**P5.15 PREPARING FOR PREP: ESTIMATING THE NEED FOR HIV PRE-EXPOSURE PROPHYLAXIS AMONG MEN WHO HAVE SEX WITH MEN USING SEXUAL HEALTH SURVEILLANCE DATA IN ENGLAND**

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**Introduction** To inform public health planning for a large-scale PrEP trial in England, we estimated the need for HIV pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM) attending sexual health clinics.

**Methods** National STI surveillance data from the genitourinary medicine clinic activity dataset (GUMCADv2) were used to estimate the annual number of HIV-negative MSM who had a HIV test in the past year (which will be a criterion for accessing PrEP in England), for 2010–2015. To estimate the number and proportion of all MSM needing PrEP, we used bacterial STI diagnosis in the past year as a proxy for high-risk behaviour, and estimated HIV incidence (per 100 person-years) in both groups. We used these data to understand the likely geographical distribution of MSM who might need PrEP within the 152 English counties.

**Results** The number of HIV-negative MSM attending sexual health clinics increased by 68% from 69,392 in 2010 to 116,546 in 2015, and the number of HIV-negative MSM with a prior HIV test nearly doubled from 14,643 to 29,023 in the same period. Among HIV-negative MSM with a prior HIV test, the number with a recorded bacterial STI (past year) increased from 4,563 (30%) in 2010 to 10,276 (35%) in 2015 (33%) on average. HIV incidence among MSM with a prior HIV test was 1.9 (95% CI 1.6–2.2) per 100 py compared to 3.3 (2.7–4.0) per 100 py in MSM with a prior HIV test and history of bacterial STI. The number of MSM in need of PrEP (according to bacterial STI history) was 200 men in 4% (6/152) of counties.

**Conclusion** We estimated that the need for PrEP among MSM in England in 2015 might be around 10,000 individuals with an annual HIV incidence of 3%. Need for PrEP was highly concentrated; in most English counties, the number of MSM with a prior HIV test was small, and only 33% of these men might be clinically assessed as eligible for PrEP. These data illustrate how the population need for PrEP might be estimated in advance of a national trial, and will inform future evaluations at a population level.

**P5.16 COMBINATION OF INHIBITORS OF CHAPERONE ACTIVITY AND CHAPERONE EXPRESSION FOR PREVENTION OF HIV-1 REACTIVATION FROM LATENCY**

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**Introduction** In vivo, the state of latency allows HIV-1 to persist in cellular reservoirs and avoid eradication. Intracellular heat shock protein 90 (Hsp90) was shown to contribute to HIV-1 reactivation from latency, so that cell-permeable inhibitors of the Hsp90 chaperone activity can prevent this reactivation and be considered as potential anti-AIDS agents. However, the Hsp90 activity inhibitors provoke up-regulation of inducible Hsp90, Hsp70, Hsp27 and we suggested that such accumulation of chaperones in cellular reservoirs assists the virus and impairs the beneficial effects of Hsp90-inhibiting treatment. Here we examined whether the suppressive action of Hsp90 inhibitors on the HIV-1 reactivation is enhanced by targeting the Hsp induction and/or the chaperone function of Hsp70.

**Methods** The HIV-1 reactivation was studied in cultured J-Lat cells. 17AAG and AUY922 were used as the Hsp90 activity inhibitors. The Hsp accumulation in the Hsp90 inhibitor-treated cells was blocked by co-treatments with quercetin or KNK437. The Hsp70 chaperone function was inhibited by 2-phenylethynylosulfonamide (PES).

**Results** Inhibition of the Hsp90 chaperone activity with 17AAG or AUY922 does suppress the HIV-1 reactivation in the drug-treated cells but this is also accompanied by the up-regulation of Hsp90, Hsp70 and Hsp27. In the case of inhibitory co-treatments (17AAG or AUY922 + quercetin or KNK437 + PES), no increase in the cellular Hsp levels occurred despite of the dysfunction of Hsp90-Hsp70-dependent chaperone machine. Such a combination of the inhibitors simultaneously targeting the chaperone activities of Hsp90 and Hsp70 and the Hsp induction much stronger suppressed the chaperone-dependent HIV-1 reactivation, as compared with the action of Hsp90 inhibitors alone.

**Conclusion** Intracellular Hsp70 appears to contribute to the HIV-1 reactivation from latency. The suppressive effects of Hsp90-inhibiting drugs on the HIV-1 reactivation from latency can be enhanced by parallel inhibiting both the Hsp induction and the Hsp70 chaperone activity.