COMPARISON OF PLASMA AND SALIVARY HIV LOADS WITH A NEW DETECTION SYSTEM: IMPLICATIONS FOR PREVENTION AND PATIENT CARE

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Abstract:

Background: DNA Genotek OMNIgene™-DISCOVER (OM-505) kits collect/store saliva at room temperature before determination of DNA/RNA. We have shown this ideal for DNA-viruses, in resource-poor settings, and now test for HIV. We compare salivary viral loads (SVL) with plasma (PVL). We make modifications to enhance detection of SVL on the Abbott system.

Methods: SVL and PVL were determined on 64 HIV-positive ART-naïve patients at YRG/CARE. Saliva was collected in OM-505, incubated at 50°C/1 hour. 70µL isopropanol was mixed with 800µL OM-505. Samples were well-vortexed and centrifuged at 2,000 x g for 5 minutes. From OM-505 and plasma, RNA was extracted automatically on Abbott m2000sp. HIV loads were determined on Abbott m2000rt.

Results: Calibration curves after diluting HIV virion 2-fold in HIV-negative saliva in OM-505 was linear (R²=0.9951) from 57,273-621 HIV copies/mL. In clinical isolates, PVL averaged 330,141 HIV copies/mL (range: 62-7,604,620) whilst SVL averaged 29,115 HIV copies/mL (range: 153-220,104). SVL was not detected in 24 samples and not determined in 9 due to
viscosity/cellular debris. In 26/31 patients SVL was lower than PVL, higher in 2/31 and equivalent in 3/31. Extracting RNA from supernatants increased the SVL and prevented clogging during automated extraction.

**Conclusions:** In most subjects HIV shedding in saliva is low/non-existent. If present, HIV can be detected accurately to 621 HIV-copies/mL. SVL does not correlate with PVL and cannot be used to determine HIV carriage. Nonetheless, when detected in saliva, HIV is intact free virion. This has clear implications for transmission. Patient factors which correlate with risk of oral shedding are under investigation.