SEPSIS HYSTERIA

CHALLENGING THE DOGMA





MERVYN SINGER

BLOOMSBURY INSTITUTE OF INTENSIVE CARE MEDICINE

UNIVERSITY COLLEGE LONDON, UK

AGENDA

- Sepsis hype
- Do patients die 'of' or 'with' sepsis?
- How many sepsis deaths are potentially 'saveable'?
- Are we fed fact or propaganda?
- Common sense is returning ...

DISCUSSION SOME MONTHS AGO…

Singer to daughter of elderly patient:

“Your father has a chest infection”

Daughter:

“Thank God. I was so worried. The doctor I spoke to in the Emergency Department told me he had sepsis so I thought he was going to die”


PLANET HYPE

Highlight a problem

Blow it up

Keep blowing it up

Sensationalise it

Weaponise it

Create Project Fear

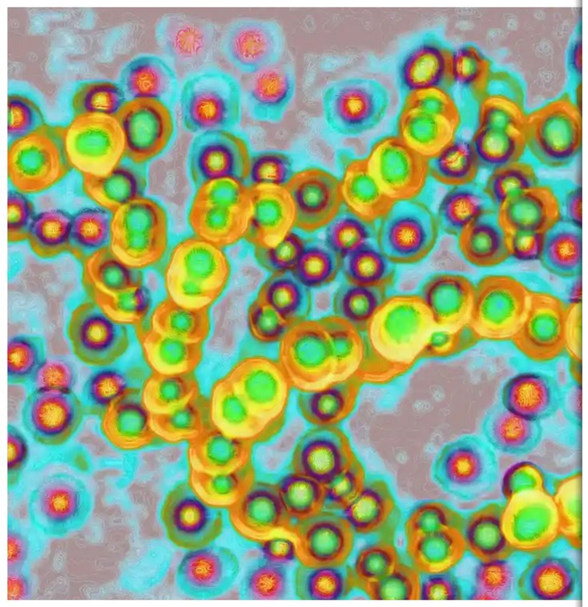

THE UK SEPSIS TRUST
INFO FOR PUBLIC
INFO FOR PROFESSIONALS
SEPSIS KILLS
44,000
EVERY
THE UK SEPSIS TRUST
DONATE TODAY
SEPSIS KILLS
37,000
PEOPLE
EVERY YEAR
IN THE UK
SEPSIS KILLS
52,000 PEOPLE
EVERY YEAR IN
THE UK
Liz Frood thought she had a tummy bug – bu
days later, she was close to death.
READ PATIENTS' STORIES
ACTING QUICKLY
CAN SAVE
14,000 LIVES FROM
SEPSIS
For more information visit www.sepsistrust.org
ALWAYS SEEK MEDICAL HELP URGENTLY
IF YOU DEVELOP ANY OF THE FOLLOWING:
Slurred speech or confusion
Extreme shivering or muscle pain
Passing no urine in a day
Severe breathlessness
It's the worst you've ever felt
Skin mottled or discoloured
JUST ASK "COULD IT BE SEPSIS?"
THE UK SEPSIS TRUST


Mail Online
Home | News | U.S. | Sport | TV&Showbiz | Australia | Femail | Health | Science
Latest Headlines | Health
The sepsis
reveal the
patients th
the 'silent
THE 28 NHS TRUST
© MailOnline - Leo Delauncey
Deaths from the silent killer at Tameside and Glossop NHS Foun
higher than expected. In real terms, 517 patients died from the vi
infection at the trust in Ashton-under-Lyne, well above the 373 de
Privacy Policy | Feedback
Like 16.2M
Mail Online
Home | News | U.S. | Sport | TV&S
Latest Headlines | Royal Family
Parc
hours
rash o
angry a
and 'just
• Ava MacFarlane, 5, d
• Parents Lesley Gearing
• Doctors working at Nott
• Symptoms included rash o
Mail Online
Home | News | U.S. | Sport | TV&Showbiz | Femail | Health | Science | Money | RightMinds | Coffee Break
News Home | Arts | Headlines | Pictures | Most read | News Board
Boy, 17, died when bungling doctors
misdia sed his blood poisoni
g it was flu
was dismiss
12AM 10°C
Ne
FOOTBALL'S BACK! FREE INSIDE: YOUR UNMISSABLE GUIDE TO THE NEW PREMIER LEAGUE SEASON CENTRE PAGES
Daily Mail
65p
MONDAY, AUGUST 6, 2018
www.dailymail.co.uk
How I lost my Botox virginity AT 74
INSPIRE MAGAZINE STARTS PAGE 39
Text message warnings dramatically boost chances of saving victims' lives
BLUEPRINT TO END THE SEPSIS SCANDAL
A TEXT message warning system which alerts doctors to cases of sepsis is revolutionising the fight against the killer disease.
By Sophie Borland
Health Editor
Daily Mail
www.dailymail.co.uk
DAILY NEWSPAPER OF THE YEAR 65p
SEPSIS DEATH DOC CAN WORK AGAIN
Verdict overturned after medic struck off
VICTIM Jack Adcock died after sepsis was missed
"We hope it reassures doctors that they will be protected if they make a mistake"
DAME JANE DACRE ROYAL COLLEGE OF PHYSICIANS, ON VERDICT
BY MARTIN BAGOT
Health Correspondent
A DOCTOR struck off over the death of a six-year-old boy has won her appeal to practise medicine again.
LESSONS Dr Bawa-Garba
Standing out: The PM in scarlet gown and heels ahead of the Brussels EU summit today
RED ALERT! THERESA'S READY FOR EU BATTLE

