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Session: **CS3**: Saturday May 2 – 15:00:17:00 – Antiretroviral Therapy and Resistence

Track:	Clinical Sciences
Subject:	Resistance
Presentation Type:	Oral
Title of Abstract:	**Utility of HIV Drug Resistance Testing in Low Viral Load Samples**
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Abstract

Background:

Genotypic HIV drug resistance testing (DRT) is recommended before treatment initiation and at virologic failure. While many DRT assays are approved for use in samples with plasma viral load (pVL)>1000 HIV RNA copies/mL, the BC Centre for Excellence in HIV/AIDS (BC-CfE) Laboratory is accredited to test samples as low as 250 copies/mL, and under exceptional circumstances can also test samples with pVL<250 copies/mL under a research protocol. Performing DRT in low pVL samples, however, is resource-intensive and the clinical relevance of these genotypes is unclear. We investigated whether DRT of low pVL samples can identify emergent drug resistance not captured by previous testing.

Methods:

All BC physician-ordered HIV DRT requests from 1998-2018 were retrospectively analyzed. HIV Protease-RT sequences collected from low pVL samples (<250 copies/mL) were compared to all prior clinical DRT results from the same patients.

Results:

From 1998-2018 the BC-CfE Laboratory received 40,153 DRT requests, of which 2045 (5%) were low pVL. In total, 1248 (61%) low pVL samples were successfully tested, compared to 82% and 95% of samples with pVL 250-1000 and pVL>1000 copies/mL, respectively (p<0.0001). A total of 1129 (90%) low pVL samples were from patients with prior DRT (median 4; Q1-Q3: 2-7 samples/patient), where the low pVL sample was collected a median of 31 (Q1-Q3: 7-81) months following the past DRT. Only 72 (6%) of low pVL genotypes revealed new or worsening resistance to one or more antiretrovirals. The majority of newly-identified resistance in low pVL genotypes was to 3TC/FTC and NNRTIs. The high test failure rate (~40%) and the infrequent detection of novel resistance mutations indicate that <4% of requested DRTs reveal additional resistance information not already captured in historical resistance genotypes.

Conclusions:

Routine DRT of samples with pVL<250 copies/mL is not recommended for patients for whom historic

genotype information is available.