

# Sepsis - A Public Health Threat

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IHU PROMETHEUS

# Conflict of Interest

## ▶ Financial:

- ▶ since 1995 I have received multiple grants from French ministry of health, French ministry of higher education, research and innovation, various European research programs, from charity entities - french national programme d'investissement d'avenir: ANR RHU 004; France 2030 IHU-3
- ▶ In 2021/2022 I received honorarium to contribute to advisory board on corticosteroids for sepsis (Pfizer), biomarkers for sepsis (Baxter, Biomerieux), vaccines (Janssen)

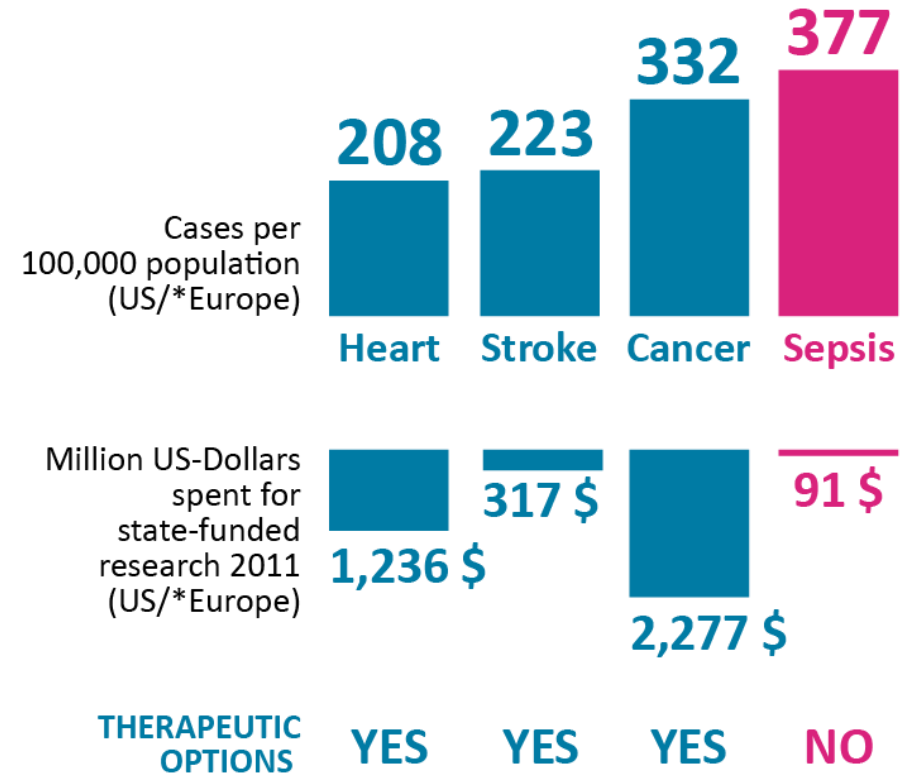
## ▶ Academic :

- ▶ Contributed to SSC 2008/2012/2016 updates
- ▶ Co-chair the Task Force of CIRCI/corticosteroids in the ICU guidelines, since 2008
- ▶ Corticosteroids for acute inflammation is the main topic of research of my group since 1991
- ▶ Vice president of France Sepsis Association
- ▶ Member of Steering committee of the European Sepsis Alliance
- ▶ Contributor to Sepsis Stronger Together

# SEPSIS, The Unknown Killer



50M cases  
11M deaths  
42% children under 5  
50% with sequelae



A large, light pink maze graphic that fills the background of the slide. It consists of several thick, curved lines that form a complex, winding path.

# **FACTS**

## **AMR and Sepsis: a common threat**

## Age specific burden

### Sepsis incidence in 2017 and children

**Sepsis incidence was biphasic; it peaked in early childhood and again in elderly adults.**

**41.5% (20.3 million)**  
of incident sepsis cases

**26.4% (2.9 million)**  
deaths related to sepsis

**children younger than 5 years**

### Mortality due to severe neonatal infections

**24%**

**of neonatal deaths are caused by severe neonatal infections (including sepsis)**

### Sepsis survivors

**One third**

**die within one year**

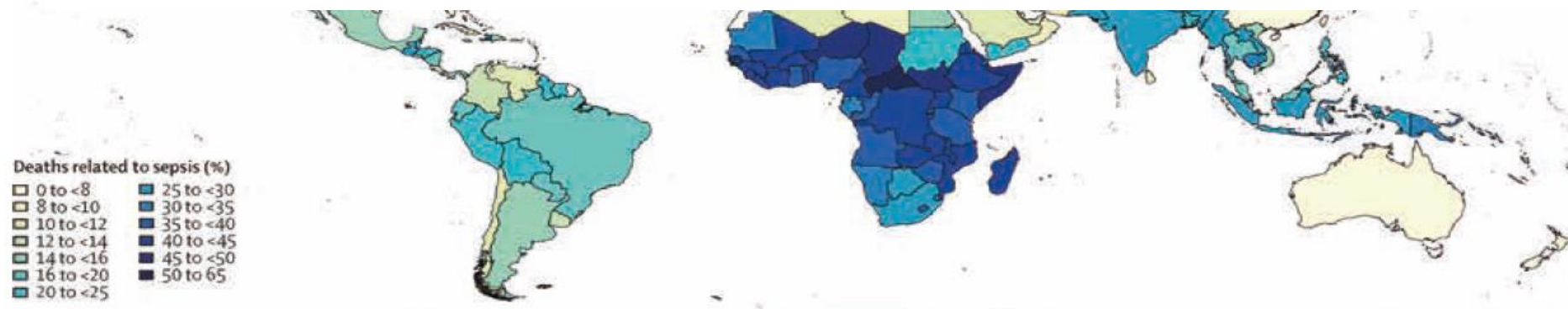
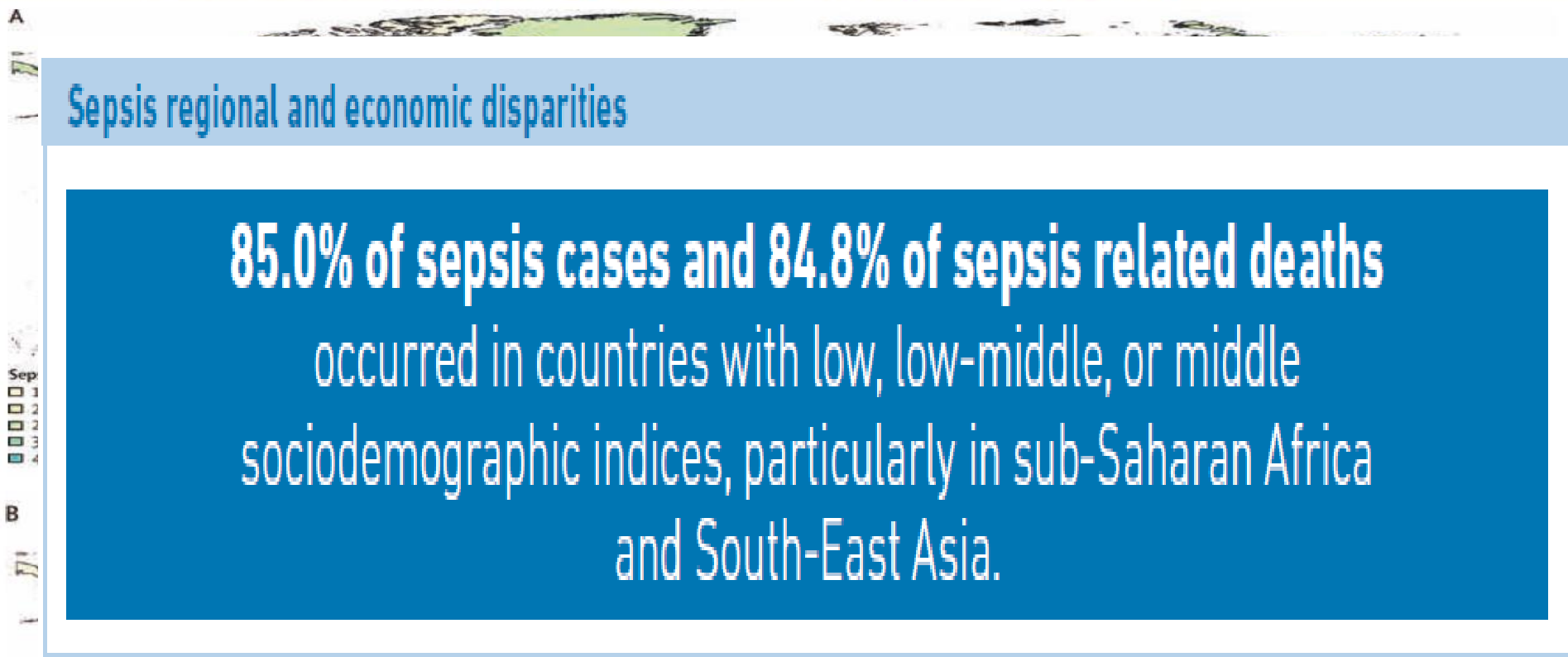
**One sixth**