The Guardian
News website of the year

Strep A: fears NHS will s
as seventh child reporte

Nadhim Zahawi says parents should look out
infection, such as fever, headache or skin ras



Streptococcus A bacteria can cause many health issues
invasive group A streptococcal disease (iGAS). Photograph

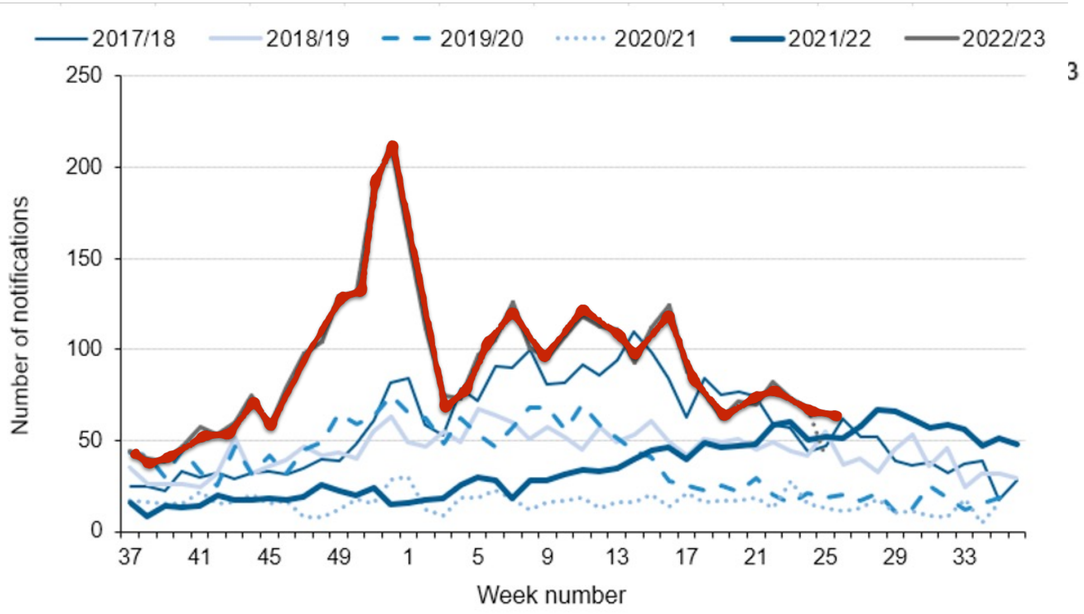
UK Health Security Agency

Research and analysis

Group A streptococcal infections: 15th update on seasonal activity in England

Updated 29 June 2023

Figure 2. Weekly laboratory notifications of iGAS, England, by season, 2017 to 2018 onwards



our
vid
he last month

Matt Hancock
@MattHancock

Follow

Sepsis kills over 52,000 every year - each death a preventable tragedy. So we're introducing new guidance to use #data to identify & treat sepsis faster - and save more lives

NHS hospitals could face fines for breaches of new sepsis rules

NHS England staff told to look out for signs of sepsis in patients attending A&E

theguardian.com

1:22 am - 11 Mar 2019

SEPSIS IS THE TIP OF THE INFECTION ICEBERG

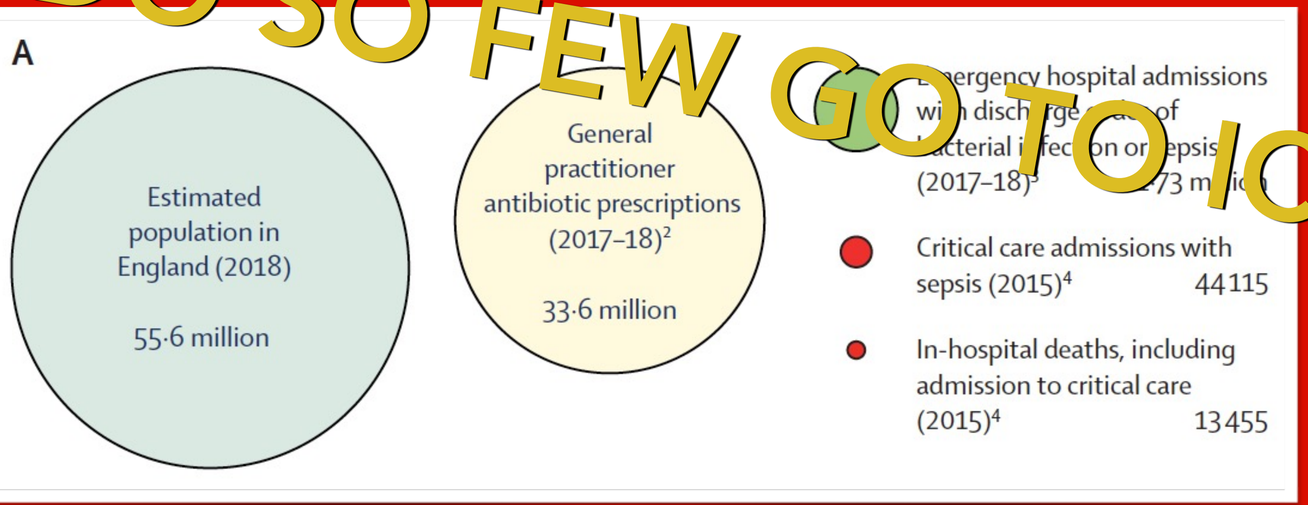
INFECTION .... SEPSIS ... DEATH

Sepsis hysteria: excess hype and unrealistic expectations

www.thelancet.com Vol 394 October 26, 2019 1513-14

*Mervyn Singer, Matt Inada-Kim, Manu Shankar-Hari

WHY DO SO FEW GO TO ICU??



