- 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

conferred by a mutation in the 23s domain of ribosomal RNA. Resistance to cefixime, however, is more complex and involves two regions of the penA gene, which encodes penicillin binding protein 2. One of several mutations in the non-mosaic and mosaic regions of the penA gene have been implicated in conferring resistance. In the United Kingdom, implementation of point-of-care methods for determination of resistance patterns may improve antimicrobial stewardship at the expense of excess costs, though as testing becomes cheaper such methods are predicted to be cost-saving. Similar results have been reported in the United States. Extensive work is underway in Australia to evaluate resistance guided therapy among various populations and the implications for co-infection with other sexually transmitted infections. In this presentation, we summarize the current state diagnostic tests for genetic markers of resistance in *Neisseria gonorrhoeae*, the implementation thus far in different countries, and how such tests can be used to guide antimicrobial therapy with the hopes of stemming the rising tide of multidrug-resistant strains.

S09.2 RESISTANCE-GUIDED TREATMENT OF CHLAMYDIA

O Peuchant*. *Université De Bordeaux, Bordeaux, France*

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Despite being one of the most common STIs globally, true antimicrobial resistance to recommended regimens for *Chlamydia trachomatis* is a rare occurrence. Concern about treatment failure has arisen because of high repeat *C. trachomatis* infection rates both in men and women. However, only few strains isolated from clinical treatment failure have been found to demonstrate multi-drug resistance in vitro, including resistance to macrolides and tetracyclines, and this resistance usually exhibits a heterotypic pattern. Treatment failure could be explained by differences in the efficacy of azithromycin and doxycycline, especially in rectal infections. If rectal infection is more difficult to treat with azithromycin than cervical infection, then auto-inoculation from rectal to cervical site could contribute to repeat cervical infection in women. Moreover, factors such as immune response and drugs pharmacokinetics may also play a role in treatment failure. Repeat infection does not necessarily mean treatment failure; recurrent *C. trachomatis* infections can result from reinfection from an untreated partner or new infection from a sexual partner or could be a false-positive diagnosis due to the detection of non-viable *chlamydia* acid nucleic that is still clearing after treatment. It is also possible that in the absence of genotyping, cases of lymphogranuloma venereum (LGV) will be missed, leading to treatment failure. The identification of L genovars should be performed early (preferably within 1 week) because LGV treatment requires 21 days of doxycycline compared with 7 days for an infection with a non-L genovar. Ideally, routine LGV molecular diagnostics should be available in all countries, where they could be centralized at some national reference or similar type of expert laboratory. Different in-house or laboratory-developed NAATs have been designed and used for LGV diagnosis. The recent availability of commercial real-time PCR kits will allow more laboratories to implement routine LGV diagnosis to guide treatment.

S09.3 MYCOPLASMA GENITALIUM: RESISTANCE-GUIDED TREATMENT STRATEGIES

C Bradshaw*. *Alfred Health and Monash University, Melbourne, Australia*

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Syndromic treatment strategies for *Mycoplasma genitalium* have low efficacy in the context of rising antimicrobial resistance. The first generation of resistance assays that indicate macrolide susceptibility/resistance have substantially improved first line cure. However rising AMR and intrinsic resistance to many commonly used antimicrobials have substantially limited treatment options. This talk will cover the efficacy of current RGT strategies using available antimicrobials and adherence to and tolerability of this approach. With a clear need to adapt treatment strategies to rising AMR, new strategies may include quinolone resistance and near patient testing

S09.4 PREVALENCE OF MOLECULAR MARKERS FOR AZITHROMYCIN RESISTANCE FOUND IN *TREPONEMA PALLIDUM* IN BRITISH COLUMBIA, CANADA

^{1,2}M Morshed*. ¹Bc Centre For Disease Control, Canada; ²University of British Columbia, Vancouver, Canada

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Introduction In 2000, BC Centre for Disease Control (BCCDC) executed a mass treatment campaign with azithromycin in an attempt to curb a syphilis outbreak. As a result of mass treatment, syphilis case numbers decreased temporarily, but within two years the outbreak began to ramp up again. An antibiotic resistance study was performed on selected samples from the past 20 years in British Columbia to understand the local trends of azithromycin-resistant syphilis in BC.

Materials/Methods BCCDC Public Health Laboratory selected positive (n=273) samples from 2000 to 2019 for azithromycin resistance testing. A two reaction RFLP (Restriction Fragment Length Polymorphism) panel was designed to detect two possible mutations in the 23S rRNA gene of *Treponema pallidum*, which confer azithromycin resistance.

Results Among samples tested, over 75% contained one of the two mutations leading to macrolide resistance. The majority of the samples had the A2058G mutation. Only four of the screened samples tested positive for the A2059G mutation. None of the samples that were tested contained both resistance-conferring mutations in the 23S rRNA gene. To note only about 8.5% (5/59) of specimens collected in the first 10 years were drug resistant. Although case of azithromycin-resistant *T. pallidum* were detected in 2000, almost no additional resistant cases were detected among selected specimens for the next 10 years, except four cases in year 2004. In contrast, the drug resistance prevalence drastically increased to 93.9% (201/214) over the next 10 years (2010–2019).

Conclusions While azithromycin is not first or second choice in recommended syphilis treatment regimen in British Columbia, it is a drug of choice for many countries in other parts of the world; increasing azithromycin drug resistance, therefore, is a real global concern. In this presentation we will discuss the positivity rate for azithromycin resistance-conferring point mutations observed in our positive *T. pallidum* PCR samples.