Methods A comprehensive review of randomised trials of behavioural and biomedical interventions aimed at decreasing HIV transmission and acquisition was performed and will be presented.

Results In addition to male circumcision, the most successful biomedical intervention has been the use of antiretroviral drugs (ARVs) for prevention of HIV perinatal transmission and sexual transmission among HIV discordant couples, and for the prevention of HIV acquisition via microbicides and oral pre-exposure prophylaxis (PrEP). All of the transmission studies have demonstrated that reductions in viral load with ARVs to undetectable viral blood levels during birth, breast-feeding, or sexual intercourse reduces transmission by > 96%. This has been the greatest success in the HIV prevention field over the past two decades and continual scale-up of access to ARVs can be associated with marked reductions in HIV transmission and incidence. Decreasing acquisition with use of ARVs is totally dependent on high adherence (> 90%) to the medications in an uninfected population. Studies have had mixed results with some populations with high adherence demonstrating high efficacy using PrEP (> 70% efficacy) or microbicide (> 50% efficacy), while others with low adherence as measured by non-detectable blood levels of ARVs demonstrated no efficacy.

Conclusion Multiple studies have confirmed that effective use of ARVs substantially reduces transmission and emphasise the critical importance of integrated behavioural and biomedical strategies. When treatment with ARVs is combined with other interventions involving voluntary counselling and testing, condoms, adherence to medications, and circumcision, the possibility of controlling HIV becomes a feasible and achievable goal.

PL.03 - Plenary session 3: Anton Luger Memorial

PL03.1 STIS - 2013: RESURGENCE OF EARLY SYPHILIS, PERSISTENCE OF HIGH STI MORBIDITY AND MORTALITY, AND EMERGENCE OF ANTIMICROBIAL RESISTANT STIS: IMPLICATIONS AND POTENTIAL RESPONSES

doi:10.1136/sextrans-2013-051184.0006

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Recent directions in clinical-epidemiologic research on STIs include (1) population-level estimates of STI prevalence (e.g., WHO's 2011 publication of global estimates), and formal population-level surveys of STI prevalence and risk determinants; (2) analysis of global mortality and disability attributable to major diseases, including STIs (the Global Burden of Disease Study, published in the December 2012 triple issue of The Lancet); (3) conceptualization and implications of the "Treatment and Care Cascade" and the "Prevention Cascade" currently focused on HIV infection; and (4) emerging interest in Program Science, linking programme implementers and scientists in needs assessments, conceptualization, design, advocacy for funding, implementation, evaluation, cost-effectiveness, and continuous strengthening of STI/HIV programmes. The global emergence and rapid spread of anti-microbial resistant pathogens, suggests the clinical mantra of "first do no harm" to the individual patient must be mirrored in a similar public health mantra - "first do no harm" to the population. This means selective use and more systematic evaluation of the impact of antimicrobial use on human and animal pathogens and microbiomes. The reemergence of syphilis and persistence of other STIs in vulnerable populations, and the limited implementation of cost-effective interventions for STI control reflects global neglect of STI programmes, and perhaps increasing failure to effectively integrate STI, HIV/AIDS, and reproductive health programmes globally (for example, the very limited integration of HIV PMTCT with elimination of congenital syphilis programmes). Nonetheless, progress in sexual health promotion and STI control can be made possible with cost-effective use by clinicians and public health leaders of effective, available tools, such as scale up of HPV and HBV vaccines, and linked delivery of other sociobehavioral and biomedical STI interventions in vulnerable populations. Rigorous evaluation of the impact of such programmes, with assessment of what is not working as well as what is working, is essential.

PL03.2 CONTROL OF SYPHILIS IN THE WORLD'S MOST POPULOUS COUNTRY: OPPORTUNITIES AND CHALLENGES

doi:10.1136/sextrans-2013-051184.0007

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As one of the major sexually transmitted infections (STIs), syphilis has made a strong resurgence in China at a rate faster than any other country since 1980s. Epidemic of the infection has focused on the groups most at risk, such as men who have sex with men (MSM), female sex workers (FSWs), particularly those women working in the service venues or on the streets, and migrants. In recent years, the Chinese government has increased its efforts to respond the epidemic. Specifically, the Ministry of Health's recently launched 10-year national syphilis control and prevention plan includes the national milestone of achieving an explicit decline in the reported syphilis incidence and the elimination of congenital syphilis by 2020, indicating specific targets for percentages of target populations educated about syphilis, tested and treated for syphilis. Increasing political commitment, innovative screening technologies, and functional health systems have provide opportunities for China to develop the comprehensive intervention package consisting of "One integration of behavioural prevention, Two systems to be strengthened, and Three active screening accesses to high-risk groups to link One standardised treatment at clinic" to highlight the combination of behavioural and biomedical interventions for achieving the goals of the national plan. However, many significant challenges at programing and implementation levels, such as capacity of health system, affordability to STI care, trust between public health providers and clients, access to hidden populations, social stigma, confidentiality, and micro-environment to support delivery of intervention and care, still remain.

PL03.3 SYPHILIS: FROM PATHOGENESIS TO CONTROL

doi:10.1136/sextrans-2013-051184.0008

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Syphilis is one of the most fascinating of all infections. Although its origin is still debated, the history of syphilis includes many famous (and infamous) persons, and the disease is featured in art and literature. Syphilis is caused by a corkscrew-shaped bacterium, *Treponema pallidum*, that was first identified over 100 years ago. It has a miniscule genome, and it lacks many of the common metabolic pathways. It is so fragile that it dies within hours outside of the host, yet it is capable of evading host defences to persist for decades within the host.

Syphilis is known as "the great imitator" because its clinical manifestations, which can range from an ulcer or rash to blindness and insanity, can be mistaken for many other clinical conditions. In contrast, the infection can lie smouldering for many years, without any clinical evidence. After 70 years of use, penicillin continues to be an effective treatment, yet resistance to macrolide antibiotics like azithromycin has erupted in *T. pallidum* in many regions of the world. Physicians recognise that some persons who are treated for syphilis can be reinfected, sometimes multiple times. At the population level, the incidence of syphilis can wax and wane, often shifting from one population group to another.