**experience significant morbidity, such as functional limitations**

**40%**

**are re-hospitalized within 90 days of discharge**

Fig. 2.1.2 Age-standardized sepsis incidence per 100 000 population for both sexes in 2017 (A), and percentage of all deaths related to sepsis, age-standardized for both sexes, in 2017 (B).



# Sepsis also places heavy health, social and economic burden, in France

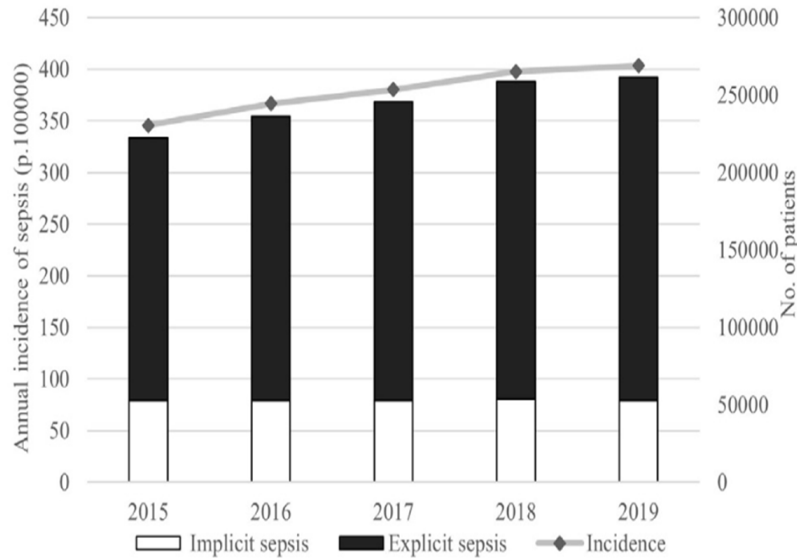
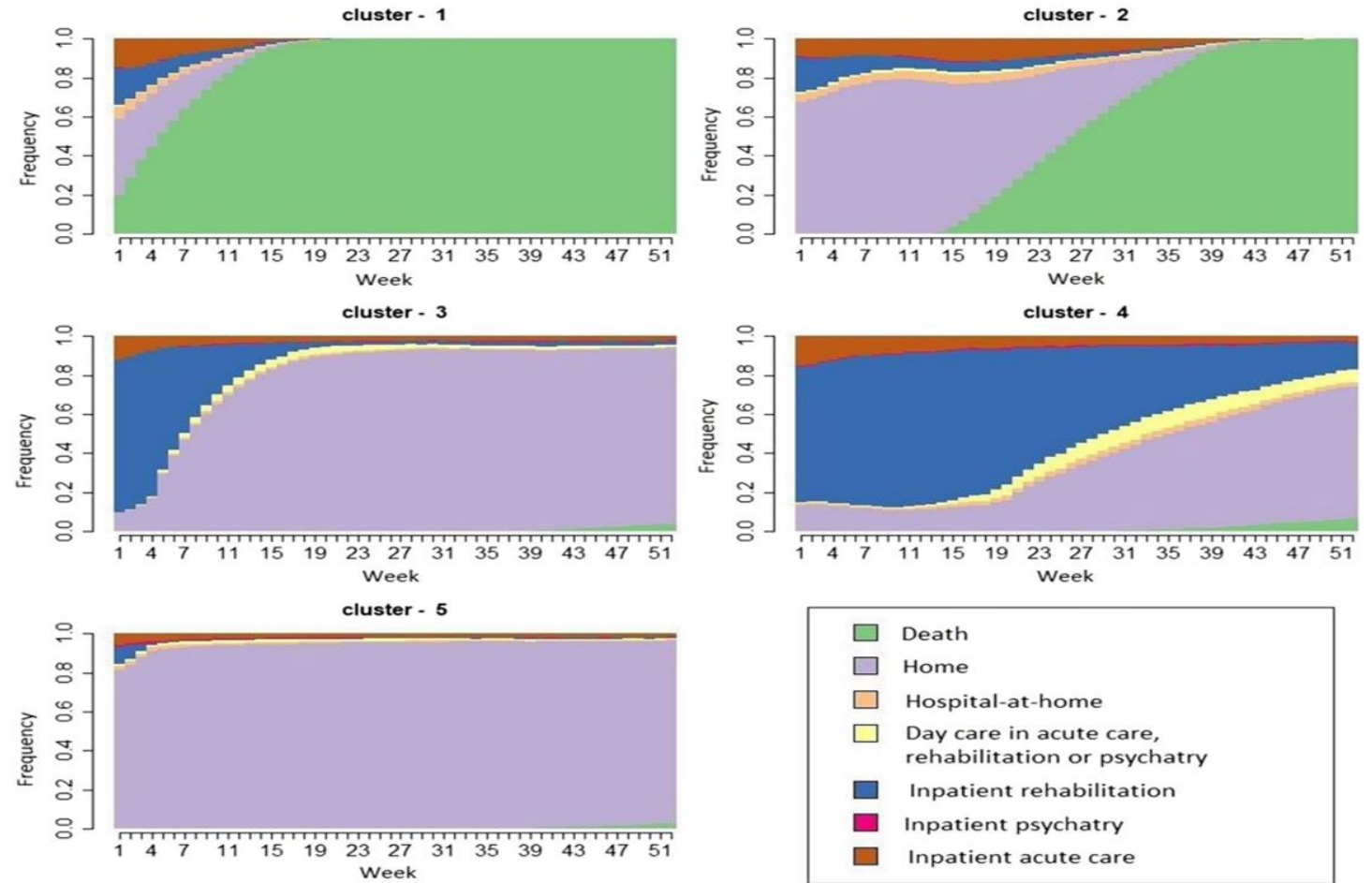


