**Search terms used for Medline Database**

(2012/01/01[PDAT] : 2016/10/03[PDAT]) AND

("Syphilis"[Mesh] OR Chancre [TW]OR Neurosyphilis [TW] OR " Tabes Dorsalis " [TW] OR syphilis [TW] OR "Treponema pallidum"[Mesh] OR "treponema pallidum" [TW]) AND

(“HIV Infections” [MeSH] OR “HIV”[MeSH] OR “hiv”[tw] OR “hiv-1”[tw] OR “hiv-2”[tw] OR “hiv1”[tw] OR “hiv2”[tw] OR hiv infect\*[tw] OR “human immunodeficiency virus”[tw] OR “human immunedeficiency virus”[tw] OR “human immuno-deficiency virus”[tw] OR “human immune-deficiency virus”[tw] OR ((human immun\*) AND (“deficiency virus”[tw])) OR “acquired immunodeficiency syndrome”[tw] OR “acquired immunedeficiency syndrome”[tw] OR “acquired immuno-deficiency syndrome”[tw] OR “acquired immune-deficiency syndrome”[tw] OR ((acquired immun\*) AND (“deficiency syndrome”[tw])) OR "Sexually Transmitted Diseases, Viral"[MeSH:NoExp])

AND

(sensitiv\*[Title/Abstract] OR sensitivity and specificity[MeSH Terms] OR diagnose[Title/Abstract] OR diagnosed[Title/Abstract] OR diagnoses[Title/Abstract] OR diagnosing[Title/Abstract] OR diagnosis[Title/Abstract] OR diagnostic[Title/Abstract] OR diagnosis[MeSH:noexp] OR diagnostic \* [MeSH:noexp] OR diagnosis,differential[MeSH:noexp] OR diagnosis[Subheading:noexp] OR “point of care” [TW])

Table S1. Characteristics of commercially available dual RDTs for HIV and syphilis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Test name** | **Time to result** | **Specimen type** | **Description** | **WHO Prequalification status** | **Shelf life** | **Volume of sample required** |
| SD BIOLINE  HIV/Syphilis Duo | Interpret test results within 15-20 minutes after adding assay diluent. (timer required) | Whole blood, serum or plasma | Solid phase immunochroma-tographic assay | Accepted to list of prequalified *in vitro* diagnostics as of October 2015 | 1-30 °C for 24 months | 10 µL |
| Chembio DPP HIV-Syphilis Assay | Total test time of 15 to 30 minutes | Whole blood, serum or plasma | Immunochroma-tographic rapid test | Not listed as of March 2017 | 15-30 °C for 24 months | 10 µL |
| MedMira Multiplo TP/HIV | Results read immediately | Whole blood, serum or plasma | Rapid vertical flow immunoassay | Not listed as of March 2017 | 2-30 °C for 24 months | 35-40 µl |
| INSTI Multiplex HIV-1/HIV-2/Syphilis Antibody Test | From 60 seconds | Whole blood, serum or plasma | Flow through (immunofiltration) immunoassay | Not listed as of March 2017 | 12 months | 50 µl |

Evaluation studies of all dual HIV/syphilis RDTs

SD BIOLINE HIV/Syphilis Duo Test

MedMira Multiplo Rapid TP/HIV Antibody Test

Chembio DPP HIV/syphilis Assay

Evaluation studies of all dual HIV/syphilis RDTs

Laboratory evaluation

Field evaluation

a)

b)

Figure S1. Stratification strategy. (a) Evaluation studies were stratified according to the RDT manufacturer, (b) evaluation setting, (c) whether serum or whole blood was used and (d) whether archived or fresh specimens were used.

Evaluation studies of all dual HIV/syphilis RDTs

Serum samples

Whole blood samples

c)

Evaluation studies of all dual HIV/syphilis RDTs

Archived specimens

Fresh specimens

d)

Table S2. Results of STARD evaluation for diagnostic test accuracy evaluation studies included in the meta-analysis.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** |
| Ondondo30 | 2013 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Chiappe31 | 2013 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Hess32 | 2014 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Humphries33 | 2014 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Omoding34 | 2014 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| Bristow35 | 2014 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Dagnra36 | 2014 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| Bristow37 | 2015 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Yin38 | 2015 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Shimelis39 | 2015 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Leon40 | 2016 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Bristow41 | 2016 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Bristow42 | 2016 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Bristow43 | 2016 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Shakya44 | 2016 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| Black45 | 2016 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| Bowen46 | 2016 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Kalou47 | 2016 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |

For a list of corresponding items, refer to Bossuyt *et al*.48

Table S3. Results of QUADAS-2 evaluation for diagnostic test accuracy evaluation studies included in the meta-analysis.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Year** | **Risk of bias** | | | | **Applicability concerns** | | |
| **Patient selection** | **Index test** | **Reference standard** | **Flow and timing** | **Patient selection** | **Index test** | **Reference standard** |
| Ondondo30 | 2013 | ? | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| Chiappe31 | 2013 | ? | ? | ? | ? | ☺ | ☺ | ☺ |
| Hess32 | 2014 | ☺ | ☺ | ? | ☺ | ☺ | ☺ | ☺ |
| Humphries33 | 2014 | ? | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| Omoding34 | 2014 | ☺ | ? | ? | ☺ | ☺ | ☺ | ☺ |
| Bristow35 | 2014 | ? | ? | ? | ? | ? | ☺ | ☺ |
| Dagnra36 | 2014 | ? | ? | ? | ? | ☺ | ☺ | ☺ |
| Bristow37 | 2015 | ? | ? | ? | ? | ☺ | ☺ | ☺ |
| Yin38 | 2015 | ☺ | ☺ | ? | ☺ | ☺ | ☺ | ☺ |
| Shimelis39 | 2015 | ☺ | ? | ? | ☺ | ☺ | ☺ | ☺ |
| Leon40 | 2016 | ? | ? | ? | ? | ☺ | ☺ | ☺ |
| Bristow41 | 2016 | ☺ | ☺ | ? | ☺ | ☺ | ☺ | ☺ |
| Bristow42 | 2016 | ? | ☺ | ? | ? | ☺ | ☺ | ☺ |
| Bristow43 | 2016 | ☺ | ☺ | ? | ☺ | ☺ | ☺ | ☺ |
| Shakya44 | 2016 | ☺ | ? | ? | ☺ | ☺ | ☺ | ☺ |
| Black45 | 2016 | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| Bowen46 | 2016 | ☺ | ☺ | ? | ? | ☺ | ☺ | ☺ |
| Kalou47 | 2016 | ? | ? | ? | ? | ☺ | ☺ | ☺ |

Where ☺ = low risk, ? = unclear risk, and ☹ = high risk of bias, as stated in Whitting *et al*.49

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