1370. Monitoring of HIV Drug Resistance Mutations in Newly Diagnosed Patients in Cyprus (2010–2012)
Joannou Demetriades, MD PhD; HIV Clinic, LARNACA GENERAL HOSPITAL, LARNACA, Cyprus

Session: 154. HIV Drug Resistance
Friday, October 6, 2017: 12:30 PM

Background. A molecular epidemiology study of HIV-1 infection was conducted in 100 HIV-1 diagnosed and untreated patients in Cyprus representing 65.4 percent of all the reported HIV-1 infections in Cyprus between 2010 and 2012.

Methods. Eighty-two patients were newly diagnosed (genotypic drug resistance testing within six months from diagnosis), and 18 patients were HIV-1 diagnosed for a longer period or the diagnosis date was unknown.

Results. Phylogenetic trees of the pol sequences obtained in this study with reference sequences indicated that subtypes B and A1 were the most common subtypes present and accounted for 43.0% and 19.0% respectively, followed by subtype C (7.0%), F1 (8.0%), CRF02_AG (4.0%), A2 (2.0%), other CRFs (7.0%) and unknown recombinant forms, URFs (12%). Most of newly-diagnosed study subjects were Cypriots (63%), males (78%) with median age 39 (Interquartile Range, IQR 33–48) reporting having sex with other men, MSM (5%).

Conclusion. A high rate of clustered transmission of subtype B drug-sensitive strains to reverse transcriptase and protease inhibitors was observed among MSM. Twenty-eight out of forty-one MSM study subjects (68.0%) infected were implicated in five transmission clusters, two of which are subtype A1 and three subtype B strains. The two largest MSM subtype B clusters included nine and eight Cypriot men, respectively, living in all major cities in Cyprus. There were only three newly diagnosed patients with transmitted drug resistant HIV-1 strains, one subject from the United Kingdom infected with subtype C strain and one from Turkey with subtype A2 strain, both with the PI drug resistance mutation M46L and one patient from Greece with subtype A1 strain with the NNRTI drug resistance mutation K103N.

Disclosures. All authors: No reported disclosures.

1371. Drug Resistance After Failure of WHO Recommended First-Line Antiretroviral Regimens for Adult HIV-1 Infection in South Africa: A Modeling Analysis
Yajun Ding, PhD; Robert Glauhsius, PhD and Ume Abbas, MD; 1Baylor College of Medicine, Houston, Texas, 2Cleveland Clinic, Cleveland, Ohio

Session: 154. HIV Drug Resistance
Friday, October 6, 2017: 12:30 PM

Background. Antiretroviral therapy (ART) is critical for ending the HIV epidemic. Tenofovir-containing ART is the first-line regimen in many countries including South Africa, with limited access to second-line ART. High levels of drug resistance have been reported among patients after virologic failure on tenofovir-containing first-line regimens (TenoRes Study, Lancet Infect Dis 2016). We assessed drug resistance at the population level using mathematical modeling.

Methods. We developed a stochastic individual-based model of the heterosexual HIV epidemic in KwaZulu Natal South Africa, and compared drug resistance from scenarios of tenofovir-containing ART scale-up, either CD4-based (threshold < 500 cells/mL) or Fast-track (80% coverage by 2020). The model represents details of HIV transmission and drug resistance dynamics including key mutations (M184V, K65R and non-nucleoside reverse transcriptase inhibitor (NNRTI)). Using an initial population of 2.5 million, we performed 100 simulations from 1978 to 2030. We estimated treatment interventions and drug resistance dynamics including key mutations, treatment strategies and antiretroviral drug resistance. Using an ensemble model and Markov Chain Monte Carlo simulation, we estimated the resistance prevalence and incidence of resistance among newly diagnosed patients in South Africa. We performed sensitivity analyses to understand the impact of different treatment strategies and drug resistance on the ART epidemic.

Results. The total resistance (prevalence of HIV-infected persons with drug resistance) reached 34% from CD4-based ART by 2030, with 30% relative contribution from transmitted resistance and 70% from acquired resistance. In contrast, Fast-track ART reduced the total resistance to 22%; though, there was an increased relative contribution from transmitted resistance (~50%). In both scenarios, NNRTI mutations were the most prevalent, followed by M184V and K65R mutations. About 48% of persons with acquired drug resistance harbored dual drug mutations, 44.7% had triple mutations and 7.3% just single mutations, from CD4-based ART. The respective estimates from Fast-track ART were 42%, 41% for triple and 6.9% for single mutations. In both scenarios, NNRTI mutations comprised about 80% of prevalent transmitted resistance.

Conclusion. Current WHO-recommended first-line ART could lead to substantial drug resistance. Effective surveillance for resistance transmission and access to second-line regimens would be crucial.

Disclosures. All authors: No reported disclosures.

1372. Antiretroviral Therapy Prescribing Practices and Virologic Response in HIV-Infected Individuals with the M184V Mutation: Results from the 550 Clinic Cohort Study
Lauren Wirkpatrick, PharmD; Paula Peyrani, MD; Anupama Raghuram, MD; 1Cathy Spencer, PharmD; 2Mary Bishop, RPh; 3Maura Wojak, PharmD 4Ashley Ross, PharmD; 2Jennifer Wiedmar, PharmD and Daniel Truelove, PharmD 4Pharmacy, University of Louisville Hospital, Louisville, Kentucky, 1Division of Infectious Diseases, University of Louisville, Louisville, Kentucky, 2Pharmacy, Osceola Regional Medical Center, Kissimmee, Florida, 3Ambulatory Care/Specialty, University of Tennessee Medical Center, Knoxville, Tennessee

Session: 154. HIV Drug Resistance
Friday, October 6, 2017: 12:30 PM

Background. Human immunodeficiency virus (HIV) treatment guidelines recommend using a regimen that contains three fully active antiretroviral agents in patients with drug resistance mutations. However, some evidence suggests that treatment-naïve patients (PI) based regimens containing less than three fully active drugs may be as efficacious in achieving viral suppression (VS) as a three-drug regimen in the presence of a M184V mutation. The purpose of this study was to identify current pre-prescribing practices and determine if VS can be achieved with regimens containing less than three fully active agents in patients with a M184V mutation.