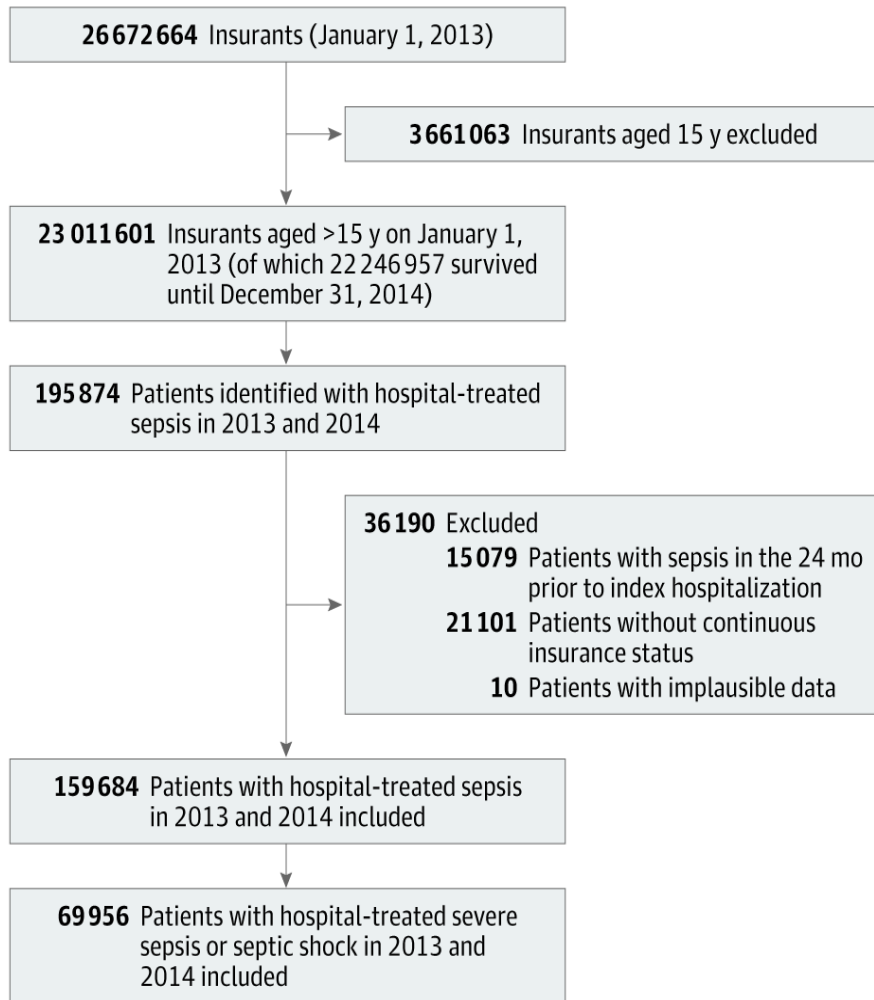
Figure 1 Sepsis incidence per 100 000 inhabitants and number of cases between 2015 and 2019 in metropolitan France.



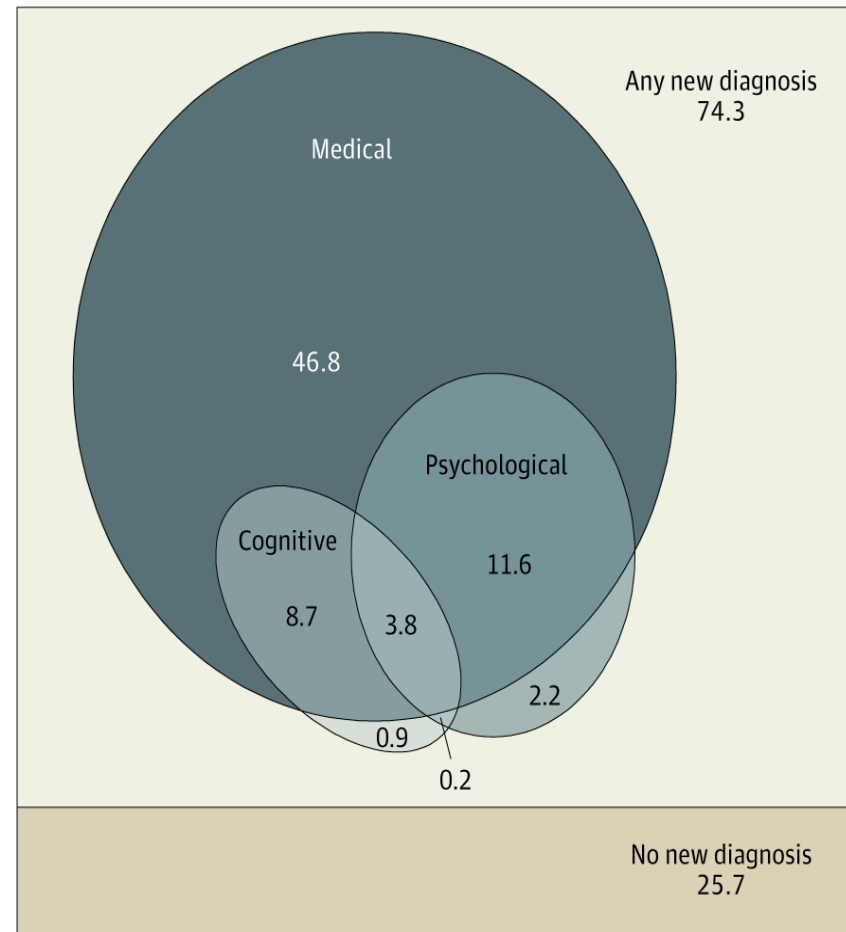
**Fig. 2** Results of the state sequence analysis of the 1-year post-sepsis period: weekly distribution of the health states by cluster. This figure is composed of 5 chronograms for each of the 5 identified care trajectories (clusters). On the x axis, time is graduated from discharge after the index sepsis hospitalization (week 1) to 1-year post-discharge (week 52). The y axis corresponds to the proportion of patients (from 0 to 1) in each health state. Clusters determined by the state sequence analysis of the healthcare pathways of survivors: cluster 1 (early death), cluster 2 (late death), cluster 3 (short-term rehabilitation), cluster 4 (long-term rehabilitation), cluster 5 (home)

# Sepsis also places heavy health, social and economic burden, in Germany

**A** Flow of cohort



**B** Postsepsis morbidity by domains and co-occurrence



Percentage of survivors of hospital-treated sepsis in 2013 and 2014 (n = 116 507). New diagnoses 12-mo postsepsis.

### Hospital-acquired sepsis cases

**1 in 4 cases** of sepsis were acquired in the hospital

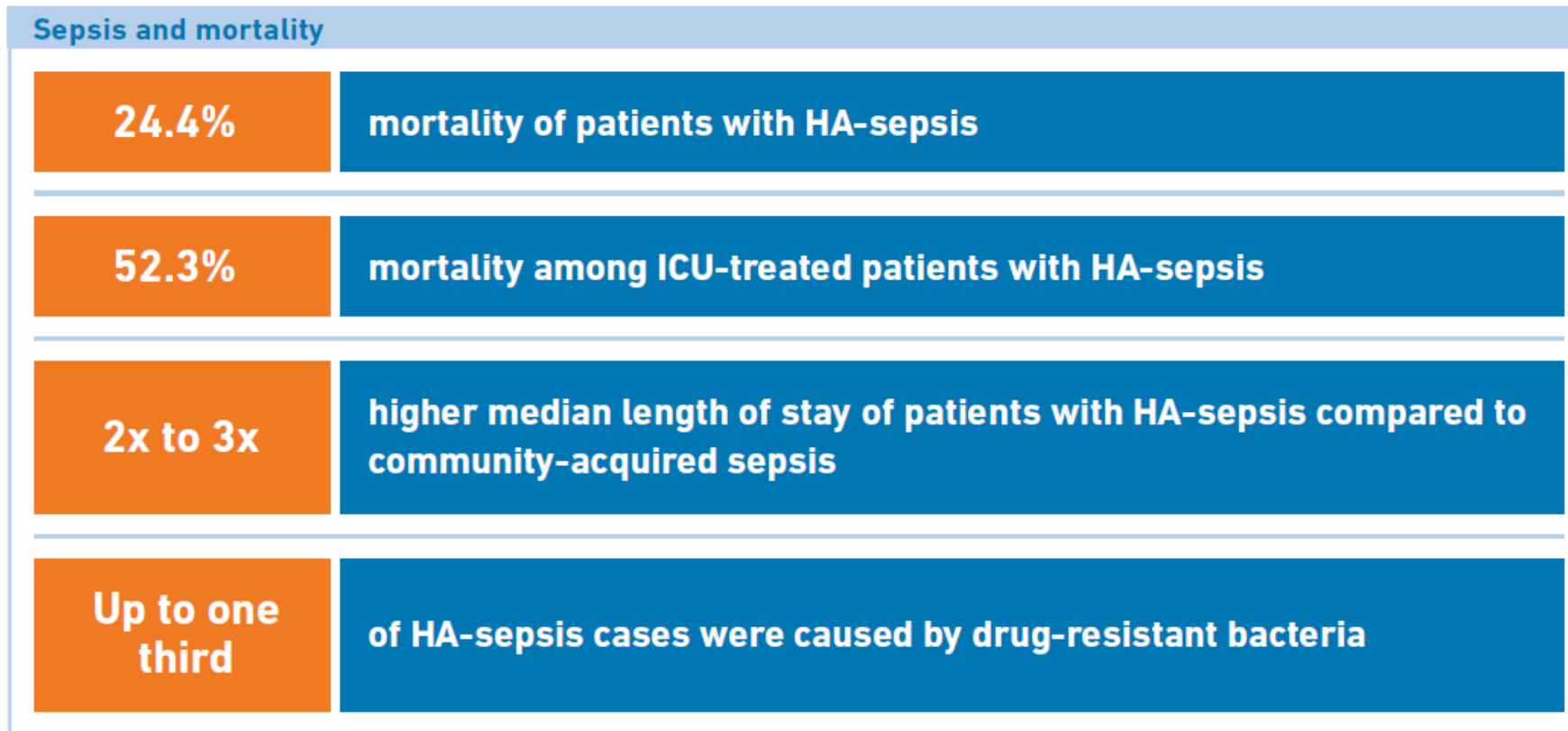
Patients with hospital-acquired sepsis had a longer length of stay and high AMR rates, which can significantly impact on patient outcomes.

