**P763** ATTENUATION OF SYPHILIS INFECTION FOLLOWING IMMUNIZATION OF RABBITS WITH A TRIVALENT ANTIGEN COCKTAIL

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**Background** The bacterium that causes syphilis, Treponema pallidum subsp. pallidum (Tp), elicits cellular and humoral immune responses to numerous antigens during infection. We have identified three recombinant peptide antigens that, when used separately for immunization, show promise in the attenuation of chancre development or dissemination to distant tissues. Here, we report protection induced by a three-antigen cocktail emulsified in either of two custom adjuvants containing Natural or Synthetic TLR4 agonists + a natural Mincle agonist.

**Methods** Three purified recombinant peptides [TpRK (aa37-273), Tp0751 (aa24-237), and Tpr Subfamily I (23-351)] were emulsified in either adjuvant and used to immunize groups of 8 rabbits. The immunized rabbits and 8 Unimmunized were emulsified in either adjuvant and used to immunize rabbits separately for immunization, show promise in the attenuation of chancre development or dissemination to distant tissues. Here, we report protection induced by a three-antigen cocktail emulsified in either of two custom adjuvants containing Natural or Synthetic TLR4 agonists + a natural Mincle agonist.

**Results** Compared to Unimmunized, treponemal burden by DF in lesion aspirates at Day 19 was lower in both Natural (P=0.001) and Synthetic (P=0.004) groups; by qPCR, treponemal burden was lower in the Natural group (P=0.008). At Days 19 and 30, the proportion of lesions ulcerating was lower in the Natural group, compared to Unimmunized (P=0.0001 [d.19] and P=0.0002, [d.30]). At day 30, the proportion of lesions ulcerating in the Natural group was lower than in the Synthetic (P=0.04) group. Mean lesion volume was smaller in immunized groups versus Unimmunized on days 10–25. RIT indicated the lowest number of disseminated Tp in rabbit tissues from the Natural group, followed by the Synthetic group, then the Unimmunized group (P=0.0247).

**Conclusion** Immunization with the three-antigen cocktail significantly attenuates syphilis infection: enhancing Tp clearance, promoting lesion healing, and reducing dissemination. In rabbits, Natural adjuvant was more effective than Synthetic adjuvant in inducing protective immunity.

**Disclosure** No significant relationships.

**P764** GETTING TO THE BOTTOM OF IT: SEXUAL POSITIONING AND SYPHILIS STAGE AT DIAGNOSIS AMONG MEN WHO HAVE SEX WITH MEN

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**Background** Effective syphilis control could be achieved by reducing its duration of infectiousness, for example, by identifying a higher proportion of cases at the primary stage. We hypothesised that men who have sex with men (MSM) who practice receptive anal intercourse (“bottoms”) are more likely to miss the primary stage and present with secondary syphilis, compared to MSM who practice exclusively insertive anal intercourse (“tops”).

**Methods** This was a retrospective analysis of MSM diagnosed with either primary or secondary syphilis at Melbourne Sexual Health Centre between 2008 and 2017. We analysed associations between the stage of syphilis (primary vs secondary) and sexual behaviour data collected by computer-assisted self-interview (CASI).

**Results** 559 MSM diagnosed with syphilis provided sufficient behavioural data for analysis, of whom 338 (60%) had primary syphilis and 221 (40%) had secondary syphilis. Among “tops”, 77% (95% CI 69–84) presented with primary syphilis and 23% (95% CI 16–31) presented with secondary syphilis. Whereas among “bottoms”, 54% (95% CI 49–59) presented with primary syphilis and 46% (95% CI 41–51) presented with secondary syphilis. Among those with primary syphilis, 247 (73%, 95% CI 68–78) had a penile chancre and 77 (23%, 95% CI 19–28) had an anal chancre. In multivariate logistic regression, “bottoms” were more likely to present with secondary syphilis than “tops” (OR 3.90, p<0.001), after adjusting for age, HIV status, and condom use.

**Conclusion** “Bottoms” more often presented with secondary syphilis compared to “tops”, and most MSM who presented with primary syphilis had penile chancres rather than anal chancres. This suggests that MSM who have receptive anal intercourse may be more likely to overlook anal syphilis chancres, perhaps because these are located inside their anal canal. These men may benefit from additional strategies to improve the recognition of anal chancres.

**Disclosure** No significant relationships.

**P765** ADDED VALUE OF TREPONEMA PALLIDUM PCR IN DIAGNOSING EARLY SYPHILIS

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**Background** Diagnosing an infection with Treponema pallidum, the causative agent of syphilis, is routinely based on serology. STD clinics routinely screen those with high-risk sexual behaviour, e.g. MSM, for syphilis. In case of an ulcer, swabs taken from the ulcer can be tested for T. pallidum by PCR. Here, we assessed the added value of PCR next to serology in primary syphilis.

**Methods** Retrospective data were analysed from patients of our STI clinic. Samples were taken from the genital ulcer for
Background Routine surveillance of Military Health System (MHS) data provides actionable information on STI rates. National increases in syphilis rates led to the publication of a 2015 MHS syphilis analysis demonstrating a significant rise in military syphilis cases between 2010 and 2015. The current study had two objectives 1) validate the current syphilis estimate through the DoD surveillance case definition and 2) evaluate the validity of clinical staging of syphilis cases within the surveillance period.

Methods Of the initial 2976 incident cases identified in the 2015 surveillance review, we sampled 500 cases. We developed and applied a standardized review algorithm for case determination and expert chart review to provide evidence of clinical stage of disease at the time of surveillance case capture.

Results Out of 500 total cases evaluated, 181 (36%) were determined to not be cases of syphilis. Surveillance cases identified through Reportable Medical Events (RME) had a positive predictive value (PPV) of 0.82 compared to those cases identified through administratively available (ICD9-coded) data with a PPV of 0.42. Similarly, surveillance classification of clinical staging of infection was grossly inaccurate with respect to Latent, Primary or Secondary (P&S), or Late infection with accuracy dependent on use of RME (PPV 0.49) vs ICD-9 codes (PPV 0.30) for case identification.

Conclusion A full one third of DoD surveillance case identified cases of syphilis in the Military Health system are not true cases of syphilis. The predominante cause of this misclassification was the reliance on appropriate use of ICDs by providers. The use of administrative data (ICD codes) for incidence and disease stage surveillance should be done with caution due to inappropriate use of coding, misinterpretation of labs, and overly inclusive case definitions. RMEs provide better accuracy (PPV) for correctly identifying incident cases but are still inaccurate with respect to clinical stage.

Disclosure No significant relationships.