Evaluation of anogenital lesion swabs with the cobas® HSV 1 and 2 test for detection of HSV DNA compared with an alternate molecular method.

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Introduction and Objectives

The diagnosis of genital herpes is definitively established by testing anogenital lesion specimens from symptomatic patients by culture or molecular methods. The objective of this study was to evaluate the newly developed **cobas**® HSV 1 and HSV 2 Test on the **cobas**® 4800 System (Figure 1) using clinician-collected swab specimens from external anogenital lesions as part of a large multicenter clinical trial.

Figure 1. **cobas**® 4800 System (**cobas x** 480 and **cobas z** 480 instruments)

Methods

The clinical performance of the **cobas**® HSV 1 and 2 Test was evaluated in an IRB-approved, prospective, multi-site, investigation comparing the results of the BD ProbeTec™ Herpes Simplex viruses [HSV 1 & 2] Q^x Amplified DNA Assays using clinician-collected external anogenital lesion swab specimens from patients with possible HSV infection. Clinicians from 8 geographically diverse sites collected 2 swabs in succession from the same lesion(s) from each symptomatic eligible male and female subjects 17 years of age or older. Swabs were placed in transport media and transported to testing sites according to manufacturer's instructions.

The swab collected first was used for the BD ProbeTec™ Herpes Simplex viruses (HSV 1 & 2) Q^x Amplified DNA Assays (Sparks, Maryland, USA), and the second swab collected was used for the **cobas**® HSV 1 and 2 Test on the cobas 4800 System (Figure 1). All testing was performed at 3 sites according to manufacturer's instructions. The overall percent agreement (OPA), positive percent agreement (PPA) and negative percent agreement (NPA) were calculated by comparing **cobas**® HSV 1 and HSV 2 Test results with BD ProbeTec™ Herpes Simplex viruses (HSV 1 & 2) Q^x Amplified DNA Assays.

Discrepant analysis was performed by Sanger sequencing on all discordant samples.

Results

There were 233 HSV positive subjects, with 73 positive for HSV 1 (44 females, 29 males), 159 positive for HSV 2 (79 females, 80 males) and one female subject positive for both HSV 1 and HSV 2, among 407 evaluable participants (203 females, 204 males).

The overall percent agreement (OPA), positive percent agreement (PPA) and negative percent agreement (NPA) of the **cobas**® HSV 1 and HSV 2 Test compared to the BD ProbeTec™ HSV 1 & 2 Assays are shown in Tables 1 and 2, respectively.

For HSV1, the OPA, PPA and NPA was 98.0% (399/407), 98.6% (73/74) and 97.9% (326/333), respectively (Table 1), and for HSV2, 96.1% (391/407), 99.4% (159/160) and 93.9% (232/247), respectively (Table 2).

Table 1. Comparison of HSV-1 results from the cobas® HSV 1 and 2 Test and the BD ProbeTec™ Herpes Simplex viruses (HSV 1 & 2) Q^x Amplified DNA Assays.

HSV-1		BD ProbeTec™ HSV-1 & HSV-2 Assays		
		Pos	Neg	Total
cobas® HSV 1 & HSV 2 Test	Pos	73	7	80
	Neg	1	326	327
	Total	74	333	407
PPA: 98.6% (95% CI = 92.7% - 99.8%)				
NPA: 97.9% (95% CI = 95.7% - 99.0%)				
OPA: 98.0% (95% CI = 96.2% - 99.0%)				

CI = 95% Confidence Interval; OPA = Overall Positive Agreement; NPA = Negative Percent Agreement; PPA = Positive Percent Agreement

Table 2. Comparison of HSV-2 results from the cobas® HSV 1 and 2 Test and the BD ProbeTec™ Herpes Simplex viruses (HSV 1 & 2) Q^x Amplified DNA Assays.

HSV-2		BD ProbeTec™ HSV-1 & HSV-2 Assays		
		Pos	Neg	Total
cobas® HSV 1 & HSV 2 Test	Pos	159	15	174
	Neg	1	232	233
	Total	160	247	407
PPA: 99.4% (95% CI = 96.5% - 99.9%)				
NPA: 93.9% (95% CI = 90.2% - 96.3%)				
OPA: 96.1% (95% CI = 93.7% - 97.6%)				

CI = 95% Confidence Interval; OPA = Overall Positive Agreement; NPV = Negative Percent Agreement; PPA = Positive Percent Agreement

Seven discordant samples were cobas-positive/BD-negative for HSV-1, with 6 testing as true positives by Sanger sequencing; one sample was cobas-negative/BD-positive for HSV-1 tested negative by Sanger sequencing (Table 1).

Fifteen discordant samples were cobas-positive/BD-negative for HSV-2 with 7 testing as true positives by Sanger sequencing; one sample was cobas-negative/BD-positive for HSV-2 tested negative by Sanger sequencing (Table 2).

Conclusions

- The **cobas**® HSV 1 and 2 Test, on the automated **cobas**® 4800 system, displayed excellent performance when compared to BD ProbeTec™ Herpes Simplex viruses (HSV 1 & 2) Q^x Amplified DNA Assays.*
- The test is highly suitable for the detection of HSV in clinician-collected anogenital swab specimens from patients with suspected HSV infection.*

Note: this data has not been evaluated by the FDA.

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