Sepsis hysteria: excess hype and unrealistic expectations

*Mervyn Singer, Matt Inada-Kim, Manu Shankar-Hari

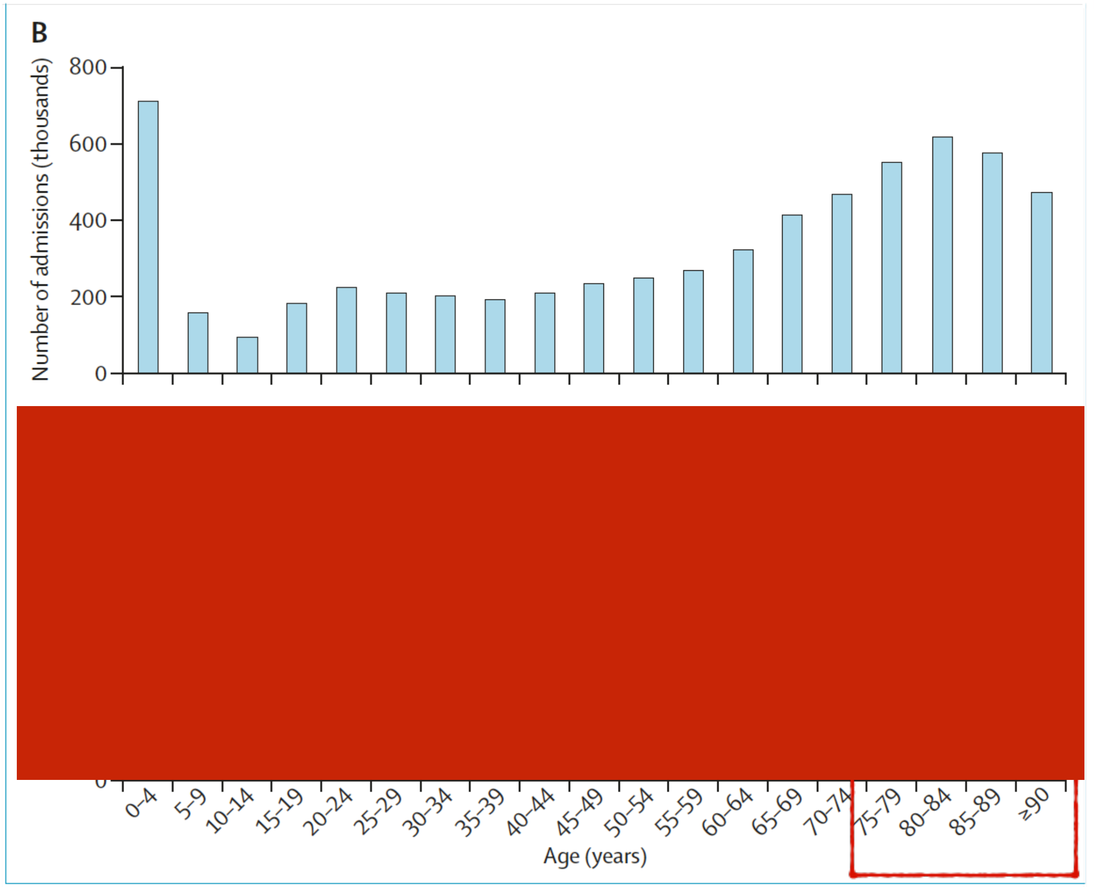


Figure: **Data for infection, sepsis, and emergency hospital admissions for sepsis or bacterial infection in England**

2011–17

www.thelancet.com **Vol 394 October 26, 2019 1513-14**

THE PRINCIPLES AND PRACTICE OF MEDICINE

DESIGNED FOR THE USE OF PRACTITIONERS AND STUDENTS OF MEDICINE

BY

WILLIAM OSLER, M. D.

