

### **Vivalytic Bacterial Meningitis by Bosch: PCR rapid test for medical emergencies**

January 9, 2025

PI11920

The test covers the most important bacterial pathogens across all age groups with a single cartridge

- ▶ The Vivalytic test is a PCR rapid test that specifically detects the six most common causes of bacterial meningitis in under an hour
- ▶ Reliable and rapid pathogen detection is crucial to reduce the high morbidity and mortality rates through immediate, targeted antibiotic treatment

Waiblingen – Bosch Healthcare Solutions (BHCS) has developed a new PCR test Vivalytic Bacterial Meningitis for its Vivalytic analysis platform. The test can detect six important bacterial meningitis pathogens in less than an hour using highly sensitive PCR technology. BHCS is thus expanding its test portfolio to cover an additional critical medical indication. “Bacterial meningitis is an absolute medical emergency,” says Dr. Stefan Zimmermann, Senior Physician at the Center for Infectious Diseases at Heidelberg University Hospital. “To prevent death and permanent damage following meningitis, prompt and targeted antibiotic treatment in the hospital is crucial.” According to the current guideline for adults, antibiotic treatment should commence within one to three hours of arrival at the emergency room<sup>1</sup>. A cerebrospinal fluid (CSF) test with Vivalytic Bacterial Meningitis delivers reliable results within the required timeframe.

#### **Multiplex PCR test for in-depth and rapid diagnostics**

The current guideline recommends the use of multiplex PCR tests for suspected bacterial meningitis due to their short analysis time and high sensitivity<sup>1</sup>. With Vivalytic Bacterial Meningitis, test results are available in less than an hour. The test is suitable for all patients with suspected bacterial meningitis.

The following pathogens are detected:

- *Neisseria meningitidis*
- *Streptococcus pneumoniae*
- *Haemophilus influenzae*
- *Streptococcus agalactiae*
- *Escherichia coli*
- *Listeria monocytogenes*

The Bosch test thus covers the most important bacterial pathogens in all age groups on a single cartridge. Newborns and young infants are particularly at risk from *Streptococcus agalactiae*, but also from *Escherichia coli* and *Listeria monocytogenes*. Older infants, toddlers, and young adults can become infected with *Neisseria meningitidis* and *Streptococcus pneumoniae*. Elderly individuals are often affected by *Streptococcus pneumoniae*<sup>2</sup>.

According to the guideline for testing antibiotic susceptibility, PCR tests should be supplemented by a CSF culture. After collecting the CSF, it is recommended to start antibiotic treatment immediately, possibly in combination with dexamethasone<sup>1</sup>.

### **An underestimated danger for millions of people**

Meningitis is an inflammation of the membranes that surround the brain and the spinal cord. The pathogens often enter the body through the respiratory tract and then spread via the bloodstream<sup>1</sup>. The infection can also be transmitted from neighboring structures, such as in the case of inflammation of the middle ear or paranasal sinuses. Worldwide, 2.5 million people are affected every year, mainly in poorer regions. More than half of the cases affect children under five years of age<sup>3</sup>. The main symptoms include headaches, attention deficits, fever, and a stiff neck. The pathogens can be bacteria, viruses, fungi, or parasites<sup>1</sup>. However, bacterial meningitis is particularly worrying, with one in five cases leading to permanent complications such as hearing loss, brain damage, and seizures<sup>4</sup>. Without immediate treatment, about half of those afflicted will die<sup>5</sup>.

### **Rapid diagnosis and immunization as key elements of WHO 2030 strategy**

Thanks to the introduction of conjugate vaccines and improved medical care, the global mortality rate from bacterial meningitis has fallen from 32 percent before 1961 to 15 percent after 2010<sup>6</sup>. Pneumococcal vaccines against various serotypes provide good protection against pneumococcal infection<sup>7</sup>. In addition to antibiotics, doctors are increasingly prescribing anti-inflammatory therapies such as dexamethasone, which reduce mortality rates, hearing loss, and neurological complications<sup>8</sup>.

The WHO has set itself the goal of eliminating bacterial meningitis worldwide by 2030<sup>9</sup>, among other things by eliminating meningitis epidemics. "Rapid diagnosis

using multiplex PCR tests could play a crucial role in this,” says Marc Meier, president of Bosch Healthcare Solutions. While PCR takes a day in the laboratory and culture confirmation requires two days, Vivalytic Bacterial Meningitis delivers results in less than an hour.

### **Vivalytic for simple and intuitive testing**

The Vivalytic system is intuitive to use and requires only a brief training session for medical staff. The collected sample is placed into a test cartridge, which already contains all necessary reagents. The cartridge is then inserted into the Vivalytic Analyser for automatic processing. The test result is shown on the display in under an hour. The fully automated workflow of the all-in-one platform minimizes the risk of infection for the user. Vivalytic Bacterial Meningitis enables reliable and easy-to-establish diagnostics, even at off-peak times at weekends and in the evenings. BHCS recently obtained CE certification for the Vivalytic Bacterial Meningitis-test. It is now available for order from distribution partners such as Randox Laboratories and R-Biopharm.

### **Sources**

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Bosch Healthcare Solutions on social media

YouTube: <https://www.youtube.com/@boschhealthcaresolutions>

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Distribution partners for Vivalytic: <https://www.bosch-vivalytic.com/vertrieb/>

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### **Contact person for press inquiries:**

Thomas Berroth

Marketing & Communication

[Thomas.berroth2@de.bosch.com](mailto:Thomas.berroth2@de.bosch.com)

+49 (0) 160 90437856

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