Methods. A single-center retrospective chart review was conducted on patients receiving treatment at the 550 Clinic from January 2003 to July 2016. Patients were screened for a M184V mutation. Patients were excluded for lack of a genotype and inadequate documentation of viral load (VL) prior to initiating or changing therapy. Regimens were characterized as containing three fully active agents or less and evaluated for VS success (VL less than 200 copies/mL). Data was analyzed using descriptive statistics, Chi-square tests, and Fischer’s exact tests.

Results. A M184V mutation was identified in 100 of the 754 patients screened for inclusion. 96% of the 167 regimens evaluated contained less than three fully active drugs. PI-based regimens (n = 86) and integrase strand transfer inhibitor (INSTI)-based regimens (n = 25) were the most commonly prescribed regimens containing less than three fully active drugs. VS was achieved with 72% of regimens containing less than three active agents compared with 69% of those containing three fully active agents (P = 0.108). In patients with a baseline VL greater than 100,000 copies/mL, VS was achieved with 80% of INSTI-based regimens compared with 21% of PI-based regimens (P = 0.040). VS was achieved with 85% of INSTI-based regimens and 78% of PI-based regimens in those with a baseline VL less than 100,000 copies/mL (P = 0.513).

Conclusion. Regimens containing less than three fully active drugs may be as efficacious as regimens containing three fully active drugs in those with a M184V mutation. In those with a high baseline VL, INSTI-based regimens may have better efficacy compared with PI-based regimens.

Disclosures. All authors: No reported disclosures.

1373. Moderate Levels of Pretreatment HIV Drug Resistance — Zimbabwe, April–July 2015
Juliana Da Silva, MD; 1Janet Dzangare, BA; 2Elizabeth Gonese, BA; 3Mutsa Mhangara, MD; 4Hilton Chirwa, Magurungu, MD; 5Beth Barr, DrPh; 6Spencer Lloyd, MD 7Elait Zvireva, MD; 8Div Global HIV and TB, Center for Diseases Control and Prevention, Atlanta, Georgia, 2Zimbabwe Ministry of Health, Harare, Zimbabwe, 3CDC-Zimbabwe, Harare, Zimbabwe, 4Ministry of Health of Zimbabwe, Harare, Zimbabwe, 5Ministry of Health of Zimbabwe, Harare, Zimbabwe, 6CDC-Atlanta, Harare, Zimbabwe, 7CDC-Atlanta, Atlanta, Georgia

Session: 154. HIV Drug Resistance
Friday, October 6, 2017: 12:30 PM

Background. The World Health Organization (WHO) HIV Drug Resistance (HIVDR) report 2012 demonstrated that the levels of HIVDR to first-line antiretroviral therapy (ART) are increasing. This finding threatens to reverse a decade of gains in HIV/AIDS epidemic control. The WHO Global Action Plan for HIVDR emphasizes strengthening the surveillance and antiretroviral drug resistance through the implementation of national cross-sectional surveys. We conducted such survey to determine the prevalence of HIVDR among ART-naïve patients in Zimbabwe and to describe the profile of the surveillance drug resistance mutations (SDRM) encountered in the country.

Methods. A cross-sectional, retrospective, case–control study was conducted in 35 clinical sites selected using two stage probability proportional to size sampling. Patients were enrolled during April–July 2015. Specimens were sent for genotyping to CDC Atlanta. SDRM were interpreted using Stanford HIV Drug Resistance Database classification.

Results. A total of 361 subjects were surveyed. Most participants were female (60.3%) and the median age was 35.8 years. Thirty-four out of 361 subjects presented with ≥1 SDRM (9.4%, 95% confidence interval: 6.8–12.8%) prior to initiation antiretroviral therapy (ART). Non-nucleoside reverse transcriptase inhibitor (NNRTI) mutations were the most commonly detected mutation (n = 30). Only two patients presented with a nucleoside reverse transcriptase inhibitor (NRTI) mutation. In total, two patients were presented with a protease inhibitor mutation. In two patients, ≥3 SDRMs were detected, which may suggest they were not truly ART-naïve.

Conclusion. This study provides national estimates of HIVDR in a high burden country with broad access to ART and provides valuable insight on the state of HIVDR in such setting. Zimbabwe has reached moderate levels of HIVDR in ART-naïve patients, as specified by the WHO classification. These levels may impact the ability to achieve viral suppression in a significant number of patients initiating standard ART regimens in Zimbabwe, where NNRTI-based regimens are the first-line and drugs with high resistance barrier, such as dolutegravir, may improve the care of patients in the developing world, where individualized pretreatment genotype is not feasible.

Disclosures. All authors: No reported disclosures.

1374. Reviewing Clinical Outcomes of Patients with the E157Q Mutation in Detrimental RT
David Pavkovich, MD; 1Deborah Richmond, MSN, CNP and Jennifer Veltman, MD 2Internal Medicine/Pediatrics, Wayne State University and Detroit Medical