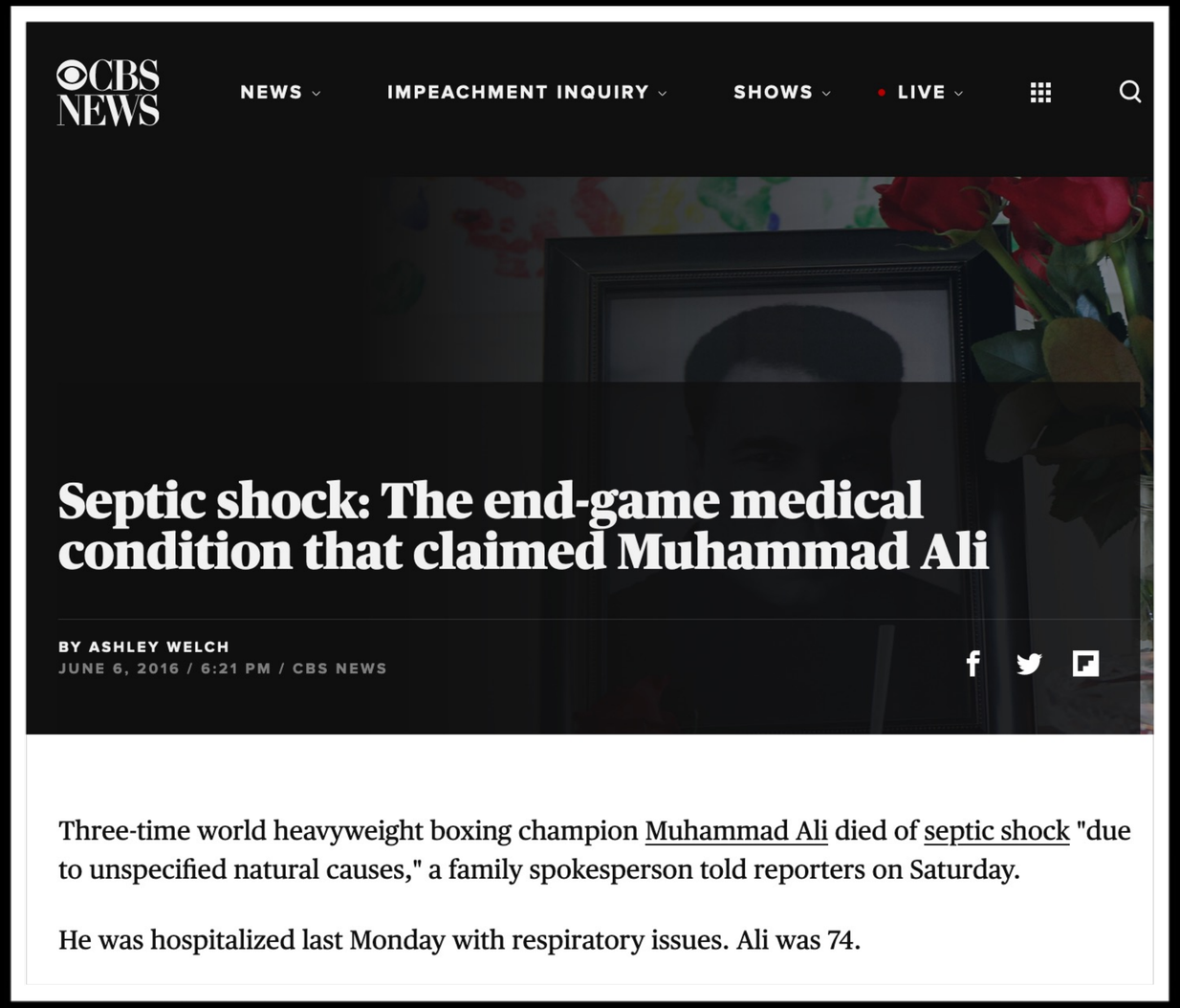
Fellow of the Royal Society; Fellow of the Royal College of Physicians, London; Professor of Medicine in the Johns Hopkins University and Physician-in-chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, McGill University, Montreal; and Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia

FOURTH EDITION

NEW YORK
D. APPLETON AND COMPANY
1901

Pneumonia may well be called the friend of the aged. Taken off by it in an acute, short, not often painful illness, the old man escapes those "cold gradations of decay" so distressing to himself and to his friends.

DO PEOPLE DIE OF OR WITH SEPSIS?



Sepsis-related deaths in the at-risk population on the wards: attributable fraction of mortality in a large point-prevalence study

Maja Kopczynska[1], Ben Sharif[1], Sian Cleaver[1], Naomi Spencer[1], Amit Kurani[1], Camilla Lee[1], Jessica Davis[1], Carys Durie[1], Jude Joseph-Gubral[1], Angelica Sharma[1], Lucy Allen[1], Billie Atkins[1], Alex Gordon[1], Llewelyn Jones[1], Amy Noble[1], Matthew Bradley[1], Henry Atkinson[1], Joy Inns[1], Harriet Penney[1], Carys Gilbert[1], Rebecca Walford[1], Louise Pike[1], Ross Edwards[1], Robyn Howcroft[1], Hazel Preston[1], Jennifer Gee[1], Nicholas Doyle[1], Charlotte Maden[1], Claire Smith[1], Nik Syakirah Nik Azis[1], Navrhinaa Vadivale[1] and Tamas Szakmany[1,2*] on behalf of Welsh Digital Data Collection Platform Collaborators

- 12,477 patients screened over two 24-hr periods in 14 Welsh hospitals
- 839 patients identified, of whom 521 fulfilled Sepsis-3 criteria (SOFA ≥2)
- 136 died in hospital, 96 for non-sepsis reasons
- Of 40 sepsis-attributable deaths (12 definite, 28 possible):
  - 77.5% had high frailty score (≥6)
  - 70% had existing DNA-CPR order
  - 42.5% had limitation-of-care order

