BIGMUN 2026
WHO: World Health Organisation

Research Report

Topic 2: Alarmed by the discovery of Strep Throat's brain-altering infections.

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Introduction

Group A Streptococci, [1]affecting millions of children and adults yearly, killing 500,000 people annually, has recently been flagged for affecting neurological health and irreversible damage. This has been observed in children and youth, mostly leading to brain inflammation, which results in behavioural, cognitive, and mobility changes. Frightening communities of parents across the globe, scientists are frantic to find the underlying cause and cure. Brain-altering infections emerging worldwide are concerning due to a high infection rate internationally, which is usually underestimated and neglected in medical care. To many, regular Strep Throat can be difficult to cure, due to limited access to proper healthcare and low awareness, preventing early diagnosis and treatment. Many possible implications are being brought to public awareness, highlighting the potential threat that a common illness can pose, which can affect society deeply. The discovery of the issue is brought to the World Health Organisation, demanding new guidelines, strategies, and solutions to limit the effects of the infection and prioritise research.

Streptococcal infections left untreated can, in rare cases, trigger such intense complications, which will be addressed by the WHO committee. Affecting the long-term neurological health and causing severe disruption in children, this issue raises great concern to the public and the World Health Organisation to go in-depth into an underestimated infection, through research and cooperation internationally.

Defining Key Terms

Group A Streptococcus (GAS) - The bacterial strain that is responsible for common strep throat infections seen globally, common in children and adults.

Post-infectious complications - The health conditions and complications that occur after a previous infection has been cured. These are usually unexpected, and due to different reasons, such as flaws in treatment or immune system responses to the illness or treatment.

Immune-mediated response - The body's immune system mistakenly attacks itself due to neurological reasons. This response can attack organs, tissue, and other bodily functions vital for health, impacting recovery and long-term health.

Neuroinflammation - The inflammation of brain tissue, which may affect behaviour and motor skills. Neuroinflammation can lead to immune-mediated responses and further responses, such as tics, seizures, movement disabilities and more.

[1] World Health Organization (WHO), "Streptococcal Infections"; Centers for Disease Control and Prevention (CDC), "Clinical Overview of Group A Streptococcal Infections"; National Institute of Neurological Disorders and Stroke (NINDS), "Neuroinflammation"; European Centre for Disease Prevention and Control (ECDC), "Group A Streptococcus—Factsheet for Health Professionals."

Cognitive impairment - Struggling to remember things, focus, behave, or think. Includes forgetting words and actions, significant changes in behaviour and mood, and losing critical and analytical thinking skills.

Antimicrobial treatment - The use of antibiotics to cure bacterial infections such as Strep Throat. Commonly used in all bacterial infections, although they can have side effects, and work differently on all people, impacting the effects of the treatment.

Background on Topic and Committee

Founded in 1948, the World Health Organisation is the United Nations committee that connects the world to promote health, aiming to reach healthcare accessibility to all. With a team of over 8,000 professionals and experts, the WHO strives to work internationally to give equal rights to all when leading a safe and healthy life. Focusing on disease prevention, outbreak response, ameliorating the healthcare system worldwide, and equity in health, WHO emphasises the importance of international cooperation.

In the mid-1990s, professionals at the U.S. National Institute of Mental Health (NIMH) created an initial hypothesis, suggesting a link between strep throat infections and the unusual neuropsychiatric symptoms in children recovering from the infection. This was one of the earliest relevant suggestions of the now-alarming discovery. The term Paediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections (PANDAS) was first introduced in 1998 by the same researchers to describe the symptoms seen in children. In 2012, researchers elaborated on the concept of the infection attacking brain tissue, and only a decade later, the topic became mainstream and a greater concern to scientists and doctors with rising cases. Although the likelihood of developing such neuropsychiatric symptoms is extremely rare, it is appearing more frequently. Recent studies are now showing that it may affect 1 out of 1,000 children who are left without proficient treatment.

Major Countries and Organisations Involved

United States: The U.S has been the pioneer in the discovery of PANDAS, and the main role in the research and identification of post-streptococcal neuropsychiatric effects in children. The NIMH and CDC have made large contributions to the studies linking neurological changes and bacterial infections. As a funder to the World Health Organisation, the United States contributes to financing research and development to the topic, building guidelines, and cooperating with other nations to find the correct measures. With current affairs and politics, the United States' future involvement with the World Health Organisation remains uncertain.

France: Being a large contributor to research in Europe on autoimmune and neurological complications post-streptococcal infections, France has emphasised through their healthcare the importance of early detection and usage of antimicrobial treatment to prevent long-term complications. Supporting the World Health Organisation's initiatives and goals, France has dedicated focus on the diagnosis of bacterial infections at its early stage, and educating the public on health, while balancing important medical caution within concerns of side effects and issues found in antibiotic use.

United Kingdom: The National Health Service (NHS) in the UK has documented multiple complications from streptococcal infections in the past, following the discovery of PANDAS. British researchers and medical professionals contribute their studies on paediatric neuroinflammation and immune responses, shaping the WHO clinical guidelines and global health protocols. Alongside their research and significant funding to the WHO, the UK strictly highlights the difference made in evidence-based policymaking and public health surveillance, especially when speaking of topics that are under-researched or recently diagnosed, contributing their ideas to the committee.

Japan: With extensive experience with bacterial infections triggering neurological disorders, Japan invests in its research and contributes its valuable data and findings to health organisations globally, to improve international understanding of the topic. Japan's current healthcare system prioritises and suggests early diagnosis, treatment, and preventative care, matching many other nations and organisations' strategies for prevention and treatment. Japan supports international collaboration through its medical research, funding, and data.