AMR: antimicrobial resistance.

### Sepsis in intensive care units (ICUs)

**24.4%** of cases of sepsis with organ dysfunction were acquired during ICU stay

**48.7%** had a hospital origin



HA-sepsis: health care-associated sepsis. ICU: intensive care unit.

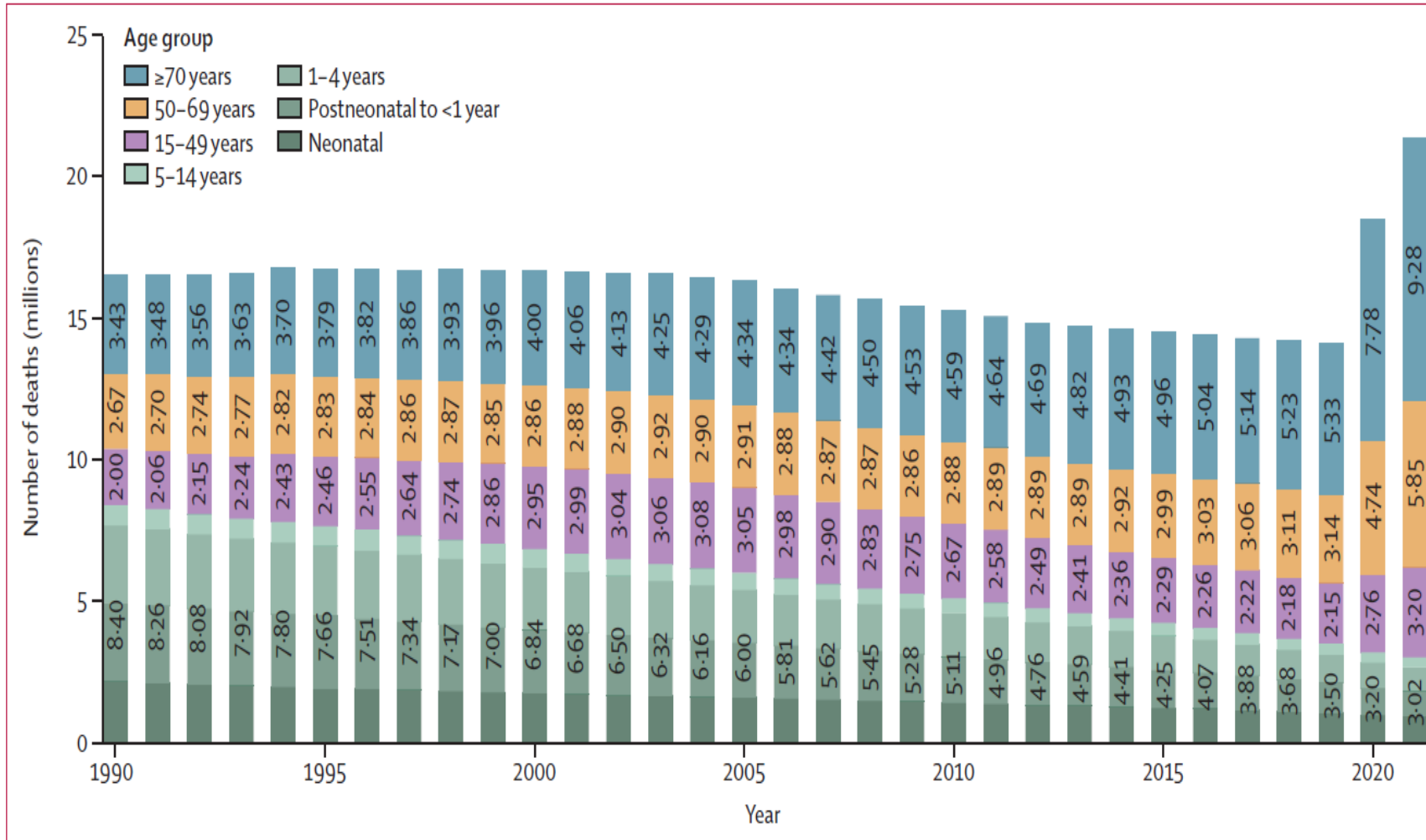


Figure 1: Global time trend of sepsis, by age, 1990–2021

Bar labels represent the number of sepsis deaths in a given year for people aged 0–14 years, 15–49 years, 50–69 years, and ≥70 years. Values for the age group of 0–14 years represent the sum of sepsis deaths among neonates, postneonates to <1 year, 1–4 years, and 5–14 years.

