Methods Urine samples from men, 10 patients with urethritis and >5 PMNL/hpf and 10 healthy controls with <5 PMNL/hpf, were collected. All samples were tested for Neisseria gonorrhoeae, Chlamydia trachomatis, Mycoplasma genitalium, Ureaplasma urealyticum, U parvum, Trichomonas vaginalis, Herpes Simplex Virus type 1 and 2 and Adenovirus using specific PCR assays. The V3 and V4 regions of the 16S rRNA gene were PCR amplified, tagged and sequenced using the Titanium kit and GS FLX pyro-sequencing system (Roche) according to manufacturer’s instructions. Sequences were analysed using the RDP Pyrosequencing Pipeline and CLC Genomics Workbench.

Results From each of the 20 samples, 8150 quality filtered sequences were randomly selected. Sequences were assigned to the genus level using the RDP Classifier. A total of 172 gen-era were identified, 153 in patients and 104 in controls. The median number of genera was 35.5 (19–49) in patients with urethritis compared to 25 (16–43) in the controls. No single genus was present in all samples. Members of the genera Pseudomonas and Sphingomonas were present in all the controls and in most of the patient samples. Also, representatives of the genera Brevundimonas, Micrococcus, Bradyrhizobium and Chryseobacterium were present in 15–18% of the samples. Of the 172 genera, 77 were only found in a single sample and 33 were found in two different samples. Rarefaction analysis at the 5 % level genera, 77 were only found in a single sample and 33 were found in

Conclusions Urine, even from healthy men, contains a very diverse group of organisms known to cause urethritis in this largely symptomatic population. The diversity is increased in symptomatic patients. The presence of high performance, we incorporated microfluidic designs such as single-use plastic microfluidic cassettes, a passive method for delivering reagents, and an amplification chemistry using gold nanoparticles.

Methods Our overall device is named mChip (mobile microfluidic chip for immunoassay on protein markers). We demonstrated an ability of mChip to simultaneously detect antibodies against HIV and syphilis in needle-pricked sample volumes. Both commercial specimens and archived specimens from Sub-Saharan Africa were used.

Results The test sensitivities and specificities for detection of HIV-specific antibodies and treponemal-specific antibodies matched the performances from lab-based ELISA. Compared to ELISA, our test can be performed anywhere, uses a very small volume of blood, and is about 10 times faster. Some of these results are in press in Nature Medicine, 2010.

Conclusion The mChip provided excellent performance in the diagnosis of HIV using only 1 µl of unprocessed whole-blood and <15 min assay-time, and an ability to simultaneously diagnose HIV and syphilis with sensitivities and specificities equal to lab-based assays. Overall, we demonstrate an integrated strategy for miniaturising complex laboratory assays using microfluidics and nanoparticles to enable POCT diagnostics and early detection of infectious diseases in remote settings.
Methods. Thirty-three asymptomatic, reproductive-age women self-collected mid-vaginal swabs every 3rd day for 16 weeks (998 samples). Participants reported behaviours and menstrual data on daily diaries. Bacterial communities were determined by pyrosequencing of barcoded 16S rRNA genes (V1–V2 region). Participants were clustered into five community classes based on temporal patterns of vaginal bacterial community composition using transition probabilities. A linear mixed effect model for the log of Jensen-Shannon rate of community change was utilised. The model accounted for correlations between samples from the same participant and was adjusted for time-varying confounders and normalised menstrual cycle time.

Results. Three of the community classes were most often dominated by Lactobacillus iners, L. crispatus, or L. gasseri, respectively, while two lacked significant numbers of Lactobacillus spp. The latter classes were split into subtype A typified by Corynebacterium, Anaerococcus, Peptostreptococcus, Peptococcus, and Finegolida, while those of subtype B showed a higher abundance of the genus Atopobium. The rank abundance and species composition of bacterial communities in some women changed markedly over short periods of time while others were relatively stable. Classes dominated by L. crispatus and L. gasseri experienced the fewest fluctuations in community composition, and communities that lacked significant number of Lactobacillus spp. also demonstrated some stability. Vaginal communities dominated by L. iners demonstrated either a lack of constancy or notable stability. The menstrual cycle was associated with temporal dynamics, but these effects were influenced by bacterial community class. Sexual activity the day prior to sampling was of borderline statistical significance (p = 0.065) and is a variable of interest in supplementary modelling.

Conclusions. Vaginal microbiota can fluctuate rapidly. Future studies should investigate the role of temporal changes in vaginal microbiota on sexually transmitted infection risk. Longitudinal studies of the vaginal microbiome may allow for the future development of targeted individualised therapeutic approaches.

Health services and policy poster session 1: Stigmatisation and Mental Health

Perceptions and Practices of Employers of Labour in Ibadan North Local Government Area Towards Persons Living with HIV/AIDS

Methods. Place of work, sex, employment status, and number of employees are key factors that influence perceptions and practices of employers of labour towards persons living with HIV/AIDS (PLWHA) in Ibadan North Local Government Area, Oyo state, Nigeria. This study was cross-sectional in design. A multistage sampling technique was used to select 400 study participants in the public (38) and private (362) sectors for interview. The instrument for data collection was a pre-tested semi-structured questionnaire. Data were analysed using descriptive statistics and the χ² test. There were more males (68.2%) than females (31.8%) among the participants. A majority, (79.0%), of the participants in the public sector (PuS) and 72.9% in the private sector (PrS) knew that an infected healthy looking person could harbour and transmit HIV to others. Overall, deep kissing (69.8%) topped the list of perceived mode of transmission of HIV; blood transfusion was mentioned by 46.8% of the participants while unprotected sex (30.4%) was the least mentioned. The listed ways of preventing HIV were: use of condom (35.9%); avoiding deep kissing (71.3%); keeping one uninfected sexual partner (21.2%); and sexual abstinence (15.4%). Avoidance of unscreened blood transfusion (6.2%) was the least mentioned means of transmitting HIV. The perception of 77.0% of the entire participants was that HIV and AIDS do not reduce workers’ productivity. A majority, (50.0%), of which 2.5% with no formal education, 1.0% primary education, 13.5% secondary education, 41.5% HND/B.Sc, 21.0% postgraduate and 0.3% with other qualifications were of the view that workers infected with HIV and AIDS should not be sacked. Slightly less than half (48.0%) would keep their staff’s HIV status secret while more than half, (57.0%), would not recruit a PLWHA. More than half of the participants, (56.5%), expressed a positive attitude to staff who is a PLWHA. More respondents in the private sector, (47.5%), claimed to have ever organised HIV and AIDS-related educational programmes for their staff than those in the public sector (42.1%) (p < 0.05). Almost equal number of participants in the public (56.8%) and private (56.2%) sectors would require mandatory test for HIV before employment. Only 1.5% of participants in the PuS and 6% in the PrS (p < 0.05) reported that their organisations had a workplace HIV and AIDS policy. Although the participants would tolerate staff with HIV and AIDS, their perceptions are indicative of limited knowledge about the mode of transmission and prevention of HIV. Health education strategies such as training and workplace HIV and AIDS education are needed to address these shortcomings.