

INFORMATION FOR PATIENTS

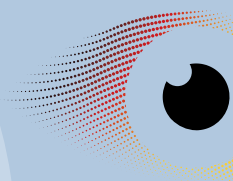
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des Deutschen Bundestages



Sepsis concerns us all! What you should know about it



DEUTSCHLAND
**ERKENNT
SEPSIS**

Eine Initiative des
Aktionsbündnis Patientensicherheit
und seiner Partner



AKTIONSBÜNDNIS
PATIENTENSICHERHEIT



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INTRODUCTION

Sepsis is commonly known as blood poisoning. Sepsis is the most severe form of infection. In sepsis, the body's natural immune defence system attacks the body's own tissues and organs.

Sepsis is an emergency.

Early recognition and treatment saves lives!

Too many people get sepsis who are not in hospital. But most people do not know what sepsis is, or don't know the early signs of sepsis. Sepsis causes about 75,000 deaths every year and is now the third leading cause of death in Germany. Only cardiovascular diseases and cancer cause more deaths. About eleven million people in the world die of sepsis every year. As a result, sepsis is a serious problem for society and health economics. In 2017, the World Health Organisation (WHO) classified sepsis as a global threat. The WHO then passed a resolution on the special need to improve measures to prevent, diagnose and manage sepsis.

Our three sepsis guides* were created for the following target groups:

- general population
- doctors, nurses and other health care workers
- management staff of outpatient and inpatient healthcare facilities

These guides are designed to make people more aware of sepsis, and to inform people about the condition in a suitable way for each target group: what causes sepsis, the signs and symptoms of sepsis, how to treat it and how to prevent it.

The need for these guides is clear in particular when new pathogens like SARS-CoV-2, Ebola, or MERS emerge, which can theoretically also lead to sepsis. But apart from pandemics with new pathogens: “Could it be sepsis?” is a question we should always ask whenever someone becomes very seriously ill.

We hope that these guides will help to save lives and reduce the long-term consequences of sepsis.

Sepsis concerns us all!

* You can find the guides for doctors, nurses, and other health care workers, and for outpatient and inpatient management, at:
<https://www.aps-ev.de/handlungsempfehlungen/>.

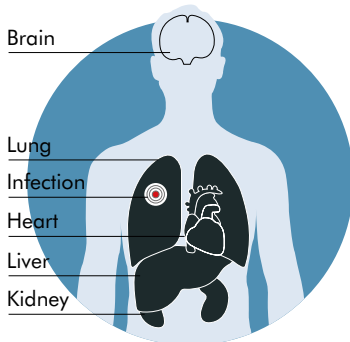
1 WHAT IS SEPSIS?

Sepsis is the medical name for what most people would call blood poisoning.

Sepsis is a life-threatening condition that is often fatal.

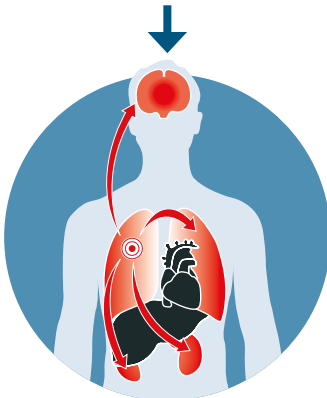
SEPSIS is ALWAYS an EMERGENCY!
IMMEDIATE hospital treatment is vital for survival!

HOW SEPSIS DEVELOPS



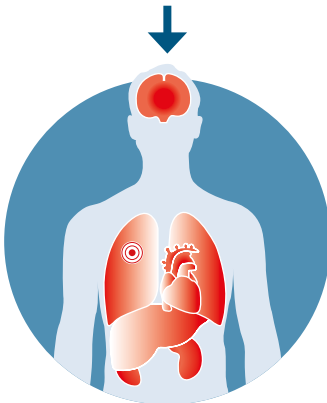
A local infection spreads to the rest of the body

A local inflammation such as pneumonia or a severe soft tissue infection (infected wound with redness and swelling) fools the body's natural defences. Invading microorganisms and the harmful substances they produce cause the immune system to mount a strong response.



Sepsis

This immune response can be so strong that the body can no longer control it. The misfiring immune response can harm and destroy tissues and organs. This is known as sepsis.



Septic shock and multiple organ failure

Cardiovascular failure and a sudden drop in blood pressure can develop. This is called "septic shock". Subsequently, vital organs stop working one by one or all at the same time. This is called multiple organ failure and often leads to death.

