1   *Appendix*

2

3   *Search strategy:*

4   Medline: (exp HIV-1/ OR HIV-1.mp.) AND (Xpert.mp. OR GeneXpert.mp. OR Cepheid.mp.)

5

6   Embase: (exp Human immunodeficiency virus 1/ OR HIV-1.mp.) AND (Xpert.mp. OR GeneXpert.mp. OR

7   Cepheid.mp.)

8

9   Global Health: (HIV-1.mp.) AND (Xpert.mp. OR GeneXpert.mp. OR Cepheid.mp.)

10

11   *Extracted variables:*

12   First author

13   Study year

14   Location (country of experiment, if multiple will record all)

15   Source population

16   Avg. patient age

17   Percentage female

18   Percentage on ART

19   Sample size (# samples tested by both reference and index test)
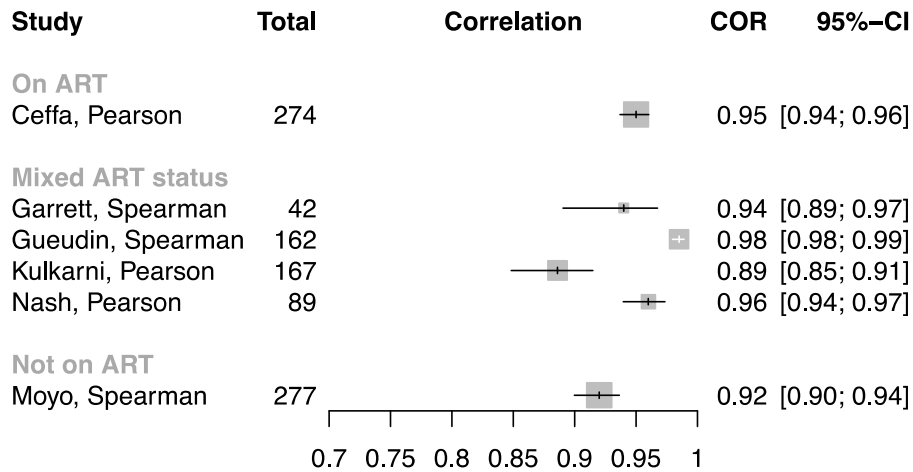
20   Index test