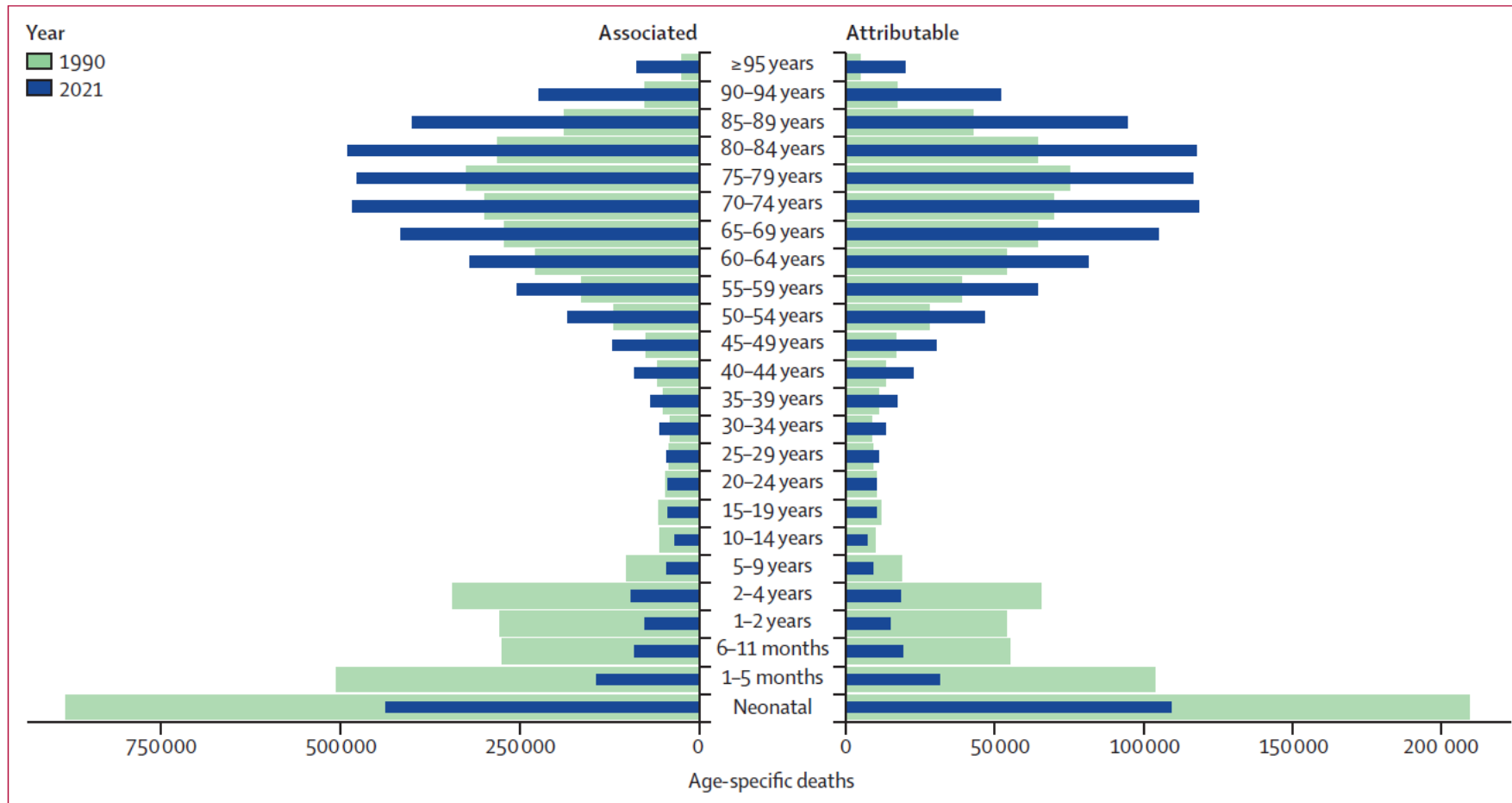
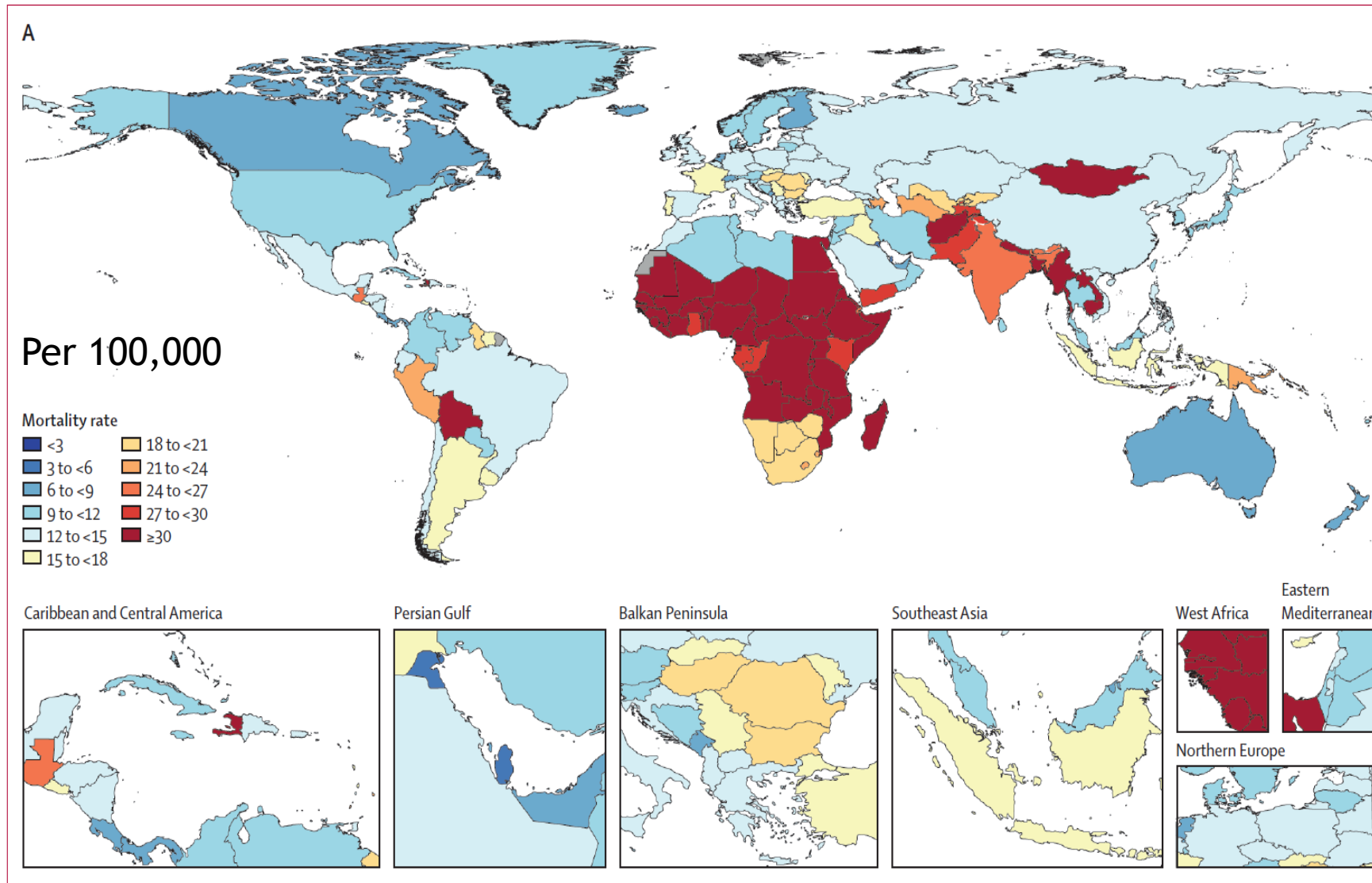
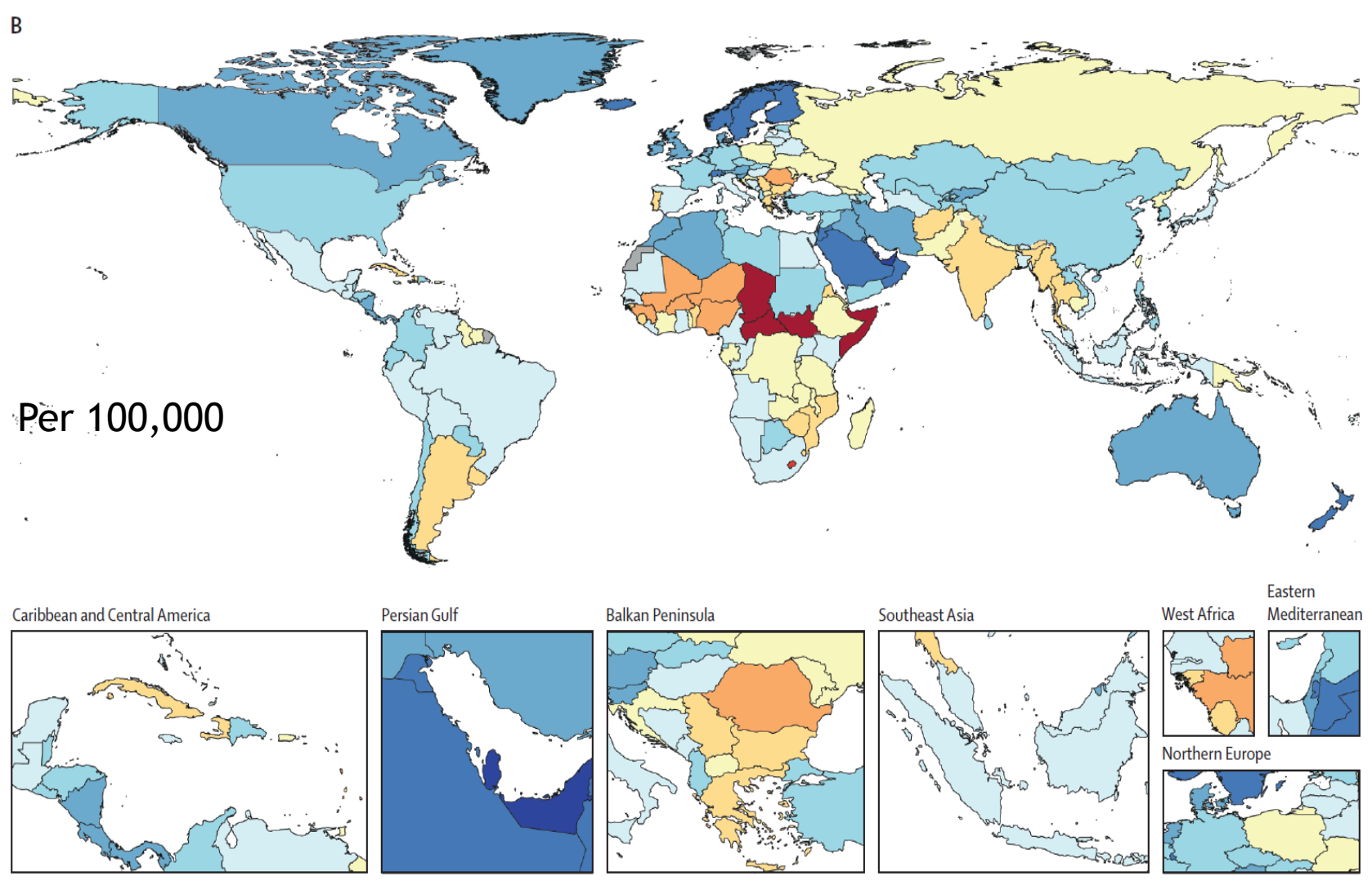