Kopczynska *et al. BMC Res Notes (2018) 11:720*

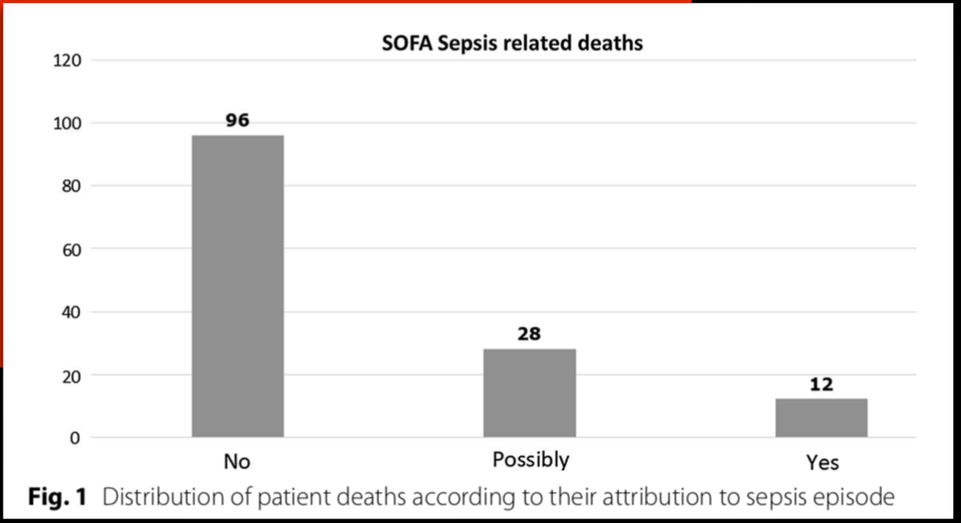


Fig. 1 Distribution of patient deaths according to their attribution to sepsis episode

Prevalence, Underlying Causes, and Preventability of Sepsis-Associated Mortality in US Acute Care Hospitals

Chanu Rhee, MD, MPH; Travis M. Jones, PharmD; Yasir Hamad, MD; Anupam Pande, MD, MPH; Jack Varon, MD; Cara O'Brien, MD; Deverick J. Anderson, MD, MPH; David K. Warren, MD, MPH; Raymund B. Dantes, MD, MPH; Lauren Epstein, MD, MS; Michael Klompas, MD, MPH; for the Centers for Disease Control and Prevention (CDC) Prevention Epicenters Program

Findings In this cohort study reviewing the medical records of 568 patients who were admitted to 6 hospitals and died in the hospital or were discharged to hospice and not readmitted, sepsis was present in 300 hospitalizations (52.8%) and directly caused death in 198 cases (34.9%). However, most underlying causes of death were related to severe chronic comorbidities and only 3.7% of sepsis-associated deaths were judged definitely or moderately preventable.

25 sepsis-associated deaths (8.3%) were considered possibly preventable.

Meaning Sepsis is a leading cause of death in US hospitals, but most of these deaths are unlikely to be preventable through better hospital-based care.

Most common underlying causes of death in patients with sepsis:

- cancer 31.0%,
- chronic heart disease 15.3%,
- dementia 9.7%

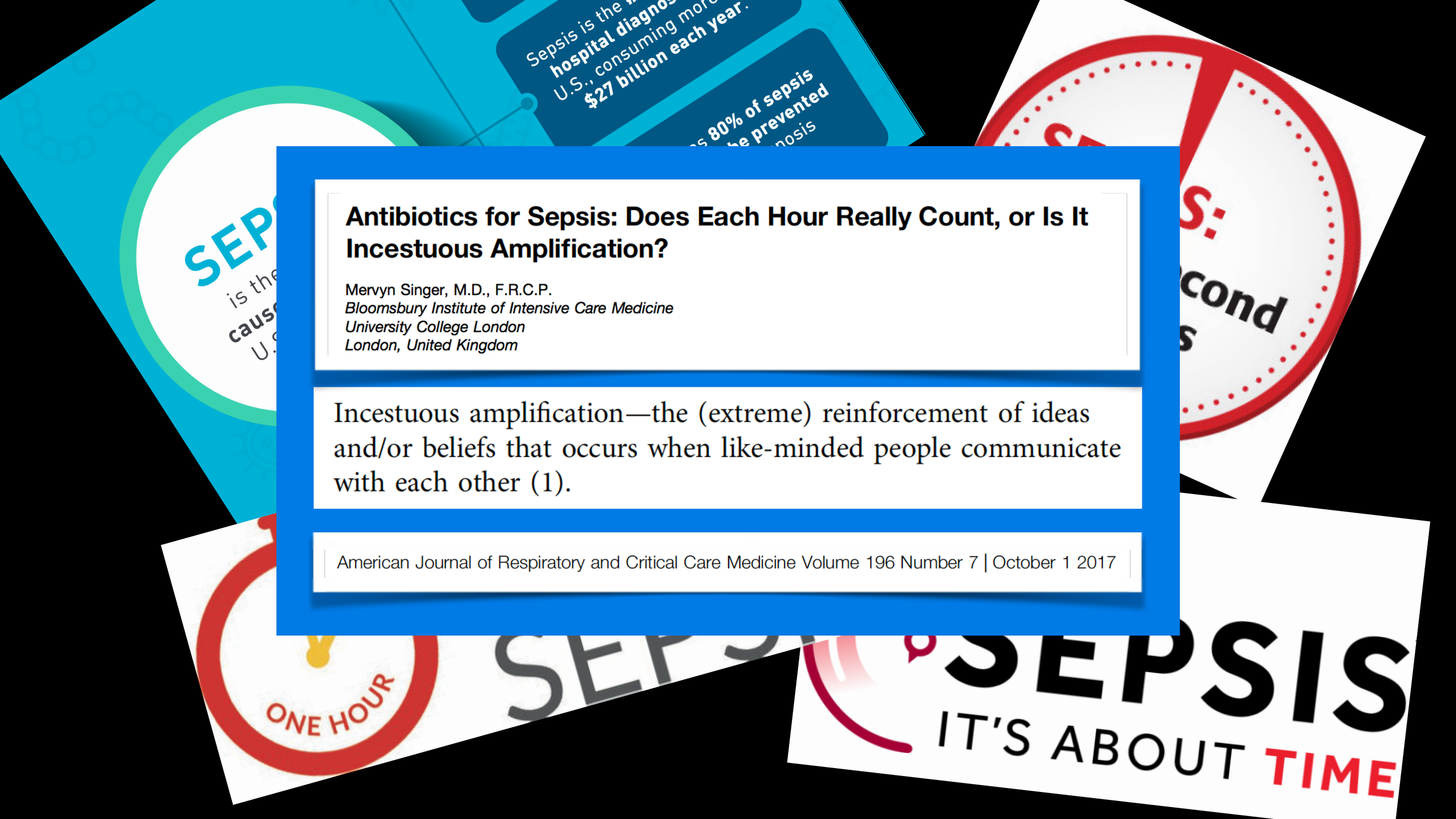
JAMA Network Open. 2019;2(2):e187571.

