Microbe of the month

Breaking The Chain of Infection

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SEPTEMBER 2022 NEWSLETTER
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Featured this month:

World Sepsis Day

13th September 2022

Hello readers!

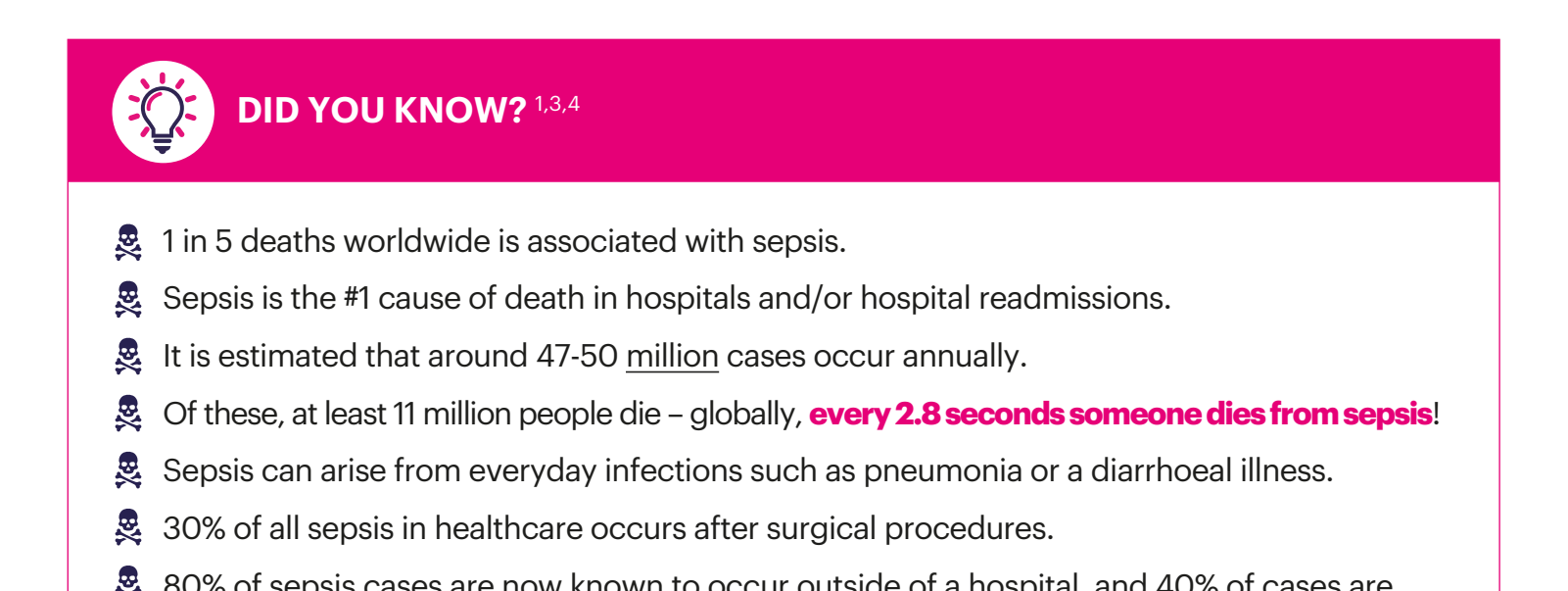
The Microbe of the Month ('MOM') newsletter aims to create awareness about current international programmes and pathogens of clinical importance, as well as recommendations to promote sound infection prevention and control and antimicrobial stewardship practices.
Every issue is laid out in an easy to read and understand format, complete with a detailed references section to assist you with risk management and Quality Assurance in your area of patient care.

Please use this material as a teaching and communication tool in your workplace – share it widely and start an 'infectious dialogue' about topical issues in infection control!

This month's content is dedicated to **World Sepsis Day** on **13th September**.
Despite huge strides in improving awareness and delivery of care since the 2012 World Sepsis Declaration, **sepsis remains one of the most common and least-recognised illnesses in both the developed and developing world.**

This burden is more than the number of lives lost to cancer or coronary disease.
Sepsis can affect anyone as a consequence of infection, but globally, young children are most affected – especially in resource-poor countries (25 million cases per year) with most deaths occurring in children under 5 years of age.[1]

The term is derived from the Greek word '***sepo***' which means 'I rot' and was first used in the medical context in Homer's poems, and in the writings of Hippocrates, the physician and philosopher, around 400 BC.[2]



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DID YOU KNOW? [1,3,4]

- 1 in 5 deaths worldwide is associated with sepsis.
- Sepsis is the #1 cause of death in hospitals and/or hospital readmissions.
- It is estimated that around 47-50 million cases occur annually.
- Of these, at least 11 million people die – globally, **every 2.8 seconds someone dies from sepsis**!
- Sepsis can arise from everyday infections such as pneumonia or a diarrhoeal illness.
- 30% of all sepsis in healthcare occurs after surgical procedures.
- 80% of sepsis cases are now known to occur outside of a hospital, and 40% of cases are children under 5 years old.

