

Microbe of the month

Breaking The Chain of Infection

Compiled by
Helen Loudon
IPC Consultant

**FEATURED
THIS
MONTH:**

World Sepsis Day

13th September 2024

10-minute read + QUIZ

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.

There is a quick quiz at the end of the newsletter to test your grasp of the content - please use this newsletter as a teaching tool in your workplace and start an 'infectious' dialogue about topical issues in infection control!

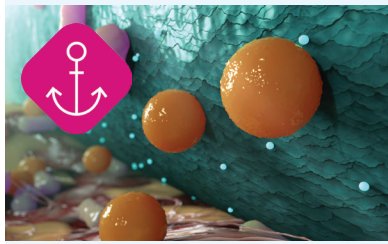
This month's content is dedicated to **World Sepsis Day on 13th September**.

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

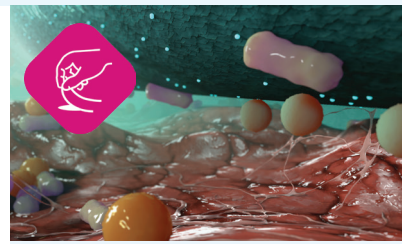
Sorbact® Technology Mode of Action



Bind:
Bacteria naturally bind and anchor to the unique Sorbact surface.



Inhibit:
Bacteria are irreversibly bound, and growth is inhibited. Development of bacterial or fungal resistance is not expected.



Remove:
Bound bacteria, fungi and endotoxins are removed.



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



DID YOU KNOW? ^{1,3-5}

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.

WHAT IS SEPSIS? ¹⁻⁵

Sepsis is not a specific illness but a syndrome encompassing a constellation of clinical signs and symptoms in a patient with suspected infection.⁵

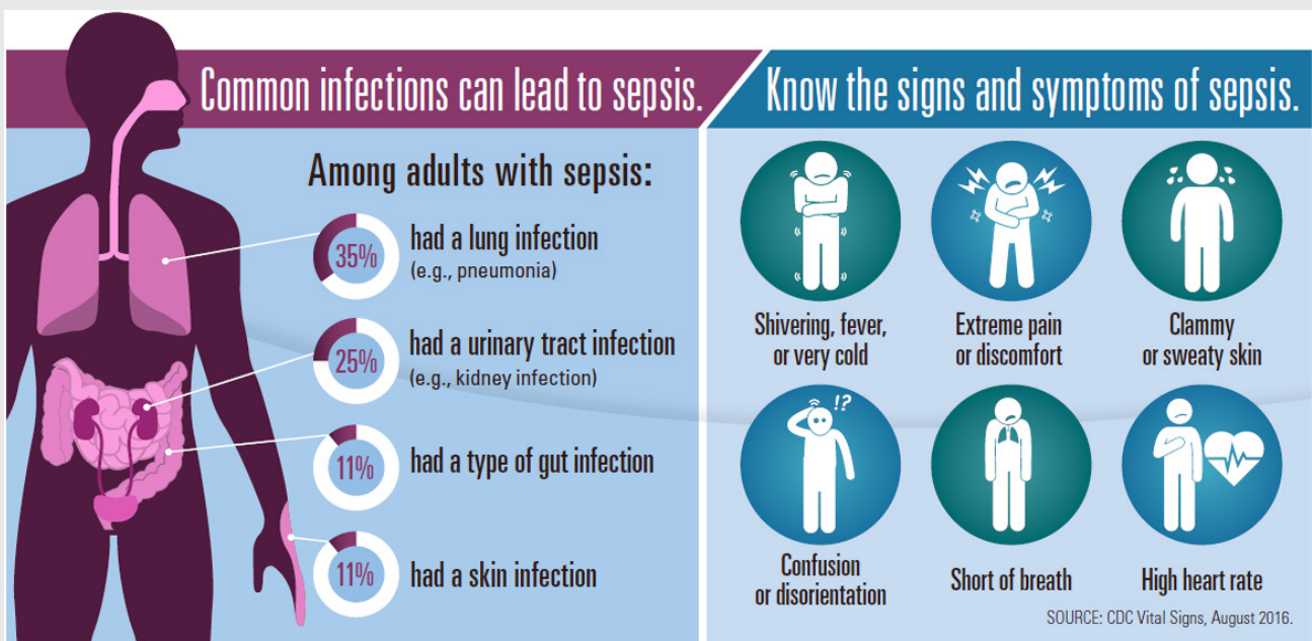
Sepsis is the body's extreme response to an infection and arises when the immune system injures its own tissues and organs. **It is a life-threatening medical emergency, as it may lead to shock, multi-organ failure and death, if it is not recognised promptly and treated appropriately.**

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.**

WHO IS AT RISK OF DEVELOPING SEPSIS? ^{1,3-6}

- ✓ 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



Healthcare providers are key to preventing infections and illnesses that can lead to sepsis.