21   Proportion patients w/ valid index test results

22   Reference test

23   Proportion patients w/ valid reference test results

24   Proportion of reference quantifiable samples that were quantifiable with index

25   Did any included participants not receive the reference test

26   Did any included participants not receive the index test

27   Were any patients excluded from the analysis

28   Proportion samples with invalid Xpert HIV-1 viral load results

29   Reasons for exclusion

30   Type of correlation

31   Number of samples used for correlation (ie quantifiable results)

32   Correlation on viral load

33   Correlation CI lower level

34   Correlation CI upper level

35   Correlation p value

36   Number of samples used for BA analysis correlation

37   Bland-Altman threshold

38   Bland-Altman agreement

39   Bland-Altman lower limit of 95% agreement

40   Bland-Altman upper limit of 95% agreement

41   Other method reported

42   Other method mean

43   Other method SD/confidence interval

44

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47

48

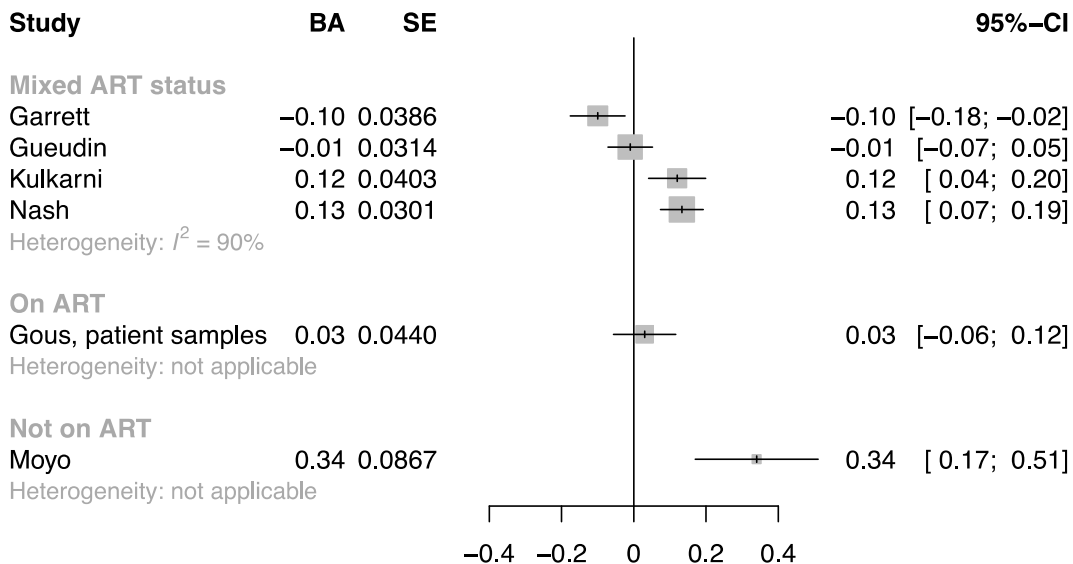| Study	Total	Correlation	COR	95%–CI
On ART				
Ceffa, Pearson	274		0.95	[0.94; 0.96]
Mixed ART status				
Garrett, Spearman	42		0.94	[0.89; 0.97]
Gueudin, Spearman	162		0.98	[0.98; 0.99]
Kulkarni, Pearson	167		0.89	[0.85; 0.91]
Nash, Pearson	89		0.96	[0.94; 0.97]
Not on ART				
Moyo, Spearman	277		0.92	[0.90; 0.94]

0.7 0.75 0.8 0.85 0.9 0.95 1

49

Figure S1. Forest plot for Pearson and Spearman correlation coefficients from comparison of VL values by Xpert and a reference test for VL stratified by patient ART status. Studies where ART status was not reported were excluded.

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Study	BA	SE		95%–CI
Mixed ART status				
Garrett	−0.10	0.0386		−0.10 [−0.18; −0.02]
Gueudin	−0.01	0.0314		−0.01 [−0.07; 0.05]
Kulkarni	0.12	0.0403		0.12 [0.04; 0.20]
Nash	0.13	0.0301		0.13 [0.07; 0.19]
Heterogeneity: $I^2 = 90\%$				
On ART				
Gous, patient samples	0.03	0.0440		0.03 [−0.06; 0.12]
Heterogeneity: not applicable				
Not on ART				
Moyo	0.34	0.0867		0.34 [0.17; 0.51]
Heterogeneity: not applicable				