FACT OR PROPAGANDA?

DOES EVERY HOUR COUNT?

NO!

- ... but don't want unnecessary or prolonged delay in giving appropriate antibiotics


Sepsis is the
hospital diagnos
U.S., consuming more
$27 billion each year.
80% of sepsis
be prevented
SEP
is the
cause
U.S.
Antibiotics for Sepsis: Does Each Hour Really Count, or Is It Incestuous Amplification?
Mervyn Singer, M.D., F.R.C.P.
Bloomsbury Institute of Intensive Care Medicine
University College London
London, United Kingdom
Incestuous amplification—the (extreme) reinforcement of ideas and/or beliefs that occurs when like-minded people communicate with each other (1).
American Journal of Respiratory and Critical Care Medicine Volume 196 Number 7 | October 1 2017
ONE HOUR
SEPSIS
IT'S ABOUT TIME

Narrative Review

Impact of time to antibiotic therapy on clinical outcome in patients with bacterial infections in the emergency department: implications for antimicrobial stewardship

P. Nauclér [1], A. Huttner [2], C.H. van Werkhoven [3], M. Singer [4], P. Tattevin [5], S. Einav [6], T. Tängdén [7, *]

Sources: A literature search was performed in the PubMed/MEDLINE database using combined search terms for various infectious syndromes (sepsis/septic shock, bacterial meningitis, lower respiratory tract infections, urinary tract infections, intra-abdominal infections and skin and soft tissue infections), time to antibiotic treatment, and clinical outcome.

Content: The literature search generated 8828 hits. After screening titles and abstracts and assessing potentially relevant full-text papers, 60 original articles (four randomized controlled trials, 43 observational studies) were included. Most articles addressed sepsis/septic shock, while few studies evaluated early initiation of therapy in mild to moderate disease. The lack of randomized trials and the risk of confounding factors and biases in observational studies warrant caution in the interpretation of results.

Implications: For patients presenting with suspected bacterial infections, withholding antibiotic therapy until diagnostic results are available and a diagnosis has been established (e.g. by 4–8 h) seems acceptable in most cases unless septic shock or bacterial meningitis are suspected. This approach promotes the use of ecologically favourable antibiotics in the ED, reducing the risks of side effects and selection of resistance.

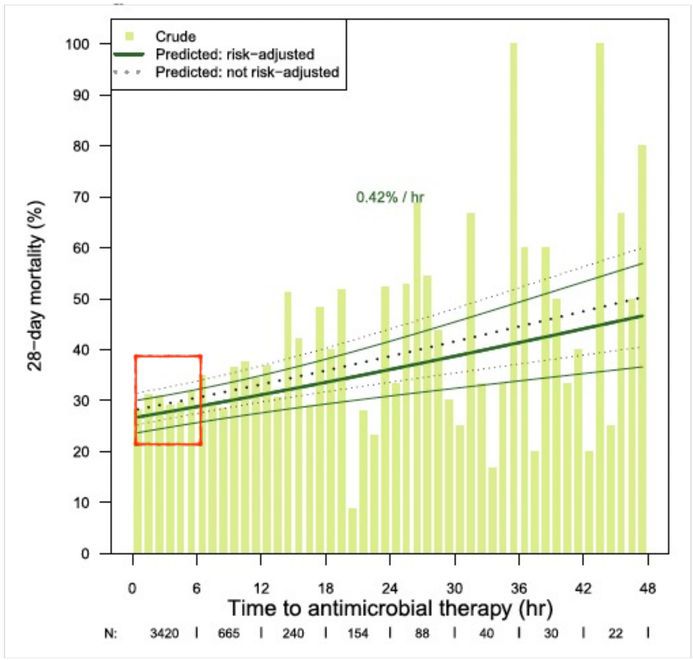
Clinical Microbiology and Infection 27 (2021) 175–181

Adverse effects of delayed antimicrobial treatment and surgical source control in adults with sepsis: results of a planned secondary analysis of a cluster-randomized controlled trial