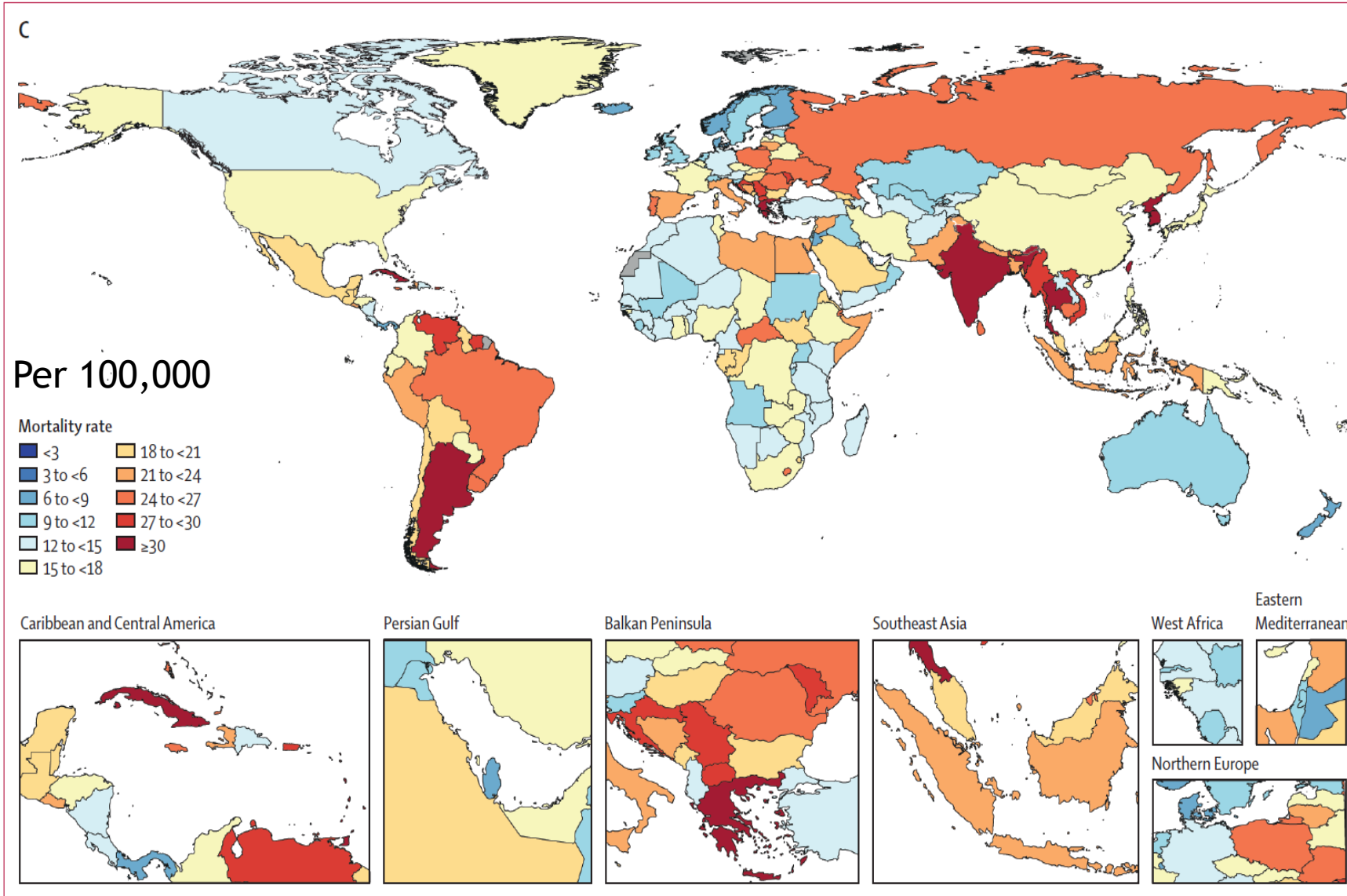
Figure 2: Deaths attributable and associated with antimicrobial resistance, by detailed age group, for 1990 and 2021  
Counterfactuals have distinct x-axes.