−0.4 −0.2 0 0.2 0.4

55

Figure S2. Forest plot for Bland-Altman (BA) correlation coefficients from comparison of VL values by Xpert and a reference test for VL stratified by patient ART status. Studies where ART status was not reported were excluded.
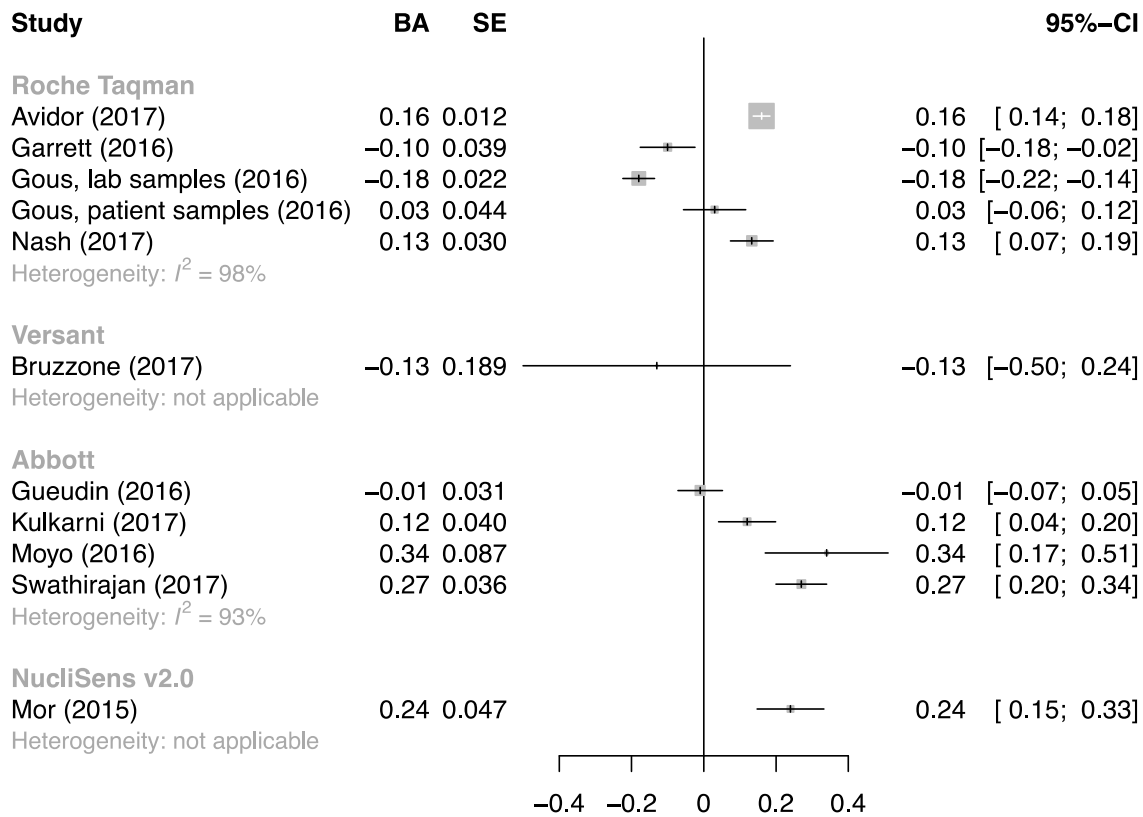
59

Study	BA	SE	95%–CI
Roche Taqman			
Avidor (2017)	0.16	0.012	0.16 [0.14; 0.18]
Garrett (2016)	−0.10	0.039	−0.10 [−0.18; −0.02]
Gous, lab samples (2016)	−0.18	0.022	−0.18 [−0.22; −0.14]
Gous, patient samples (2016)	0.03	0.044	0.03 [−0.06; 0.12]
Nash (2017)	0.13	0.030	0.13 [0.07; 0.19]
Heterogeneity: $I^2 = 98\%$			
Versant			
Bruzzone (2017)	−0.13	0.189	−0.13 [−0.50; 0.24]
Heterogeneity: not applicable			
Abbott			
Gueudin (2016)	−0.01	0.031	−0.01 [−0.07; 0.05]
Kulkarni (2017)	0.12	0.040	0.12 [0.04; 0.20]
Moyo (2016)	0.34	0.087	0.34 [0.17; 0.51]
Swathirajan (2017)	0.27	0.036	0.27 [0.20; 0.34]
Heterogeneity: $I^2 = 93\%$			
NucliSens v2.0			
Mor (2015)	0.24	0.047	0.24 [0.15; 0.33]
Heterogeneity: not applicable			

−0.4 −0.2 0 0.2 0.4

60

Figure S3. Forest plot for Bland-Altman (BA) correlation coefficients from comparison of VL values by Xpert and a reference test for VL stratified by reference test. Full names and manufacturers of reference tests are as follows: Abbot = Abbott RealTime HIV-1 m2000rt, Abbott Molecular. Roche Taqman = COBAS® AmpliPrep / COBAS® TaqMan®, Roche Diagnostics. Versant = NucliSENS EasyQ® HIV-1 v2.0, bioMérieux, VERSANT HIV-1 RNA 1.5 Assay, Siemens HealthCare Diagnostics