Abstract:

PRINCIPLES: HIV-1 in female genital secretions has been measured using swabs, Sno Strips (Akorn, Inc., Buffalo Grove, IL), and cervicovaginal lavage (CVL), but little is known regarding the comparability of these collection techniques. METHODS: We compared HIV-1 RNA detection and quantity in specimens obtained from HIV-1-seropositive women in Kenya using three sample collection techniques and three storage techniques and evaluated reproducibility in samples collected 5 days apart. Specimens were stored in no medium, freezing medium, or TRI Reagent (Molecular Research Center, Cincinnati, OH) for 2 to 15 months. RESULTS: HIV-1 RNA assays were conducted on 640 specimens from 20 antiretroviral naive women. Storage in TRI Reagent significantly enhanced detection of genital HIV-1 and yielded significantly higher mean log10 RNA levels than specimens collected in either no or freezing medium. The prevalence of HIV-1 RNA detection in TRI Reagent ranged from 50% to 80% depending on collection method and was highest in cervical swabs. Mean log10 HIV-1 RNA levels were 3.1 log10 copies/cervical swab, 2.6 log10 copies/cervical Sno Strip, 2.5 log10 copies/vaginal swab, 2.4 log10 copies/vaginal Sno Strip, 2.9 log10 copies/ml for cervicovaginal lavage (CVL) cell pellet, and 2.1 log10 copies/ml in CVL supernatant. Comparing specimens from days 1 and 6, there was significant concordance of HIV-1 RNA detection and correlation of HIV-1 RNA levels for cervical swabs, vaginal swabs, vaginal Sno Strips, and CVL cell pellets (kappa, 0.5-0.9; r, 0.5-0.9), but not for cervical Sno Strips or CVL supernatants. CONCLUSIONS: Cervical or vaginal swab, vaginal Sno Strip, and CVL collection led to reproducible measurement of genital HIV-1 RNA, despite storage for several months and international transport. Collection using swabs was simpler than Sno Strips or cervicovaginal lavage, and yielded the highest prevalence of HIV-1 RNA detection and reproducibility.