Rapid Detection of VZV-DNA with the BD MAX™-Instrument in the Routine Laboratory

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Introduction
Varicella zoster virus (VZV) is an enveloped virus with a double stranded DNA genome. Primary infection with VZV causes chickenpox, while reactivation of the virus is responsible for varicella zoster, or shingles.

In immunocompromised persons (AIDS, transplanted recipients, cancer patients) a generalized zoster infection with life-threatening pneumonia and encephalitis may develop.

Diagnosis depends on the ability to detect VZV-DNA in a rapid and sensitive fashion.

The BD MAX™ is a fully automated instrument for molecular diagnostics. The nucleic acid extraction and subsequent polymerase chain reaction (PCR) is done by adding the appropriate reagent cartridges and test tubes. Further intervention is not necessary (walk-away system)

1-24 samples can be processed and various tests can be performed in one run. The test duration varies between 2 and 3.5 hours depending on the number of samples and test format.

Based on the results of preliminary tests, extraction reagents, master-mix buffer and IC were supplied by BD. Primer and probes were developed and provided by altona diagnostics (formerly astra diagnostics), Hamburg, Germany.

Material & Methods

Swabs
Previously positive tested swab from clinical samples were washed out in Tris-EDTA buffer, pH 8.0.

Buffer solutions were pooled and diluted to obtain samples with defined concentrations of VZV-DNA.

Buffer were delivered lyophilized in appropriate cartridges (Swab/Whole Blood Kit).

DNA Preparation

Samples for DNA preparation as well as Master Mix-buffer and Internal Control were delivered lyophilized in appropriate cartouches (Swab/Whole Blood Kit).

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For Interassay precision three positive (low, middle and high) and one negative sample from the first series of tests were tested three times on two further days.

Summary & Conclusion

The BD MAX™ instrument is a true walk-away system and saves hands-on-time in a routine molecular diagnostic laboratory.

Clinical specimens (Swabs, plasma, liquor) can be processed and analyzed in combination with the altona diagnostics VZV-DNA-Kit.

Results showed a good intra- and interassay precision as well as a linear decrease of 3 dilutions.

QCMD Proficiency Test

QCMD proficiency test panel VZV 2010 was tested with the BD Swab-Kit.

The results have a good correlation to values indicated by QCMD.

Low positive samples (10, 11, 16) were not detected with the BD MAX™ - Swab-Kit.

The BD MAX™ instrument in combination with the altona diagnostics VZV-Kit is a suitable and reliable tool for analyzing VZV infections in clinical specimens.