Fig. 1 "What is sepsis?", source: Author's own design, based on Global Sepsis Alliance

2 SEPSIS CAN AFFECT ANYONE!

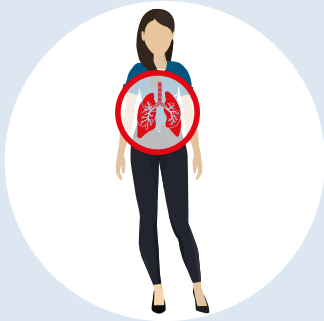
Somebody in the world dies from sepsis every 3 seconds¹.

In Germany²

- ▶ sepsis causes about 75,000 deaths every year and is the third-leading cause of death after cardiovascular diseases and cancer
- ▶ there are about 320,000 cases of sepsis every year – that's the size of the population of Bonn
- ▶ 80% of sepsis cases are in people who are not in hospital
- ▶ up to 20,000 sepsis deaths are preventable with early detection and treatment, vaccination and measures to prevent hospital-acquired infections

Anyone can get sepsis – certain groups are more at risk.

RISK GROUPS



People with chronic diseases, such as lung, liver or heart disease



Individuals with weakened immune systems, such as people with diabetes, cancer, dialysis or AIDS



People with no spleen



Children under 1 year



People over 60 years of age

Fig. 2 "Risk groups", source: Author's own design, based on Global Sepsis Alliance

3 WHEN DOES SEPSIS HAPPEN?

Sepsis develops in a person with an infection. It is the most severe complication of infection.

Sepsis **can** result from:

- pneumonia
- a urinary tract infection
- inflammation in the abdomen
- the aftermath of surgery
- a cut or bite (a scrape or a scratched mosquito bite)
- tubes or devices in the body (permanent/port catheters, joint replacements, pacemakers, etc.)

4 COULD IT BE SEPSIS?

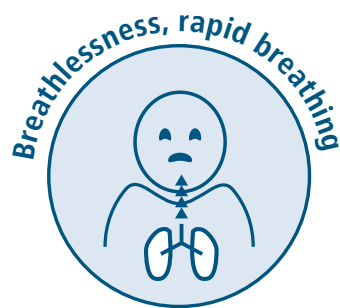
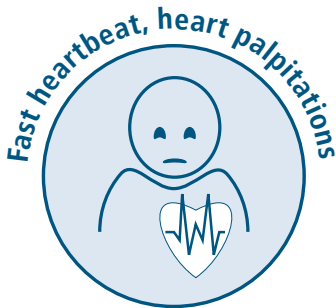
The symptoms of sepsis are non-specific at the start and hardly different from normal flu.

It could be sepsis if at least two of the following signs of illness are present (see Figures 3 and 4):

SEPSIS SIGNS IN ADULTS AND CHILDREN



Confusion or change of character
("seems different from usual", "completely changed")



Faster breathing
(22 breaths or more/minute)



Feeling extremely ill
("feels like I'm going to die", "never felt this ill") / severe pain

Fig. 3 "Sepsis signs in adults and children", source:
Author's own design, based on Sepsis-Stiftung (Sepsis Trust); RKI

SEPSIS SIGNS IN NEWBORNS



- Might feel abnormally cold to the touch, but might also feel feverish
- Is breathing heavily
- Is vomiting repeatedly and/or has diarrhoea
- Slow reactions/movements
- Is not drinking or eating
- Has seizures

Fig. 4 "Sepsis signs in newborns", source: Author's own design, based on Sepsis Trust

German Coalition for Patient Safety recommends:

**If you notice at least two sepsis symptoms,
always call 112!**

Ask the doctors or person answering your call:

"Could it be sepsis?"

Be persistent – don't let them "brush you off"!

**Call emergency
services
112**

5 TREATMENT OF SEPSIS

If the diagnosis of sepsis is confirmed in the hospital, the next step may be transfer to the intensive care unit (ICU).

Treatment should start as soon as possible after diagnosis. Treatment involves these vital measures:

- draw blood for blood cultures
- draw blood for laboratory tests
- give antibiotics
- give intravenous fluids (“put on a drip”)
- monitor urine production
- apply an oxygen mask, if necessary

Other measures may be needed to find where the infection started and treat that area with surgery (to remove the local focus of infection).

6 LONG-TERM EFFECTS OF SEPSIS

Sepsis can have long-term effects. They can be very different, and some only develop years later.

Some types of physical damage are common but not immediately obvious, while others are plainly visible. There may also be psychological and social effects.