EDUCATE patients and their families about the early symptoms of severe infection and sepsis, and when to seek care for an infection, especially those at higher risk.

REMINDE patients that taking care of chronic illnesses helps prevent infections.

ENCOURAGE infection prevention measures, such as hand hygiene and vaccination against infections.

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. Global adult sepsis guidelines were updated in 2021, and are reviewed every 4 years.

The 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

The '**Hour-One Bundle**'⁶ 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 ≥ 65 mm Hg.^{5,6}

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.**^{4,7}



Antibiotics
Antivirals
Antifungals
Antiparasitics

SEPSIS AND ANTIMICROBIAL STEWARDSHIP⁸

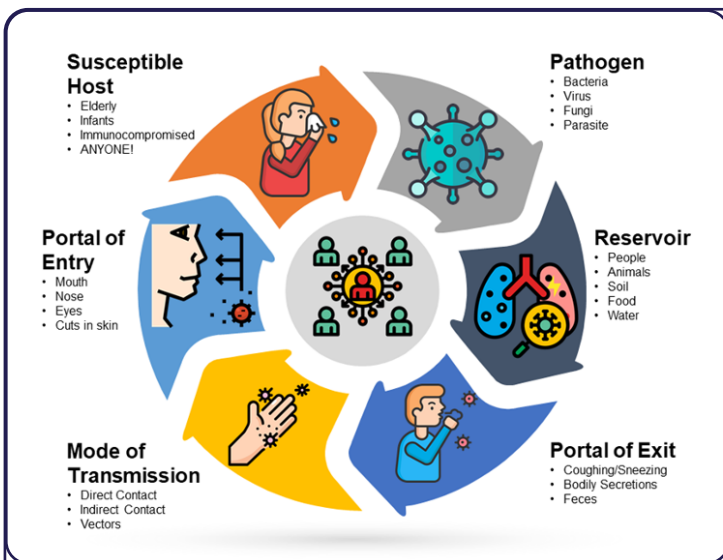
Timely and appropriate antimicrobial therapy represents the cornerstone of effective sepsis management, and at the same time, meets a key requirement for antimicrobial stewardship.

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... ^{1,3-8}

- ✓ 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.



Supply the correct answer!

- Question 1.** World Sepsis Day is commemorated on the _____ every year.
- Question 2.** Sepsis disproportionately affects vulnerable populations such as pregnant women, children and neonates, the elderly, and _____ individuals.
- Question 3.** Timely recognition and treatment of sepsis critically increases the chances of patient survival. TRUE / FALSE
- Question 4.** Signs and symptoms of sepsis include shortness of breath, tachycardia, shivering, clammy skin, severe body pain and mental _____.
- Question 5.** 5. Surgical procedures account for at least ____% of all sepsis in healthcare.

**Need product or newsletter information?
Click here and an Essity representative
will contact you**

REFERENCES

1. Global Sepsis Alliance - World Sepsis Day 2024. Sepsis Factsheets and Toolkits. Available from <https://www.worldsepsisday.org/news/2024/1/10/have-a-great-start-into-2024-updated-toolkits> [Accessed 8.8.2024]
2. Sepsis History and Definition 2022. <https://www.news-medical.net/health/Sepsis-History.aspx>
3. Forrester JD. Sepsis and Septic Shock. Critical Care Medicine – MSD Manual Professional Edition. March 2023
<https://www.msmanuals.com/professional/critical-care-medicine/sepsis-and-septic-shock/sepsis-and-septic-shock#>
4. Society of Critical Care Medicine. Surviving Sepsis 2021 (Adult) Guidelines: Management of Sepsis and Septic Shock.
<https://www.sccm.org/Clinical-Resources/Guidelines/Guidelines/Surviving-Sepsis-Guidelines-2021#Recommendations>
5. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, Bellomo R, Bernard GR, Chiche JD, Coopersmith CM, Hotchkiss RS, Levy MM, Marshall JC, Martin GS, Opal SM, Rubenfeld GD, van der Poll T, Vincent JL, Angus DC. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016 Feb 23;315(8):801-10. doi: 10.1001/jama.2016.0287. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4968574/>
6. Kilpatrick, C., Saito, H., Allegranzi, B., & Pittet, D. (2018). Preventing sepsis in health care - It's in your hands: A World Health Organization call to action. Journal of Infection Prevention, 19(3), 104–106. <https://doi.org/10.1177/1757177418769146>
7. Society of Critical Medicine and the European Society of Intensive Care Medicine. 2019 Surviving Sepsis Campaign. Hour-1 Bundle: Initial Resuscitation for Sepsis and Septic Shock.
8. World Health Organisation (2020). Global report on the epidemiology and burden of sepsis: current evidence, identifying gaps and future directions.
<https://www.who.int/publications/i/item/9789240010789>

Tork Clean Hands Training, now available on desktop



Our award-winning virtual training environment helps healthcare professionals improve their hand hygiene compliance anywhere, at any time to secure hand hygiene at every moment.

