service appeared especially suitable for MSM using PrEP who arrange their own STI-care
- e-STI should deliver prevention messages for those who tested negative

Challenges

- Quality assurance of test procedures (e.g. quality of the test, which test is offered) is a topic that should be high on the agenda
- Implementation is only effective when based on a clear theoretical/scientific framework
- Sustainability of regional e-STI initiatives is challenging; most are financed by research grants and broader/sustainable expansion may need governmental funding
- Tracking linkage-to-care is challenging in interventions with anonymous participation
- Return rates of home-sampling kits may be improved through digital innovations

S08.3a HOW TO REALIZE IMPLEMENTATION IN HIV SELF-TESTING BY DISTRIBUTION VIA THE SOCIAL NETWORK IN CHINA: A JOINED COLLABORATION BETWEEN STAKEHOLDERS

¹W Tang*, ²Y Zhou. ¹University of North Carolina Project-China, Guangzhou, China; ²Zhuhai Center for Diseases Control and Prevention, Zhuhai, China

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HIV self-testing (HIVST) had been widely used in China since 2012, but social network strategies were rarely used to improve HIVST coverage. This presentation reports a case of community-based social network distribution of HIVST among Chinese men who have sex with men (MSM).

In 2016, UNC Project-China hosted an HIV testing intervention development designathon and invited eight teams from two provinces to contribute. The Zhuhai team designed an HIVST promotion proposal, which was a joint working plan between a community-based organization and the local CDC. They co-developed a social media platform for self-test kits application and results reporting, which successfully provided 600 kits to MSM in 2016. However, due to the lack of evidence-based intervention, the program failed to increase the testing coverage and lack of innovation. After that, the researchers in the UNC Project-China team brought in secondary distribution idea, which allows the index MSM to apply for multiple kits and distribute them to people in their social network. After the piloting, 373 index MSM successfully motivated 287 alters for testing, among whole 40% were new testers, and the HIV testing yield among alters was significantly higher than that among index MSM. In the following RCT, a monetary incentive and peer referral further improved the mean number of kits that were distributed by index MSM (MD=1.21, 95% CI: 0.77–1.65). The strategy strongly increased testing coverage and was further implemented at the provincial level.

Opportunities

- Social-media platform provided an opportunity to reach a diverse index MSM

- Social-network distribution expanded the testing coverage
- A jointed collaboration increased the understanding of the needs of the community

Challenges

- The proportion of index that willing to distribute kits is remaining low
- Did not involve in the alters for further distribution
- Did not take the key influencers into consideration

S08.3b USING SOCIAL MEDIA AND SOCIAL NETWORK TO EXPAND HIV SELF-TESTING IN CHINA

^{1,2}Y Ni, ^{1,2}Y Lu, ³Y Zhou, ^{1,2}W Tang*. ¹Dermatology Hospital of Southern Medical University, Guangzhou, China; ²University of North Carolina Project-China, Guangzhou, China; ³Zhuhai Municipal Center for Diseases Control and Prevention, Zhuhai, China

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HIV self-testing (HIVST) is considered as an effective strategy to enhance HIV testing, especially among the marginalized populations such as men who have sex with men (MSM). We aimed to evaluate the effectiveness of social network-based secondary distribution model of HIVST among MSM in China. MSM participants (defined as 'indexes') who were recruited through an online platform. Indexes could order up to 5 HIVST kits through the online platform. Refundable deposits of 15 USD were attached to each HIVST kits. Indexes were encouraged to distribute HIVST kits to members (defined as 'alters') within their social networks. All testers were required to upload photos of results to the platform, and indexes could get fully refunded after the results were verified. We firstly tested the feasibility of the model, and then conducted a three-arm RCT (Intervention 1: monetary incentives, Intervention 2: monetary incentives+online peer referral; Control: standard approach). Indexes could send personalized referral links to alters and receive 3 USD for each successfully distributed HIVST kit. Overall, a total of 640 eligible indexes ordered 1984 HIVST kits via our online platform. In summary, 1935 results (returning rate: 97.5%, 1935/1984) were returned, of which 648 results were from 625 alters. For the three-arm RCT implemented between September 2019 and June 2020, the mean number of unique tested alters motivated by each index was 0.57 ± 0.96 in the standard of care group, compared with 0.98 ± 1.38 in the intervention 1 group (mean difference [MD] 0.41, 95% CI: 0.08–0.74), and 1.78 ± 2.05 in the intervention 2 group (MD=1.21, 95% CI: 0.77–1.65). We conclude that social network-based secondary distribution model of HIVST is acceptable and effective in expanding HIV testing among MSM. Using social network strategies can optimize the current HIV testing services among the marginalized populations and it is promising to be scaled up.

S08.4 FOUR QUESTIONS ARISING FROM THREE DIGITAL APPROACHES TO STI TESTING: REFLECTIONS ON DIGITAL CARE AS IT DEVELOPS AND IS MAINSTREAMED

P Baraitser*. *Sh:24, London, UK*

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Introduction Digital delivery of sexual health care (or e_STI), including home-based and internet-based services, has now moved beyond 'asymptomatic testing'. As increasingly complex care is provided online and at scale it is timely to research the optimum balance between different modes of service delivery and the interfaces between them.

Methods Comparing digital services across contexts enables new thinking about integrating digital options into mainstream sexual health care at scale. We consider the same service adapted for the United Kingdom and Nairobi, Kenya and two different approaches to sexual health diagnosis, self-sampling and photodiagnosis.

Findings Digital services are delivered through a collaboration of humans and machines. Machines deliver timely automated responses, but specialist clinicians should be highly visible and accessible to provide personal information and care. Digital health services learn from both e-commerce (speed and convenience) and face-to-face care (safety and care) with new opportunities to combine them. Clinical technologies and pathways function differently when used online and need careful adaptation for digital services. Iterative approaches to implementation that use human centred design support safe and effective adaptation. They highlight the need for support for service users who take on new responsibilities previously completed by clinicians.

Discussion Digital sexual health care can improve individual and public health and it is timely to discuss effective implementation. Integration of digital options into mainstream sexual health care at scale provides new learning on the optimal balance between the different media of service delivery and the interfaces between them. New strategies to maintain quality assurance within online STI care are required at policy level (for example, regulations on posting samples and drugs); health system level (for example, training clinicians to deliver hybrid models of care) and service level (for example, implementing hybrid services that use different media to stay caring, safe and effective).

S09.1 ANTIMICROBIAL RESISTANCE DIRECTED THERAPY FOR NEISSERIA GONORRHOEAE

^{1,2}L Allan-blitz*. ¹Brigham and Women's Hospital, Boston, USA; ²Boston Children's Hospital, Boston, USA

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Neisseria gonorrhoeae has developed resistance to nearly all antimicrobials used in its treatment. Such rapid emergence of antimicrobial resistance prompted the United States Centers for Disease Control and Prevention to declare multi-drug resistant *Neisseria gonorrhoeae* infections to be one of the top three urgent antimicrobial resistant threats to public health in 2013. The consequences of untreated infection are numerous, ranging from neonatal blindness and sepsis, to female infertility. Rectal infection with *Neisseria gonorrhoeae* also increases the susceptibility to HIV infection. In recent years, genetic mutations conferring resistance to various antimicrobials have been identified, prompting the development of rapid, genetic tests for guidance of antimicrobial therapy. A single mutation in codon 91 of the gyrase A gene is necessary and sufficient to confer resistance to ciprofloxacin. Resistance to azithromycin is likely