

Are all HIV postal sampling kits the same?

Dried blood spots significantly outperform conventional mini-tube sampling in a real world comparative review

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Background: This is a comparative review of the use of dried blood spot (DBS) HIV sampling kits versus mini-tube (MT) HIV sampling kits as part of an online sexually transmitted infection (STI) postal testing service. We compared the STI postal kit return rates, HIV blood sample return rates, and the successful processing/analysis rates of the DBS and MT kits. This allowed us to calculate a 'request-to-result ratio' (RRR) for both kit types. The RRR can be defined as the number of online kit requests required to produce one successfully analysed result.

Methods: In 2017, data were reviewed from an online postal STI kit requesting service at a time of transitioning from MT to DBS containing kits. Descriptive statistics were applied to participant characteristics, with Pearson's Chi-squared or Fisher exact test used to demonstrate statistical differences.

Results: 550 STI postal kit requests from a North West of England region were reviewed from 13/06/17 – 22/09/17 (275 MT, 275 DBS). Baseline characteristics between the two groups were comparable (63% female, 90% white British, and 86% heterosexual with a median age of 26 years). The successful processing rate for the DBS was 98.8% c.f. 55.7% for the MT ($p < 0.001$). The RRR for MT was 2.96, c.f. 1.70 for DBS. There was a 5.4% false positive HIV rate in the MT c.f. none in the DBS kits.

Summary of comparisons of MT and DBS kits for HIV sampling

Collection Kit	STI Kit Returns/ Requests n (%)	HIV Sample Returns/STI kit returns n (%)	Successful HIV sample processing & analysis/HIV sample returns n (%)	Overall HIV results obtained/ STI kits requested n (%)	Request-to-result Ratio (RRR) n (ratio)
MT	189/275 (68.7)	167/189 (88.4)	93/167 (55.7)	93/275 (33.8)	275/93 (2.96)
DBS	183/275 (66.5)	164/183 (89.6)	162/164 (98.8)	162/275 (58.9)	275/162 (1.70)
p-value	0.58	0.70	<0.001	<0.001	<0.001

Conclusions: This comparative analysis suggests that in this community setting, the use of postal HIV DBS kits resulted in a significantly lower RRR compared with MT kits with the biggest factor being the large amount of MT samples not analysed due to an inadequate blood volume. The unexpected level of false positive results in the MT samples needs confirming in larger studies.

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