According to research, we remember 90% of what we learn when we simulate the real experience as opposed to just 10% of what we read*.

Try for free at tork.co.za/cleanhands

*Based on The Learning Pyramid



Think ahead.

Stand together against antimicrobial resistance



**wound
warriors**

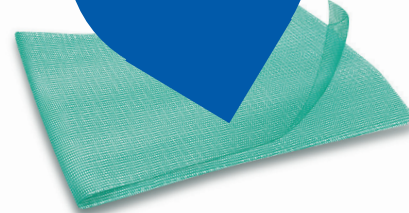
Sorbact® Technology dressings can form a valuable part of your Antimicrobial Stewardship strategy¹

Antimicrobial resistance is a heavy burden and optimal wound management is key in fighting it. Dedicated to improving wellbeing through leading hygiene and health solutions, Essity supports the antimicrobial stewardship initiative.

- Sorbact® Technology dressings reduce the bioburden in wounds²
- Effective against the WHO's top 5 pathogens, as shown in-vitro³
- Using Cutimed® Sorbact® for acute and hard-to-heal wounds supports Antimicrobial Stewardship (AMS)¹ as part of a multi-modal approach, in line with the Best Practice Statement for AMS Strategies⁴

Prevent and manage infected wounds with the unique Sorbact® Technology.

Average bacterial
load reduction
-73.1%⁵



www.woundwarriors.co.za

Cutimed is a registered trademark of Essity. Sorbact is a registered trademark of ABIGO Medical AB.

1. Rippon MG, Rogers AA, et al. 2021. Antimicrobial stewardship strategies in wound care: evidence to support the use of dialkylcarbamoyl chloride (DACC)-coated wound dressings. J Wound Care. 30(4):284-296.
2. Gentili V, Giansini S, et al. 2012. Panbacterial real-time PCR to evaluate bacterial burden in chronic wounds treated with Cutimed Sorbact. Eur J Clin Microbiol Infect Dis. 31(7):1523-1529. 3. Husmark J, Arvidsson A, et al. 2020. Antimicrobial effect of a DACC-coated bacteria-binding wound dressing against WHO pathogens. EWMA 2020. EPO06. 4. Wounds UK (2020) Best Practice Statement: Antimicrobial stewardship strategies for wound management. Wounds UK, London. 5. Mosti et al., Comparative study of two antimicrobial dressings in infected leg ulcers: a pilot study, Journal of Wound Care, 2015 Mar;24(3):121-2; 124-7

 **essity** Cutimed®,
an Essity brand

Name and business address: BSN MEDICAL PTY (LTD) an
Essity Company. **Co. Reg. No.** 2001/003941/07. 30 Gillitts
Road, Pinetown, 3610. Tel. No. +27 31 710 8111.
Email: medical.za@essity.com, www.essity.com. Further
information available on request from Essity. 24_BSN104

Leukoplast®

 **Cutimed®**



Cost-effective
surgical site infection prevention...

.....
Proven infection management...

.....
Physical microbe binding
technology...

Leukomed® Sorbact® Surgical site infection prevention

- Clinically significant 65% relative risk reduction of acquiring a surgical site infection post caesarean section¹
- Up to 57% cost reduction of SSI when treating caesarean sections, using NHS cost model²
- Effective reduction of the bacterial burden in critically colonised or locally infected wounds³

¹ Staniewski J, Bizon M, Cendrowski K, et al (2016b) Randomized controlled trial evaluating dialkylcarbonyl chloride impregnated dressings for the prevention of surgical site infections in adult women undergoing caesarean section. Surg Infect (Larchmt) 17(4): 427-35

² Davies H, McMaster J, et al. Cost-effectiveness of DACC dressing to prevent SSI following caesarean section. Presented at Wounds UK, Harrogate, November 2018

³ Cutting K, Maguire J (2015) Safe bioburden management. A clinical review of DACC technology. Journal of Wound Care Vol 24, No 5

Essity, 30 Gillitts Road, Pinetown 3610. Phone: + 27 31 710 8111.
Email: medical.za@essity.co.za. www.medical.essity.co.za

 **essity** Leukoplast®,
an Essity brand

Leukomed®
by **Leukoplast®**

Sorbact® is a registered trademark of ABIGO Medical AB.