1990



2021



**2050**

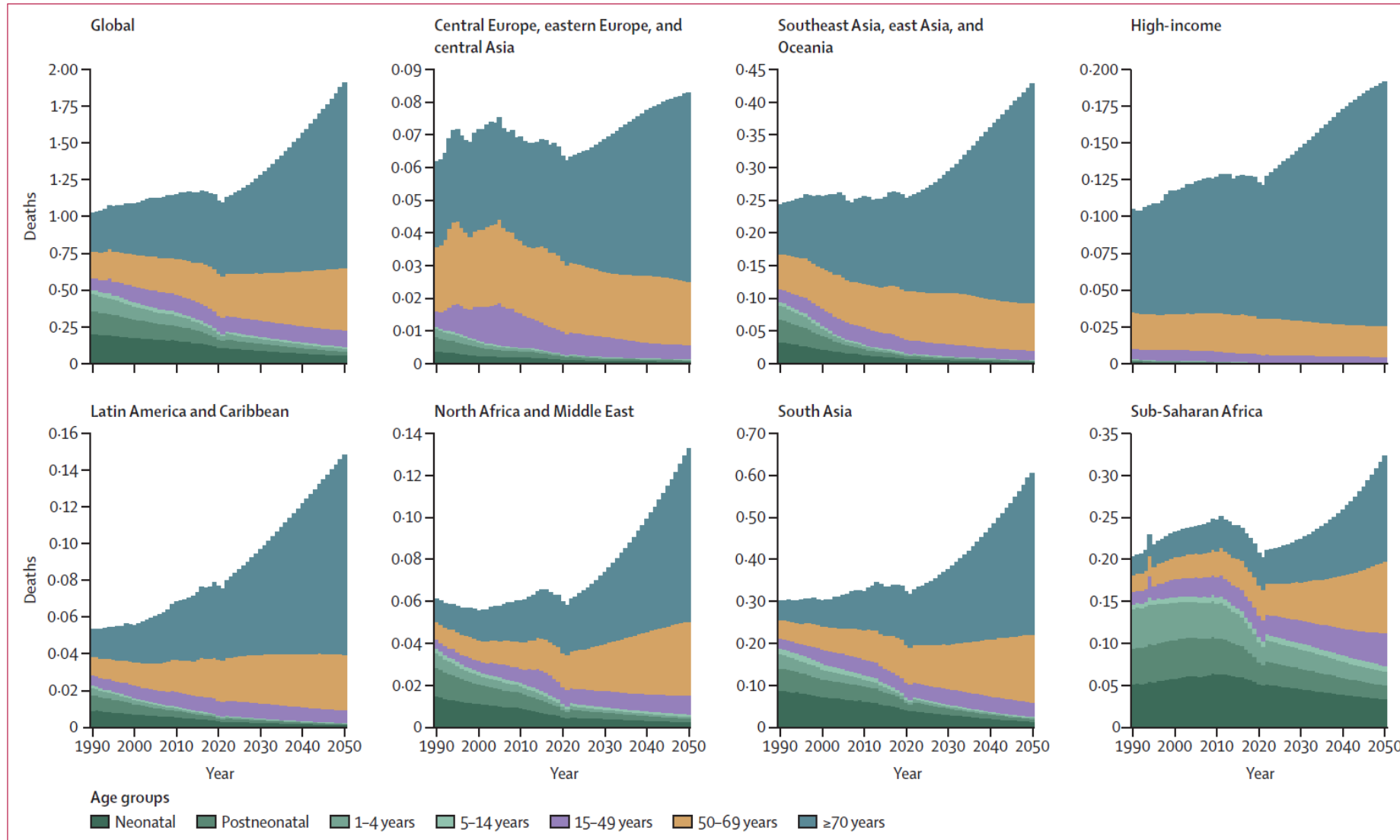


Figure 7: Deaths attributable to AMR by age group and location in the reference scenario, 2022–2050 Units are in millions.



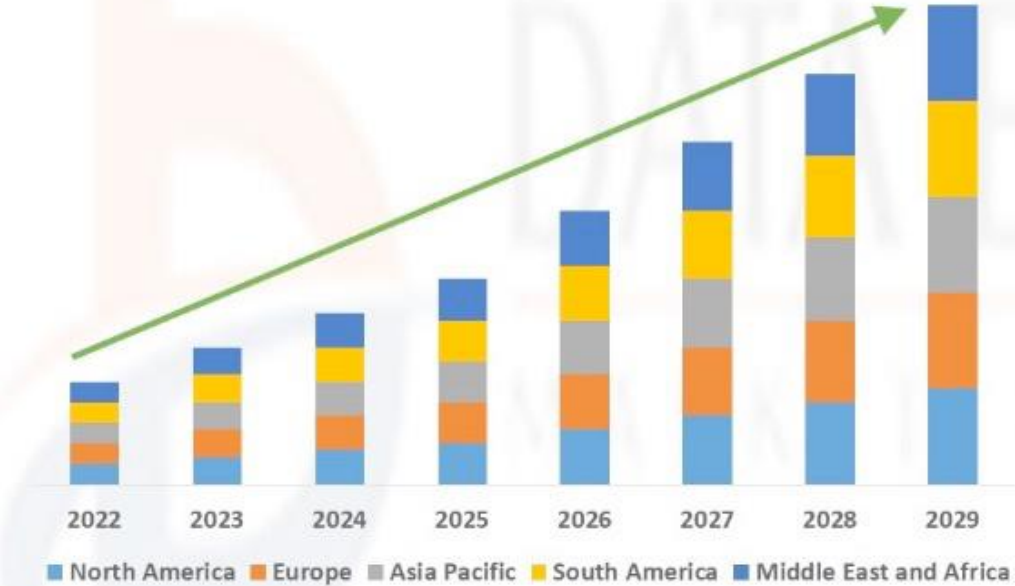
**ACTS!**



50M cases  
 11M deaths  
 42% children under 5  
 50% with sequelae

WHO 2020, Rudd Lancet 2020

Global Sepsis Market Global Sepsis Market is Expected to Account for USD 6.8 Billion by 2029



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Source: Data Bridge Market Research Market Analysis Study 2022

Global Sepsis Market, By Regions, 2022 to 2029



DATA BRIDGE MARKET RESEARCH

# PARIS DECLARATION EU SEPSIS PATIENTS & FAMILIES



## VENUE

- ▶ Conseil économique, social et environnemental (CESE)
- ▶ Palais d'Iéna
- ▶ 75016 Paris
  
- ▶ Registration required
- ▶ <https://www.fhu-sepsis.uvsq.fr/event-revealing-the-burden-of-sepsis>
  
- ▶ Contact: [sepsisparis2024@gmail.com](mailto:sepsisparis2024@gmail.com)

[www.instagram.com/sepsisstrongertogether](https://www.instagram.com/sepsisstrongertogether)

[www.facebook.com/people/Sepsis-Stronger-Together](https://www.facebook.com/people/Sepsis-Stronger-Together)

# SEPSIS AWARENESS IN EUROPE

- Ireland: 28%
- United Kingdom: 82%
- The Netherlands: 20%
- Belgium: ?\*
- Sweden: 55%
- Spain: ?
- France: 7%
- Italy: 33%
- Germany: 83%



#### Sources:

- [www.ipsos.com/en-uk/survey-5-european-countries-about-sepsis-demonstrates-lack-awareness-and-expectation-faster](http://www.ipsos.com/en-uk/survey-5-european-countries-about-sepsis-demonstrates-lack-awareness-and-expectation-faster) (2021)
- Royal College of Surgeons, Ireland (2018)
- SepsisNet (the Netherlands, 2021)

## Sepsis survivors call for the development of a European sepsis plan

On World Sepsis Day 2024, European sepsis patient groups, sepsis survivors, and grieving families, united in the Sepsis Stronger Together consortium,

patients and sepsis survivors. A European Sepsis Action Plan should be developed, grounded in the exchange of best practices and the adoption of harmonised guidelines. This plan should include eight priorities, complementing the recommendations of the 2030 Global Agenda for Sepsis.<sup>1</sup> Sepsis Stronger Together demands

given the fact that sepsis affects more people than cancer, stroke, or heart diseases. European leaders must recognise the urgency of this issue and act swiftly. The time for change is now—the global burden of sepsis must be reduced and the lives of millions affected by this devastating condition must be improved.



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# REVEALING THE BURDEN OF SEPSIS

**WHAT IS SEPSIS?**

NOT VERY WELL KNOWN WHILE:  
**11 million DEATHS** (1 OUT OF 5) WORLDWIDE !!  
 250,000 IN FRANCE  
 50 million CASES. **EVERYONE IS CONCERNED**  
 42% CHILDREN UNDER 5. WOMEN MORE OFTEN

**IS IT A DISEASE ??!**  
 IT IS AN "UNKNOWN KILLER":  
**AN ABNORMAL RESPONSE OF OUR BODY TO AN INFECTION** (VIRUS? BACTERIA?..)

*If you survive, it is not the end of the story!  
 Half of the patients will continue to suffer.*

**WE NEED RECOGNITION > INVESTMENTS IN RESEARCH**

FROM POLITICS  
 FROM THE MEDIA  
 FROM THE SOCIETY

**FIRST STEPS:**

- IN FRANCE:**
  - PP ANNANE'S STUDY
  - CREATION OF IHU PROMETHEUS FOR INFECTIOUS DISEASES
- IN SWEDEN:**
  - CAMPAIGN TO RAISE AWARENESS (MEDIA...)
  - PROTOCOLS IN HOSPITALS
  - LEARNING THE WORD 'SEPSIS'
  - DO NOT SCARE PEOPLE
- IN GERMANY:**
  - LAUNCH OF THE GLOBAL AGENDA FOR SEPSIS AT THE BUNDESTAG

WORLDWIDE SEPSIS DAY SEPTEMBER 13<sup>th</sup>

**WE CAN SAVE LIVES!**  
**SYMPTOMS ARE MISUNDERSTOOD:**

SHIVERING, FEVER  
 EXTREME PAIN → DISCOMFORT  
 PALE or DISCOLOURED SKIN  
 SLEEPY, CONFUSED  
 I FEEL LIKE I MIGHT DIE  
 SHORT OF BREATH!