YOU can help to **#StopSepsis** and **#SaveLives** – get involved at **https://www.worldsepsisday.org/wsd2022**

WHAT IS SEPSIS? [1,3]

Sepsis is the body's extreme response to an infection and arises when the immune system injures its own tissues and organs. **It is a life-threatening medical emergency, as it may lead to shock, multi-organ failure and death, if it is not recognised promptly and treated appropriately**.

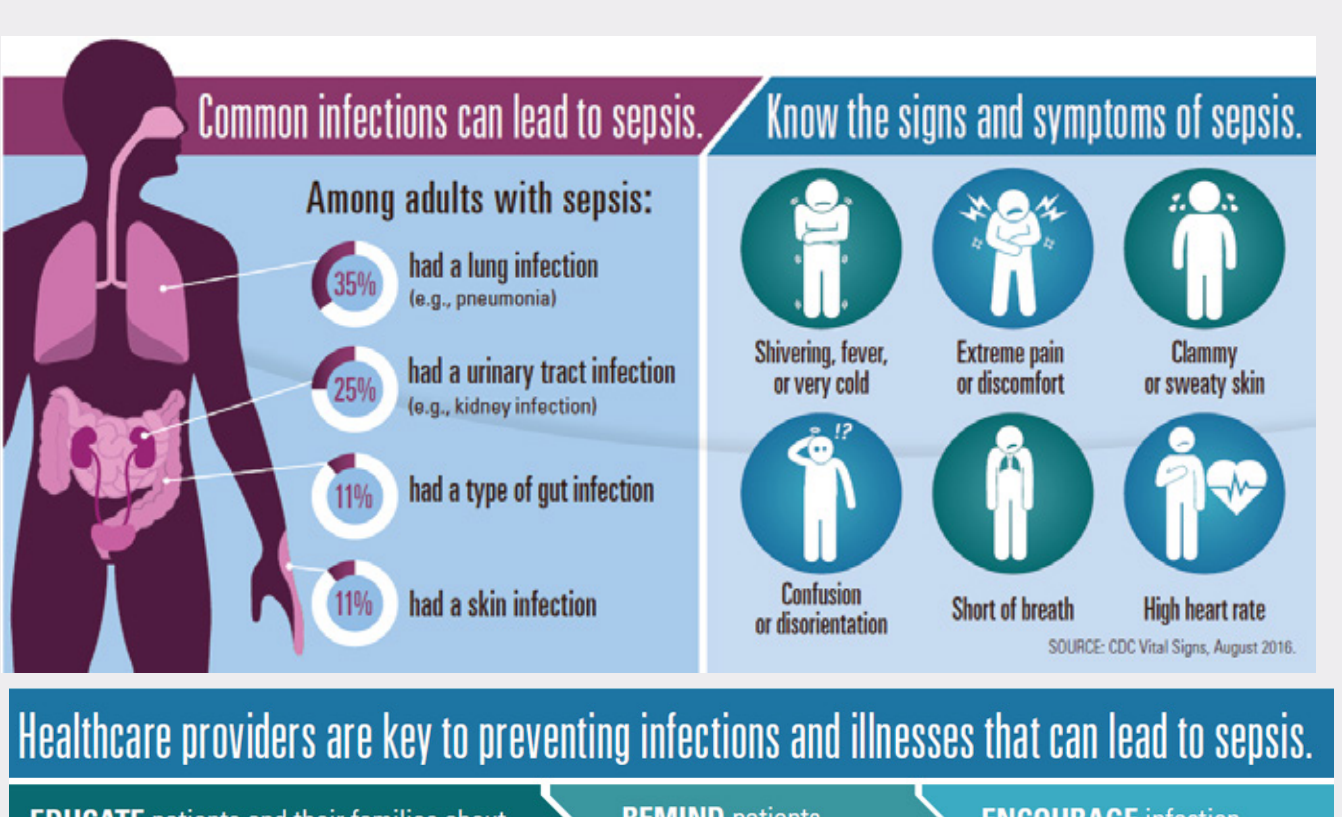
Almost any type of infection can lead to sepsis. Infections that lead to sepsis most often start in the lung, urinary tract, wounds, or gastrointestinal tract.

However, sepsis can also be a result of an existing infection, and therefore, some infections can be spread to others. **Most sepsis is caused by bacteria – however, it can also be a result of viral infections, such as COVID-19 or influenza**.

VIDEO (1½ minutes): **'Sepsis Explained'**
https://www.news-medical.net/health/Sepsis-History.aspx [3]

WHO IS AT RISK OF DEVELOPING SEPSIS? [3,4]

- Adults 65 years and older
- Pregnant or recently pregnant women
- Neonates
- Hospitalised patients
- Patients in intensive care units
- People living with HIV/AIDS
- People with liver cirrhosis
- People with cancer
- People with kidney disease
- People with autoimmune diseases
- People with diabetes mellitus
- People without a spleen



INTERNATIONAL GUIDELINES FOR THE MANAGEMENT OF SEPSIS AND SEPTIC SHOCK [5]

The Global Sepsis Alliance (GSA) is dedicated to reducing the impact of sepsis on the health of children and adults, and coordinates national and international efforts against sepsis. Updated global adult sepsis guidelines were released in 2021 by the **Surviving Sepsis Campaign**.