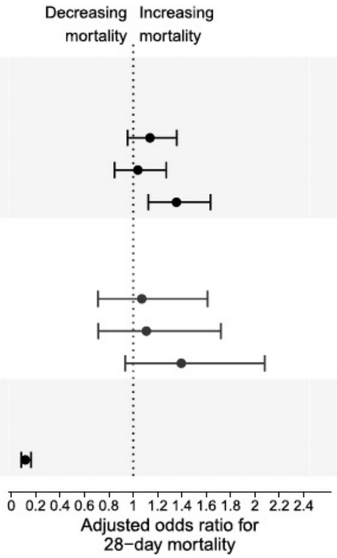
Hendrik Rüddel[1,2], Daniel O. Thomas-Rüddel[1,2], Konrad Reinhart[3,4], Friedhelm Bach[5], Herwig Gerlach[6], Matthias Lindner[7], John C. Marshall[8], Philipp Simon[9], Manfred Weiss[10], Frank Bloos[1,2], Daniel Schwarzkopf[1,2,11*] and the MEDUSA study group

Critical Care (2022) 26:51

Using a categorized timing variable, there were no significant differences comparing treatment within 1 h versus 1–3 h, or 1 h versus 3–6 h. Delays of more than 6 h significantly increased mortality (OR = 1.41 [1.17, 1.69]). I



Predictor	No. of patients	Observed mortality	Risk-adjusted mortality	OR (95% CI)	P-value
Timing of antimicrobial therapy	4659/4792				0.008*
0–1 hr		364/1270 (28.7)	25.3 (22, 28.9)	1	
1–3 hrs		418/1352 (30.9)	27.8 (24.4, 31.6)	1.14 (0.95, 1.36)	0.149
3–6 hrs		255/836 (30.5)	26 (22.3, 30.2)	1.04 (0.85, 1.27)	0.715
>6 hrs		437/1201 (36.4)	31.5 (27.5, 35.7)	1.36 (1.12, 1.63)	0.001
Timing of surgical source control	1563/1595				0.22*
0–1 hr		92/327 (28.1)	25.1 (19.1, 32.3)	1	
1–3 hrs		85/287 (29.6)	26.4 (20.8, 32.9)	1.07 (0.71, 1.61)	0.743
3–6 hrs		93/293 (31.7)	27.1 (21.3, 33.8)	1.11 (0.71, 1.72)	0.646
>6 hrs		240/656 (36.6)	31.9 (26.7, 37.5)	1.4 (0.94, 2.08)	0.102
Success of source control	1563/1595				
Not successful		179/262 (68.3)	68.7 (60.7, 75.7)	1	
Successful		331/1301 (25.4)	20.2 (16.5, 24.5)	0.12 (0.08, 0.16)	<=0.001



Infectious Diseases Society of America Position Paper: Recommended Revisions to the National Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) Sepsis Quality Measure

Chanu Rhee,[1,2] Kathleen Chiotos,[3,a] Sara E. Cosgrove,[4,b] Emily L. Heil,[5,c] Sameer S. Kadri,[6,©] Andre C. Kalil,[7] David N. Gilbert,[8] Henry Masur,[6] Edward J. Septimus,[1,9] Daniel A. Sweeney,[10] Jeffrey R. Strich,[6] Dean L. Winslow,[11] Michael Klompas,[1,2]; for the Infectious Diseases Society of America Sepsis Task Force[d]

[d]This position paper is endorsed by the American College of Emergency Physicians, Pediatric Infectious Diseases Society, Society for Healthcare Epidemiology of America, Society of Hospital Medicine, and Society of Infectious Disease Pharmacists.

Concerns:

- Antibiotic overuse
  - high rate of over-diagnosis of sepsis
  - mandate encourages aggressive a/b use for all patients, regardless of certainty of diagnosis or severity of illness
- Overlooks treatment for non-infectious conditions
- Evidence base does not support immediate a/b for all sepsis
- Complex ‘time-zero’ definition - non-evidence-based

Clinical Infectious Diseases 2021;72(4):541–52

Infectious Diseases Society of America Position Paper: Recommended Revisions to the National Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) Sepsis Quality Measure

Chanu Rhee,[1,2] Kathleen Chiotos,[3,a] Sara E. Cosgrove,[4,b] Emily L. Heil,[5,c] Sameer S. Kadri,[6] Andre C. Kalil,[7] David N. Gilbert,[8] Henry Masur,[6] Edward J. Septimus,[1,9] Daniel A. Sweeney,[10] Jeffrey R. Strich,[6] Dean L. Winslow,[11] Michael Klompas,[1,2]; for the Infectious Diseases Society of America Sepsis Task Force[d]

IDSA's core recommendation is to limit SEP-1 to septic shock, for which the evidence supporting the benefit of immediate antibiotics is greatest. Prompt empiric antibiotics are often appropriate for suspected sepsis without shock, but IDSA believes there is too much heterogeneity and difficulty defining this population, uncertainty about the presence of infection, and insufficient data on the necessity of immediate antibiotics to support a mandatory treatment standard for all patients in this category.

