Researching meningitis: the latest progress

Issue 2, August 2025

This issue spotlights the latest research driving progress to defeat meningitis by 2030. From boosting vaccine coverage, to improving care and our understanding of how meningitis affects survivors, these studies inform global efforts to better prevent, diagnose and treat this disease.

Since 1995, Meningitis Research Foundation has awarded 164 grants. The total value of our investment in vital scientific research is over £19.5 million.

Closing the gaps in infant protection: evidence supporting PCV20 in England

Invasive pneumococcal disease (IPD) in children is very dangerous. Meningitis is the most serious form of IPD and can lead to death or life-changing problems like brain damage and hearing loss. The World Health Organization (WHO) advises all countries to include pneumococcal conjugate vaccines (PCVs) in their routine vaccination programmes to protect children from this disease.

Currently, infants in England receive the PCV13 vaccine to protect them against IPD. A new study looked at the benefits of changing England's infant pneumococcal vaccine from PCV13 to either PCV15 or PCV20 as more cost-effective options. These newer vaccines cover more serotypes – the types of bacteria that cause IPD. This broader coverage is important because over time, types of the bacteria that aren't covered by the vaccine can become more common. The results show that PCV20 has the potential to offer lots of health benefits to the public by covering more of the most invasive serotypes.

New vaccines could protect more children

The findings have been presented to the UK's Joint Committee on Vaccination and Immunisation. Changing to a new vaccine could improve already strong protection against pneumococcal infection. This highlights the need to keep improving vaccine policies in response to new evidence.

Using newer vaccines could protect more children from serious infections like meningitis, while saving money. This has prompted expert discussions on updating national vaccination plans.

Improving diagnosis in low-resource settings

Access to fast diagnosis and proper treatment are limited in many low- and middle-income countries (LMICs). Improving this is a goal of the WHO Global Roadmap to Defeating Meningitis by 2030. Recent research in seven African and South Asian countries found that meningitis was the cause of 7% of deaths in children under five. This rate is higher than the WHO's estimate of 5.1%. Many cases were missed by standard death-reporting tools. This suggests that the true burden of meningitis is underestimated.

Most deaths were linked to hard-to-treat bacteria like *Klebsiella pneumoniae* and *Acinetobacter baumannii*. These don't always respond well to antibiotics and can also spread easily in hospitals, especially to newborns. Most children under five who died from meningitis in this study were not diagnosed before they passed away. More than 80% of these deaths could be prevented.

Faster diagnosis, better care

Another study trialled a low-cost diagnosis and healthcare package that uses local knowledge and expert advice in 13 hospitals across Brazil, India and Malawi. The results show that using these tools made it easier for patients to get important tests. It also helped doctors find and confirm serious brain infections faster.

Research shows that many child deaths from meningitis in low- and middle-income countries go undetected and that low-cost changes in daily hospital routines could help spot meningitis earlier and improve patient care.

The health package includes:
- Step-by-step guides for diagnosis.
- Lumbar puncture kits.
- Tests to find the cause of infection.
- Training for hospital staff.

Beyond survival: the lasting impact of meningococcal disease on families

Invasive meningococcal disease (IMD) can lead to serious long-term health issues. However, it is still unknown how it truly impacts families and society over time. It can cause lasting health problems in children, such as limb loss, hearing issues, epilepsy, and mental health challenges which often require years of care. This places a heavy financial and emotional burden on families. A study conducted in Brazil highlights the significant long-term treatment costs and lost workdays for caregivers, especially in severe cases. Caregivers of children with multiple limb amputations lost up to 85 workdays in just the first year and after that the need for care and support remained high.

A similar U.S. study highlighted the ongoing physical, emotional and financial challenges that IMD survivors and caregivers often face, showing that recovery extends far beyond hospital discharge. These researchers found that most survivors reported various long-term health problems, with issues like trouble walking, memory loss, emotional stress and feelings of isolation. Feelings of sadness, anxiety, or being alone were common long after leaving the hospital. Even with health insurance, families had to pay for therapy, equipment, or home care. For many, surviving IMD is the beginning of a lifelong journey with health challenges, financial burden and reduced emotional well-being.

Children who survive IMD often face serious, lasting health problems, while their families deal with high costs, missed work and years of caregiving. Stronger support systems are urgently needed to help them manage life after the disease.

Lasting effects of meningococcal disease on children and families

Research from Brazil and the U.S. shows that children who survive meningococcal disease often face serious health problems. Findings highlight the need for stronger financial and social support for survivors and families, aligning with WHO's goal to provide connected care and reduce the burden of meningitis by 2030. Ongoing support is crucial for both survivors and their caregivers. Change can only happen with better care coordination and policy action to manage the lasting impact of the disease.

Identifying preventable loss: strengthening diagnosis and health systems

Tuberculous meningitis (TBM) is a rare but fatal form of tuberculosis (TB) that affects the brain. It's hard to diagnose because the symptoms, like fever and vomiting, are common in other illnesses. TBM isn't tracked separately in global health data, so many cases are missed and the true impact is likely underestimated.

A major study from January 2025 found that while TBM is rare in children with TB, it can lead to death and life-changing disability worldwide. Most TBM cases and deaths happened in countries with few health resources as these places often lack the tools and trained staff needed for early TBM diagnosis.

Many tuberculosis meningitis cases in children are missed, leading to preventable deaths and disabilities. Better tools and hospital care are urgently needed to improve how tuberculous meningitis is found and treated worldwide.

The study estimated that in 2019, around 24,000 children under 15 had TBM, with most cases in children under five years old. Unfortunately, two out of three children with TBM died and almost 90% of these deaths were due to late diagnosis or treatment. Of those who survived, over 5,500 were left with brain or nerve damage, potentially needing care for the rest of their lives. These results show how important vaccines like the BCG (Bacillus Calmette-Guérin) vaccine are for newborns, as they help protect against TBM. They also suggest that better tracking of TBM cases could help doctors and health systems respond more quickly to cases.

New data reveals missed TB meningitis cases in children

Overall, these findings could provide the data needed to advocate for prioritising TBM in national and international health plans.

This summary has been produced by the Research team at Meningitis Research Foundation to support greater knowledge and understanding of the advances being made in defeating meningitis. Sign up to our mailing list to get notified of news related to our grant funding rounds and events.

*To find out more about our work, and to support it, visit **meningitis.org**.*