The new guidelines also represent greater geographic and gender diversity than previous versions, and specifically address the challenges of treating patients experiencing the long-term effects of sepsis.

Many 'sepsis survivors' experience significant consequences, such as impaired quality of life (e.g., organ failure and amputation), **depression and anxiety, poor cognitive function, and shortened life expectancy**. To address these issues, the guidelines recommend involving patients and their families in goals-of-care discussions and hospital discharge plans, which should include early and ongoing multidisciplinary follow-up and support.

THE 'GOLDEN HOUR' AND THE SEPSIS TREATMENT BUNDLE [5,6]

Directed by experts in critical care medicine from both the Society of Critical Care Medicine (SCCM) and the European Society of Intensive Care Medicine, the detailed guidelines recommend the implementation of performance-based 'sepsis awareness' programmes for the early identification of sepsis, and the use of the '**Sepsis Bundle**' as a standard of care.

The concept of **the 'Golden Hour'** is well established – extensive evidence demonstrates improved patient outcomes if sepsis and septic shock are recognised and treated promptly. **Each hour of delay in the delivery of the 'sepsis treatment bundle' is associated with an 8% increase in mortality.**

The '**Hour-One Bundle**'[6] includes **5 steps** which should be started immediately upon presentation in all patients with clinical elements suspicious for sepsis or septic shock:

1. Measure serum lactate levels.
2. Obtain microbiological specimens and blood cultures before administering antibiotics.
3. IV broad-spectrum intravenous antimicrobials (to cover all likely pathogens) should be initiated as soon as possible, and within one hour for both septic shock and sepsis without shock.
4. Administer IV balanced crystalloids or normal saline for fluid resuscitation of patients with sepsis or septic shock.
5. Apply vasopressors if the patient remains hypotensive during or after fluid resuscitation to maintain a mean arterial pressure of ≥ 65mm Hg.

VIDEO (3 minutes): The Surviving Sepsis Campaign: Overview of the 2021 Guidelines and Hour-1 Bundle
https://www.youtube.com/watch?v=KyXm2jV5j4A

HANDLE ANTIMICROBIALS WITH CARE

Antibiotics
Antivirals
Antifungals
Antiparasitics

SEPSIS AND ANTIMICROBIAL STEWARDSHIP [5]

Timely and appropriate antimicrobial therapy represents the cornerstone of effective sepsis management, and at the same time, meets a key requirement for antimicrobial stewardship.

However, sepsis is also a major driver of broad-spectrum antibiotic use and therefore contributes to the emerging global threat of **antimicrobial resistance (AMR)**. In turn, resistance negatively affects individuals with sepsis by decreasing the effectiveness of available antimicrobial therapy.

Failure to initiate appropriate broad-spectrum therapy in patients with sepsis and septic shock is associated with a substantial increase in morbidity and mortality. The choice of empiric antimicrobial therapy will depend on complex issues related to the patient's history, clinical status, and local epidemiologic factors.

Key assessment factors should include the nature of the clinical syndrome or site of infection, concomitant underlying diseases, chronic organ disease and medication, invasive devices, the presence of immunosuppression, recently known infection or colonisation with specific pathogens, and whether the patient has received any antimicrobial agents within the previous three months.

In addition, the patient's location at the time of infection acquisition (i.e., community, chronic care institution or acute care hospital), local pathogen prevalence, and the susceptibility patterns of common local pathogens must be factored into the choice of therapy. Potential drug intolerances and toxicity must also be considered.

THE BOTTOM LINE... [7]

- Sepsis is a serious worldwide health threat.
- While sepsis affects individuals of any sex and of any age, there are significant disparities in the burden of disease – sepsis disproportionately affects vulnerable populations such as pregnant and recently pregnant women, neonates, young children, older persons, individuals with underlying chronic conditions, and the immunocompromised.
- Timely diagnosis of sepsis critically increases the chance of survival and is a pillar of quality care in the clinical management of sepsis.
- Targeted activities which prevent avoidable infection include hand hygiene and Infection Prevention and Control (IPC) best practices, access to vaccines, improved sanitation, and water quality.
- Antimicrobial resistance (AMR) jeopardises the effective treatment of underlying infection and sepsis, making effective IPC programmes and actions such as hand hygiene even more crucial.
- There is a severe lack of population-based sepsis data globally, especially from low and middle-income countries, which makes it difficult to estimate the true burden of sepsis.
- A dedicated sepsis surveillance system should be linked to existing surveillance programmes and disease networks (e.g., ICD coding, maternal and child health, HIV, tuberculosis, healthcare vs. community acquired infections, AMR, etc.).
- Improving research on sepsis epidemiology and burden is critical to inform interventions for its prevention, diagnosis and management.

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