1. Common but not immediately obvious physical damage

This kind of damage is mainly brain damage and nerve damage, which then leads to cognitive disorders and muscle and nerve weakness. The brain damage usually does not show up in radiology exams (e.g. magnetic resonance imaging, MRI).

The disorders may have the following symptoms:

- severe reduction in fitness (mental and/or physical)
- poor concentration
- reduced responsiveness
- attention problems
- very limited memory
- slower to understand things
- problems with sight and speech/language
- balance problems and dizziness
- breathing problems
- muscle weakness
- chronic pain, polyneuropathy
- disturbed sleep

We recommend that anyone with these problems be referred to a clinical neuropsychology or cognitive neurology facility for assessment and treatment.

2. Obvious physical damage

These are amputations and other physical damage from essential surgery (e.g. abdominal wall weakness, organ damage such as heart and kidney dysfunction).

3. Psychological effects

The most common mental health effects are depression and post-traumatic stress disorder. These conditions can be treated by appropriate psychotherapy.

4. Social effects

These are a result of the long-term health condition, which in many cases results in disability. People living with the long-term effects may experience stress with the people around them due to a lack of understanding of the new problems. Talking to other sepsis survivors and their families can be very helpful.

The long-term effects of sepsis are not widely known, so many doctors and therapists are not aware of these problems. That's why you should describe your current symptoms to your doctor in detail. Say that you have had sepsis and say when you had it. Your doctor can then refer you to a specialist.

Early rehabilitation is important:

- physiotherapy
- occupational therapy
- psychotherapy
- clinical neuropsychology/cognitive neurology
- orthoptics (experts for treating eye problems)
- speech therapists (experts for speech and language problems)
- rehabilitation
 - inpatient treatment combined with therapy.
 - there are no (early) rehabilitation programmes specifically for sepsis yet, so try to find a centre that covers most or all of the long-term effects you have.

Accept help!

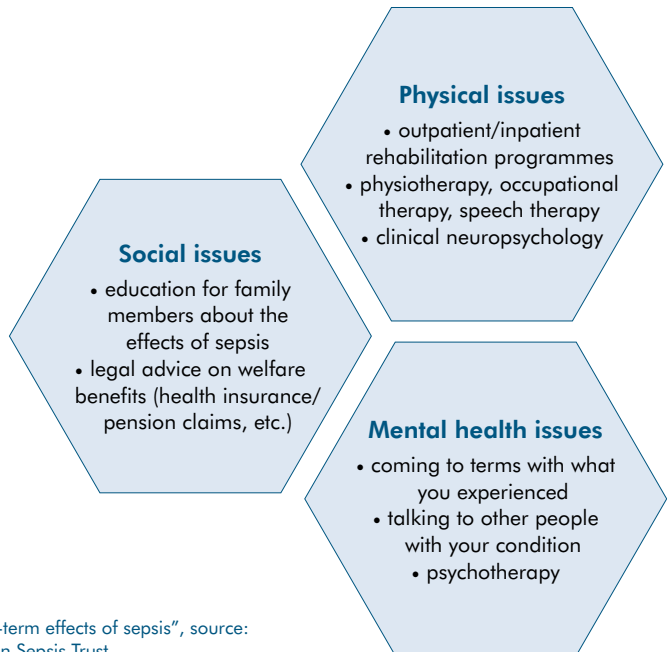


Fig. 5 "Ways to manage long-term effects of sepsis", source: Author's own design, based on Sepsis Trust

7 PREVENTING SEPSIS

PREVENTING INFECTIONS	AT HOME	<ul style="list-style-type: none">→ Observe general hygiene for example hand-washing and food hygiene→ Get your vaccinations	PREVENTION
	IN PRIMARY HEALTHCARE	<ul style="list-style-type: none">→ Educate people about infectious diseases→ Identify vulnerable patient groups such as pregnant women and people with diabetes→ Offer vaccinations	
	IN HOSPITALS	<ul style="list-style-type: none">→ Observe hospital hygiene standards Guidelines of the Commission for Hospital Hygiene and Infection Prevention (KRINKO)	

Fig. 6 “Preventing sepsis”, source: Author’s own design, based on RKI

Sepsis and its long-term effects are often preventable!