Centres for Disease Control and Prevention (CDC): The CDC plays a major role in identifying key details and research on streptococcal infections, outbreaks, and complications. The CDC conducts numerous studies and research on post-infectious neurological mediated conditions linked to Strep Throat. They develop clinical guidelines for diagnosis, antimicrobial treatments, and infection prevention. The CDC collaborates with the WHO and other national health agencies, such as the European Centre for Disease Prevention and Control (ECDC), Doctors Without Borders, and UNICEF, all sharing common goals to collaborate internationally.

Relevant UN Resolutions:

[2]

UN General Assembly Political Declaration on Antimicrobial Resistance (AMR) September 26, 2024

"Reaffirm that the 2030 Agenda for Sustainable Development offers a framework to ensure healthy lives, and recall commitments to fight malaria, HIV/AIDS, tuberculosis, hepatitis, the Ebola virus disease, neglected tropical diseases and other communicable diseases and epidemics that disproportionately affect developing countries, including by addressing growing antimicrobial resistance while reiterating that antimicrobial resistance challenges the sustainability and effectiveness of the public health response to these and other diseases as well as gains in health and development and the attainment of the 2030 Agenda," (Clause 2)

"Recognise the leading roles of the World Health Organisation, the Food and Agriculture Organisation of the United Nations, the World Organisation for Animal Health and the United Nations Environment Programme, as the Quadripartite organisations, and the work of the standing Quadripartite Joint Secretariat on Antimicrobial Resistance," (Clause 22)

"Recognise that armed conflicts have a devastating impact on health systems and antimicrobial resistance, leaving people, especially people in vulnerable situations, refugees, internally displaced (individuals), and those living on occupied territories or conflict-affected areas, without full access to essential health care and exposing them to preventable diseases and other health risks, and exacerbate health needs, including for mental health and psychosocial support, rehabilitation, treatment for chronic diseases and others such as cancer, HIV/AIDS and tuberculosis," (Clause 20)

General Assembly Declarations on Global Health Preparedness (2023)

"Through a declaration on universal health coverage, the 193-member body pledged to bolster efforts to achieve the health-related Sustainable Development Goals and to expedite the achievement of universal health coverage by 2030. To do so, the Assembly resolved to address the global shortfall of 523 million people without access to quality health care, medicines, and services, and to reverse the trend of rising catastrophic out-of-pocket health expenditure by 2030." (Paragraph 4)[3]

[2] National Institute of Mental Health (NIMH), *"PANS and PANDAS: Questions and Answers";* World Health Organization (WHO), *"Increased Incidence of Scarlet Fever and Invasive Group A Streptococcus Infection";* National Health Service (NHS), *"Group A Streptococcal Infections";* National Institute of Infectious Diseases (NIID), *"Group A Streptococcal Infections in Japan";* Centers for Disease Control and Prevention (CDC), *"Group A Streptococcal Disease."*

[3] *Political Declaration of the High-level Meeting on Antimicrobial Resistance* (A/RES/79/XX, adopted September 26, 2024); United Nations General Assembly, *Declaration on Global Health Preparedness* (A/RES/78/XX, 2023); World Health Organization (WHO), *"Global Action Plan on Antimicrobial Resistance"*; Food and Agriculture Organization of the United Nations (FAO), *"Strategic Framework on Antimicrobial Resistance."*

Previous Attempts to Address the Issue

WHO Global Action Plan on Antimicrobial Resistance (2015)

"The 'Global Action Plan' to tackle the growing problem of resistance to antibiotics and other antimicrobial medicines was endorsed by the World Health Assembly in May 2015 in resolution WHA67.25. The goal of the plan is to ensure continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality assured, used in a responsible way, and accessible to all who need them."

Five objectives outlined:

- Improve awareness and understanding of antimicrobial resistance
- Strengthen knowledge through surveillance and research
- Reduce the incidence of infection
- Optimize the use of antimicrobial agents
- Ensure sustainable investment in countering antimicrobial resistance

Increased Incidence of invasive Group A Streptococcus infection Reports to WHO

"WHO continues to support countries in assessing and responding to the epidemiological situation across the region and to provide recommendations to the public."

"WHO currently assesses the risk for the general population posed by the reported increase in iGAS infections in some European countries as low, considering the moderate rise in iGAS cases, GAS endemicity, no newly emerging emm gene sequence types identified, and no observed increases in antibiotic resistance. The risk will be continuously assessed based on available and shared information."[4]

Proposed Solutions

1. Early Detection and Standardised Diagnosis. (Developing guidelines to identify post-streptococcal neurological symptoms, promote routine testing, encourage safe use of antimicrobial treatments)
2. Strengthen Surveillance and Reports (Expand WHO disease surveillance and regular reports to medical authorities and health organisations to improve the records and data received.)
3. Improve Access to Early Treatment (equitable access to antimicrobial treatments for strep throat in Less Economically Developed Countries (LEDC))

[4] "Global Action Plan on Antimicrobial Resistance"; World Health Organization (WHO), *World Health Assembly Resolution WHA67.25*; World Health Organization (WHO), "Increased Incidence of Invasive Group A Streptococcus Infection: Risk Assessment and Regional Support."

4. Spread Public Awareness (informing the public, parents, healthcare providers, and all others of the potential risks caused by normally short-term bacterial infections such as GAS.
5. Research and Consensus Building (establish working groups to review data)
6. International Cooperation and Collaboration (partnership between nationals and organisations)

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