**TREAT PATIENTS PHYSICALLY AND MENTALLY**

**CARE FOR THE FAMILIES**

WHAT ABOUT THE POST-SEPSIS SYMPTOMS?

IN U.K.:  
 NURSES' HOTLINE  
 POST HOSPITAL CARE  
 PEER SUPPORT

**TRANSFORM PAIN INTO ACTION:**  
 BEING ACTIVE,  
 VOLUNTEERING, RAISING FUNDS

**SMALL BIG THINGS CAN BE DONE**  
 (MESSAGES ON AMBULANCES...)

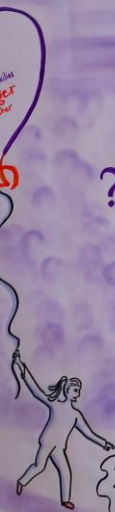
**THE COST WILL BE HUGE**  
 "IT HAS TO BE PUBLIC-FUNDED"

NOT ALL THE PATIENTS ARE HOSPITALIZED IN ICU.

**EDUCATION**  
 (Can you see us ??!?)

**CALL TO ACTION**

**USEFUL TOOLS:**  
 ICU DIARY FOR PATIENTS IN NEED TO EXPLAIN THE STORY AND CONNECT PEOPLE



# CALL TO ACTION FOR EU PUBLIC HEALTH AUTHORITIES



- 1. Training.** All healthcare professionals (primary care & emergency settings) must be trained to detect SEPSIS & initiate timely treatment to save lives & reduce the risk of long-term consequences.
- 2. Reporting.** SEPSIS must be explicitly stated in discharge documents & carefully explained to patients, including its potential long-term effects & where to seek help post-discharge.
- 3. Naming.** SEPSIS should be documented accurately in patient records and not be regarded as a complication.
- 4. Clinical pathways** for SEPSIS should be developed which span the whole patient's journey, ensuring access to multidisciplinary care for all SEPSIS patients, including children, young adults & the elderly.
- 5. National Health campaigns** should inform the general public about SEPSIS as 80% of SEPSIS cases develop outside hospital;
- 6. Educational packages** on infection prevention, hand hygiene & the dangers of SEPSIS should be offered, from schools over universities to professional life, as *anyone can get SEPSIS at any age.*
- 7. Access to care.** National governments have to ensure universal access to SEPSIS management.
- 8. Investing.** EU authorities & national governments should invest in SEPSIS research as it affects much more persons than cancer, stroke or heart diseases.

Primary Care - collaboration with ministries for implementation in 2026



MINISTÈRE  
DE L'ÉDUCATION  
NATIONALE  
ET DE LA JEUNESSE

*Liberté  
Égalité  
Fraternité*

# Promotion de la santé à l'École



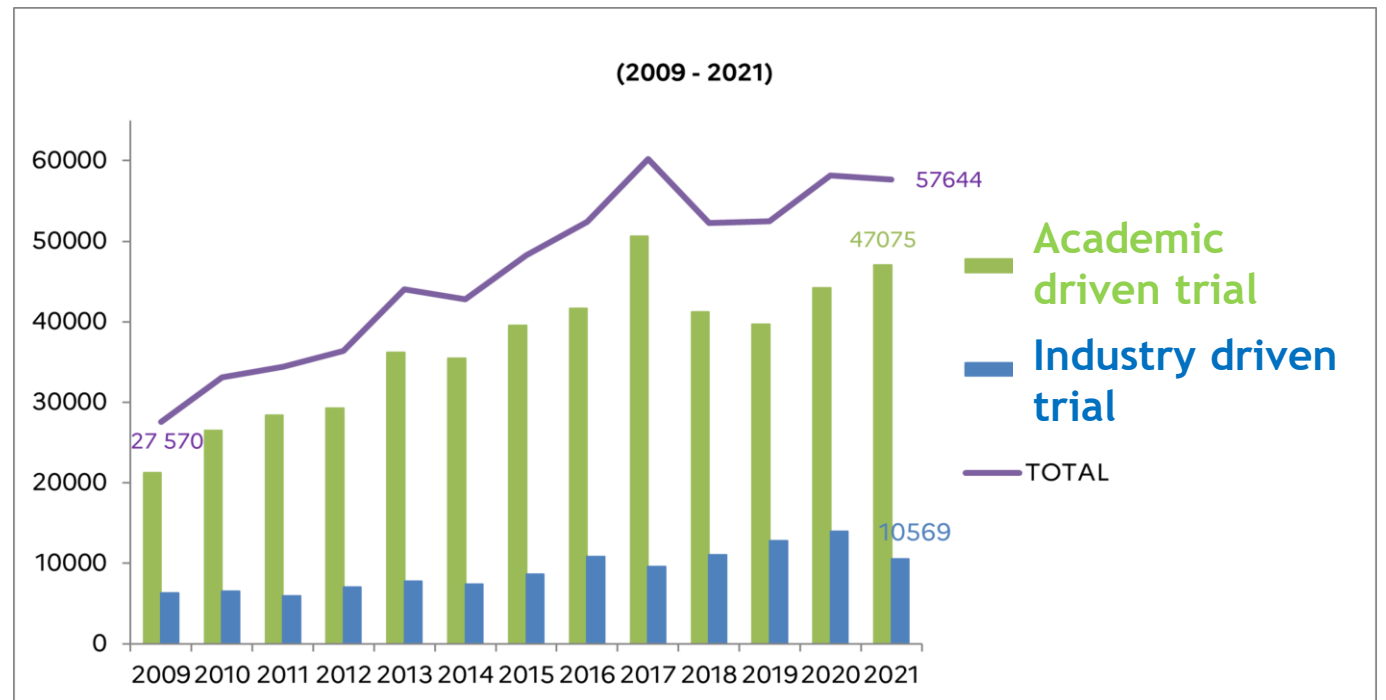
Health promoting school



# From Patients to Research Participants

## Alike Cancer Comprehensive Centre

PRECLINICAL	PHASE I	PHASE II	PHASE III	PHASE IV
Laboratory Research determines if treatment is useful and safe	6-10 Participants Understand effects of treatment in humans	20-50 Participants Evaluate safety and efficacy of treatment	100-200 Participants Confirm benefit and safety of treatment	200+ Participants Evaluate long-term effects of treatment



Launch of the 2030 Global Agenda for Sepsis, 10/09/24, German Bundestag (Berlin)



With:

- Stefan Schwartze, the Federal Government Commissioner for Patients
- Prof. Konrad Reinhart, Founding President of the GSA, and Dr. Mariam Jashi, CEO of the GSA
- Mr. Roland Göhde, Co-founder and CEO of the Virchow Foundation and CEO of the German Health Alliance
- Dr. Hans Henri P. Kluge, WHO Regional Director for Europe
- Prof. Dr. Axel R. Pries, President, World Health Summit
- Dr. Rudi Eggers, Director, Director Integrated Health Services, World Health Organization
- Prof. Djillali Annane, Dean, Faculty of Medicine, University of Versailles Saint-Quentin-en-Yvelines
- Mariah McKimbrough, an artist and sepsis survivor (Sepsis Stiftung as its Art Director)

# Live discussion with politics

EU Parliament Brussels, 19 march 2025



*Let's join them to relieve sepsis burden!*



Krista Bracke



Elena Moya



James Corcoran



Eliane Reyes



Marianne Haverkamp



Jamila Hedjal