What’s important:

- always remember it could be sepsis. Know the symptoms. If you recognise two or more signs of sepsis (p.11/12), call 112 for emergency assistance. The medical on-call service at 116117 can also help clarify suspected sepsis.
- especially in babies and toddlers, older adults and people with a chronic illness: if they have an infection, remember it could be sepsis
- keep an eye on insect bites and skin injuries, apply an antiseptic if necessary
- effective treatment of infections
- get vaccinated against preventable infections such as pneumonia, flu, and measles

- maintain effective treatment of chronic diseases (such as diabetes)
- a healthy lifestyle and good hygiene

Everything that protects against infections helps to prevent sepsis.

Important vaccinations:

- pneumococcal vaccination to prevent bacterial pneumonia
- flu jab every year
- all vaccinations recommended by the Standing Committee on Vaccination at the Robert Koch Institute (known to your family doctor)

Hand hygiene helps prevent infection:

- wash your hands regularly and thoroughly (20 - 30 seconds) with soap and water
- especially after going to the toilet and after blowing your nose, after touching animals or raw meat, before preparing food and before eating
- use hand sanitizer before and after contact with sick people

8 MORE INFORMATION

Further information and help is also available from:

- Aktionsbündnis Patientensicherheit e.V.
(German Coalition for Patient Safety)
www.aps-ev.de
- Global Sepsis Alliance
www.global-sepsis-alliance.org
- Sepsis-Stiftung (Sepsis Trust)
<https://www.sepsis-stiftung.eu/>
- Deutsche Sepsis-Hilfe e.V. (German Sepsis Self-Help Group)
<https://sepsis-hilfe.org/de/>
- Deutsche Sepsis-Gesellschaft (German Sepsis Society)
<https://www.sepsis-gesellschaft.de/>
- Robert Koch Institute
https://www.rki.de/DE/Content/InfAZ/S/Sepsis/Sepsis_allgemein.html
https://www.rki.de/DE/Content/Infekt/Krankenhaushygiene/Haendehygiene/Haendehygiene_node.html
https://www.rki.de/DE/Content/Kommissionen/STIKO/Empfehlungen/Impfempfehlungen_node.html
- Information on the long-term effects of sepsis
<https://www.sepsisfolgen.info/>
- Stiftung Neuronales Netzwerk – Deutsche Stiftung für Menschen mit erworbenen Hirnschäden (Neural Network Trust – German Trust for People with Acquired Brain Damage)
<http://neuronales-netzwerk.org/start.html>
- Addresses of clinical neuropsychology experts in Germany
<https://www.gnp.de/behandlerliste>
- National Association of Statutory Health Insurance Physicians
<https://www.kbv.de/html/sepsis.php>

9 BIBLIOGRAPHY

- 1 Rudd KE, Johnson SC, Agesa KM et al. Global, regional, and national sepsis incidence and mortality, 1990-2017: analysis for the Global Burden of Disease Study. *Lancet*. 2020 Jan 18;395(10219):200-211. doi: 10.1016/S0140-6736(19)32989-7.
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LEGAL INFORMATION

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Alte Jakobstr. 81, 10179 Berlin, Germany
www.aps-ev.de

“Sepsis” task force

Head

Prof. Dr. Dr. Rainer Petzina, Universitätsklinikum Schleswig-Holstein

Deputy head

Dr. Antje Erler, Sepsis-Stiftung

Representative of the Board of Management

Dr. Ruth Hecker

Editorial content team

Head of the “Population” subgroup

Prof. Dr. Christiane Hartog, Charité – Universitätsmedizin Berlin,
KLINIK BAVARIA Kreischa

Frank Köhler, Deutsche Sepsis-Hilfe e.V.

Head of the “Healthcare Professionals” subgroup

Manuela Forster, BD – Becton Dickinson

Head of the “Management” subgroup

Prof. Dr. Herwig Gerlach, Vivantes Klinikum Neukölln
Delia Strunz, Johnson and Johnson

Other members of the “Population” subgroup

Susanne Eberl, Sana Kliniken AG

Dr. Eike Eymers, AOK Bundesverband

Jutta F. Maywald Kessel, AFK

Arne Trumann, Sepsis-Stiftung

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Fig. 2: Sponsored by the Global Sepsis Alliance

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COMMENTS AND FEEDBACK

This guide was made available for public comment prior to publication.

Not all participants in the final round of comments agree with all of the content. A record of the comments is available at: www.aps-ev.de/kommentierung/.

The APS guides are tools for improving patient safety. The APS pledges with its products to provide up-to-date and real-life guidance based on a broad consensus of the individuals involved and their expertise. This also includes monitoring APS products regularly to keep them up to date.

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Aktionsbündnis Patientensicherheit e.V., info@aps-ev.de.



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