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

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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[1]. 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[1]. 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*[2].

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[1].

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[1]. 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[3]. The main symptoms include headaches, attention deficits, fever, and a stiff neck. The pathogens can be bacteria, viruses, fungi, or parasites[1]. However, bacterial meningitis is particularly worrying, with one in five cases leading to permanent complications such as hearing loss, brain damage, and seizures[4]. Without immediate treatment, about half of those afflicted will die[5].

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[6]. Pneumococcal vaccines against various serotypes provide good protection against pneumococcal infection[7]. In addition to antibiotics, doctors are increasingly prescribing anti-inflammatory therapies such as dexamethasone, which reduce mortality rates, hearing loss, and neurological complications[8].

The WHO has set itself the goal of eliminating bacterial meningitis worldwide by 2030[9], 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

1) Pfister H.-W., Klein M. et al., Ambulant erworbene bakterielle Meningoenzephalitis im Erwachsenenalter, S2k-Leitlinie, 2023, in: Deutsche Gesellschaft für Neurologie (Ed.), Leitlinien für Diagnostik und Therapie in der Neurologie. https://dgn.org/leitlinie/ambulant-erworbene-bakterielle-meningoenzephalitis-im-erwachsenenalter (retrieved on 12/17/2024)
2) https://www.msdmanuals.com/de/profi/neurologische-krankheiten/meningitis/akute-bakterielle-meningitis#Ätiologie_v8339873_de (retrieved on 12/17/2024)
3) GBD 2019 Meningitis Antimicrobial Resistance Collaborators. Global, regional, and national burden of meningitis and its aetiologies, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet Neurol. 2023 Aug;22(8):685-711 https://pubmed.ncbi.nlm.nih.gov/37479374/ (retrieved on 12/17/2024)
4) GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet. 2020 Oct 17;396(10258):1204-1222. doi: 10.1016/S0140-6736(20)30925-9. Erratum in: Lancet. 2020 Nov 14;396(10262):1562. https://pubmed.ncbi.nlm.nih.gov/33069326/ (retrieved on 12/17/2024)
5) https://www.who.int/news-room/fact-sheets/detail/meningitis (retrieved on 12/17/2024)
6) van Ettekoven CN, Liechti FD, Brouwer MC, Bijlsma MW, van de Beek D. Global Case Fatality of Bacterial Meningitis During an 80-Year Period: A Systematic Review and Meta-Analysis. JAMA Netw Open. 2024 Aug 1;7(8):e2424802. https://pubmed.ncbi.nlm.nih.gov/39093565/
(retrieved on 12/17/2024)
7) https://www.rki.de/DE/Content/Infekt/Impfen/Materialien/Faktenblaetter/Pneumokokken.pdf?__blob=publicationFile (abgerufen am 17.12.2024)
8) Brouwer MC, McIntyre P, Prasad K, van de Beek D. Corticosteroids for acute bacterial meningitis. Cochrane Database of Systematic Reviews 2015, Issue 9. Art. No.: CD004405. https://pubmed.ncbi.nlm.nih.gov/26362566/
(retrieved on 12/17/2024)
9) https://www.who.int/initiatives/defeating-meningitis-by-2030 (retrieved on 12/17/2024)

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Bosch Healthcare Solutions GmbH is a wholly owned subsidiary of Robert Bosch GmbH. The subsidiary was established in 2015 with the aim of developing products and services that improve people's health and quality of life. Nearly 300 associates (state 2024) are employed at the company's headquarters in Waiblingen, Germany. The subsidiary's solutions draw on the Bosch Group's core competencies: sensors to collect data, software to evaluate that data, and services based on this data analysis.

Additional information is available online at www.bosch-healthcare.com, www.vivatmo.com, www.bosch-vivalytic.com.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 429,000 associates worldwide (as of December 31, 2023). The company generated sales

of 91.6 billion euros in 2023. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability.

In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source.

It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is "Invented for life," Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 470 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. Bosch's innovative strength is key to the company's further development. At 136 locations across the globe, Bosch employs some 90,000 associates in research and development, of which nearly 48,000 are software engineers.

The company was set up in Stuttgart in 1886 by Robert Bosch (1861–1942) as "Workshop

for Precision Mechanics and Electrical Engineering." The special ownership structure of

Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making

it possible for the company to plan over the long term and to undertake significant upfront investments in the safeguarding of its future. Ninety-four percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The remaining shares are held by Robert Bosch GmbH and by a corporation owned by the Bosch family.

The majority of voting rights are held by Robert Bosch Industrietreuhand KG. It is entrusted with the task of safeguarding the company's long-term existence and in particular its financial independence – in line with the mission handed down in the will of the company's founder, Robert Bosch.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com.

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