Research news in clinical context

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A BROADLY NEUTRALISING ANTIBODY TO PREVENT HIV TRANSMISSION

Two HIV prevention trials (HVTN 704/HPTN 085; HVTN 703/HPTN 081) enrolled 2699 at-risk cisgender men and transgender persons in the Americas and Europe and 1924 at-risk women in sub-Saharan Africa who were randomly assigned to receive the broadly neutralising antibody (bnAb) VRC01 or placebo (10 infusions at an interval of 8 weeks). Moderate-to-severe adverse events related to VRC01 were uncommon. In a prespecified pooled analysis, over 20 months, VRC01 offered an estimated prevention efficacy of ~75% against VRC01-sensitive isolates (30% of viruses circulating in the trial regions). However, VRC01 did not prevent infection with other HIV isolates and overall HIV acquisition compared with placebo. The data provide proof of concept that bnAb can prevent HIV acquisition, although the approach is limited by viral diversity and potential selection of resistant isolates.

Corey L, Gilbert PB, Juraska M, *et al*. Two randomized trials of neutralizing antibodies to prevent HIV-1 acquisition. N Engl J Med. 2021;384:1003–1014.

SEMINAL CYTOKINE PROFILES ARE ASSOCIATED WITH THE RISK OF HIV TRANSMISSION

Investigators analysed a panel of 34 cytokines/chemokines in blood and semen of men (predominantly men who have sex with men) with HIV, comparing 21 who transmitted HIV to their partners and 22 who did not. Overall, 47% of men had a recent HIV infection, 19% were on antiretroviral therapy and 84% were viraemic. The cytokine profile in seminal fluid, but not in blood, differed significantly between transmitters and non-transmitters, with transmitters showing higher seminal concentrations of interleukin 13 (IL-13), IL-15 and IL-33, and lower concentrations of interferon-gamma, IL-15, macrophage colony-stimulating factor (M-CSF), IL-17, granulocyte-macrophage CSF (GM-CSF), IL-4, IL-16 and eotaxin. Although limited, the findings suggest that the seminal milieu modulates the risk of HIV transmission, providing a potential development opportunity for HIV prevention strategies.

Vanpouille C, Frick A, Rawlings SA, *et al*. Cytokine network and sexual HIV transmission in men who have sex with men. Clin Infect Dis. 2020;71:2655–2662.

THE CHALLENGE OF ESTIMATING GLOBAL TREATMENT ELIGIBILITY FOR CHRONIC HEPATITIS B FROM INCOMPLETE DATASETS

Worldwide, over 250 million people are estimated to live with chronic hepatitis B (CHB), although only ~11% is diagnosed and a minority receives antiviral therapy. An estimate of the global proportion eligible for treatment was not previously available. A systematic review analysed studies of CHB populations done between 2007 and 2018 to estimate the prevalence of cirrhosis, abnormal alanine aminotransferase, hepatitis B virus DNA >2000 or >20 000 IU/mL, hepatitis B e-antigen, and overall eligibility for treatment as per WHO and other guidelines. The pooled treatment eligibility estimate was 19% (95% CI 18% to 20%), with about 10% requiring urgent treatment due to cirrhosis. However, the estimate should be interpreted with caution due to incomplete data acquisition and reporting in available studies. Standardised reporting is needed to improve global and regional estimates of CHB treatment eligibility and guide effective policy formulation.

Tan M, Bhadoria AS, Cui F, *et al*. Estimating the proportion of people with chronic hepatitis B virus infection eligible for hepatitis B antiviral treatment worldwide: a systematic review and meta-analysis. Lancet Gastroenterol Hepatol, 2021; 6:106–119.

BROAD GEOGRAPHICAL DISPARITY IN THE CONTRIBUTION OF HIV INFECTION TO THE BURDEN OF CERVICAL CANCER

This systematic review and meta-analysis estimated the contribution of HIV infection to the global and regional burden of cervical cancer using data from 24 studies which included 236 127 women with HIV. HIV infection markedly increased the risk of cervical cancer (pooled relative risk 6.07; 95% CI 4.40 to 8.37). In 2018, 4.9% (95% CI 3.6% to 6.4%) of cervical cancers were attributable to HIV infection globally, although the population-attributable fraction for HIV varied geographically, reaching 21% (95% CI 15.6% to 26.8%) in the African region. Cervical cancer is preventable and treatable. Efforts are needed to expand access to HPV vaccination in sub-Saharan Africa; more immediately, there is an urgent need to integrate cervical cancer screening within HIV services.

Stelzle D, Tanaka LF, Lee KK, *et al*. Estimates of the global burden of cervical cancer associated with HIV. Lancet Glob Health. 2020; 9:e161–69.

THE COMPLEX RELATIONSHIP BETWEEN SERUM VITAMIN D AND PERSISTENCE OF HIGH-RISK HUMAN PAPILLOMA VIRUS INFECTION

Most cervical high-risk human papilloma virus (hrHPV) infections are transient and those that persist are more likely to progress to cancer. Based on the proposed immunomodulatory properties of vitamin D, a longitudinal study examined the association between serum concentrations of five vitamin D biomarkers and short-term persistent (vs transient or sporadic) detection of hrHPV in 72 women who collected monthly cervicovaginal swabs over 6 months. No significant associations were detected in the primary analysis. In sensitivity analyses, after multiple adjustments, serum concentrations of multiple vitamin D biomarkers were positively associated with the short-term persistence of 14 selected hrHPV types. The relationship between vitamin D and hrHPV infection warrants closer examination. Studies should have longer follow-up, include populations with more diverse vitamin D concentrations and account for vitamin D supplementation.

Troja C, Hoofnagle AN, Szpiro A, *et al*. Understanding the role of emerging vitamin D biomarkers on short-term persistence of high-risk HPV infection among mid-adult women. J Infect Dis 2020. Online ahead of print

PUBLISHED IN STI—THE EDITOR'S CHOICE: ONE IN FIVE CASES OF INFECTION WITH *NEISSERIA GONORRHOEAE* CLEAR SPONTANEOUSLY

Studies have indicated that *Neisseria gonorrhoeae* (NG) infections can resolve

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spontaneously without antibiotic therapy. A substudy of a randomised trial investigated 405 untreated subjects (71% men) who underwent both pretrial and enrolment NG testing at the same anatomical site (genital, pharyngeal and rectal). Based on nuclear acid amplification tests, 83 subjects (20.5%) showed clearance of the anatomical site within a median of 10 days (IQR 7–15) between tests. Those with spontaneous clearance were less likely to have concurrent chlamydia infection (p=0.029) and dysuria (p=0.035), but there were no differences in age, gender, sexual orientation, HIV status, number of previous NG episodes, and symptoms other than dysuria between those with and without clearance. Given the high rate of spontaneous resolution, point-of-care NG testing should be considered to reduce unnecessary antibiotic treatment.

Mensforth S, Ayinde OC, Ross J. Spontaneous clearance of genital and extragenital Neisseria gonorrhoeae: data from GToG. STI 2020; 96:556–561.

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