Clinical Infectious Diseases 2021;72(4):541–52

Early Care of Adults With Suspected Sepsis in the Emergency Department and Out-of-Hospital Environment: A Consensus-Based Task Force Report

This report has been organized by the American College of Emergency Physicians and has been endorsed by the American Academy of Emergency Medicine, the American College of Osteopathic E American Osteopathic Board of Emergency Medicine, the Association of Academic Cha the Council of Emergency Medicine Residency Directors, the Emergency Medicine R Emergency Nurses Association, the Infectious Diseases Society of America, the National As Society for Academic Emergency Medicine, the Society of Critical Care Medicine, and th

Donald M. Yealy, MD; Nicholas M. Mohr, MD, MS; Nathan I. Shapiro, MD; Arjun Venkatesh
Wesley H. Self, MD, MPH

once the diagnosis of sepsis is established, rapid and comprehensive therapy—not just antibiotic administration—is optimal. But the current data do not recommend a singular time target that clearly improves outcomes for all. In those of sepsis—septic shock—the nce support a shorter time lationship between time and 6

We recommend prompt administration of antibiotics in the ED, but we reserve very short time thresholds for those with infection and shock and note there are insufficient data to recommend a specific time threshold for administration of antibiotics.

Annals *of* Emergency Medicine Volume 78, NO. 1 : July 2021

UK NATIONAL EARLY WARNING SCORE (NEWS-2)

Chart 1: The NEWS scoring system

Physiological parameter	Score 3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO_2 Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO_2 Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
				Air			
			101–110	111–219			≥220
			41–50	51–90	91–110	111–130	≥131
				Alert			CVPU
			35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	

Chart 2: NEWS thresholds and triggers

NEW score	Clinical risk	Response
Aggregate score 0–4	Low	Ward-based response
Red score Score of 3 in any individual parameter	Low–medium	Urgent ward-based response*
Aggregate score 5–6	Medium	Key threshold for urgent response*
Aggregate score 7 or more	High	Urgent or emergency response**

* Response by a clinician or team with competence in the assessment and treatment of acutely ill patients and in recognising when the escalation of care to a critical care team is appropriate.

**The response team must also include staff with critical care skills, including airway management.

- ... used in all hospitals (ED, ward) ... ambulance crews, nursing homes ... and GPs

October 2022 v2.0
(Replaces May 2022 version)

https://www.aomrc.org.uk/reports-guidance/

The working group unanimously agreed with the principle that treatment urgency for adults and children in secondary care should initially be determined by severity of illness using NEWS2 or PEWS, respectively as part of clinical assessment.

Vital signs	Vital signs: NEWS-2 'Physiology first'	0	1-4	5-6	≥7

The severity score should then be interpreted in the light of clinical assessment, to include rapidity of deterioration and trajectory, likely diagnosis (such as infection and sepsis), immune status, and evidence of organ dysfunction.

https://www.aomrc.org.uk/reports-guidance/

October 2022 v2.0
(Replaces May 2022 version)

Academy of Medical Royal Colleges

Statement on the initial antimicrobial treatment of sepsis

If additional concerns are identified at this stage, the clinician can 'upgrade' the actions required at least to the next highest severity band.

Vital signs	Vital signs: NEWS-2 'Physiology first'	0	1-4	5-6	≥7
Initial assessment	History, examination, lab results	***If clinical or carer concern, continuing deterioration, surgically remediable sepsis, neutropaenia, or blood gas / lab evidence of organ dysfunction, including elevated serum lactate, upgrade actions at least to next NEWS-2 level →***			

https://www.aomrc.org.uk/reports-guidance/

October 2022 v2.0
(Replaces May 2022 version)

Academy of Medical Royal Colleges

Statement on the initial antimicrobial treatment

Assessment of comorbid disease, frailty and patient preferences must also be considered to inform judgements about treatment intensity.

Vital signs	Vital signs: NEWS-2 'Physiology first'	0	1-4	5-6	≥7
Initial assessment					
	Comorbid disease, frailty, patient preferences?	*Consider influence of comorbid disease, frailty and ethnicity on NEWS-2, and patient preferences for treatment intensity, limits, end-of-life care*			

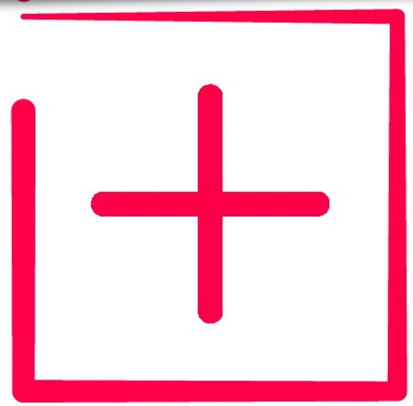
October 2022 v2.0
(Replaces May 2022 version)

Academy of Medical Royal Colleges

Statement on the initial antimicrobial treatment of sepsis

https://www.aomrc.org.uk/reports-guidance/

For patients with possible, probable or definite infection, infection-specific diagnostic tests and administration of antimicrobials should be completed within 6, 3, or 1 hour of recording a NEWS2 of 1-4, 5-6, or ≥7, respectively. These are maximum periods, not targets.



October 2022 v2.0

(Repla

Academy of Medical Royal Colleges

Sta

ant

of s

Vital signs	**Vital signs: NEWS-2 'Physiology first'**	0	1-4	5-6	≥7
Initial assessment	**History, examination, lab results**	***If clinical or carer concern, continuing deterioration, surgically remediable sepsis, neutropaenia, or blood gas / lab evidence of organ dysfunction, including elevated serum lactate, upgrade actions at least to next NEWS-2 level →***			
	Comorbid disease, frailty, patient preferences?	*Consider influence of comorbid disease, frailty and ethnicity on NEWS-2, and patient preferences for treatment intensity, limits, end-of-life care*			
Initial (generic) actions	**Monitoring and escalation plan**	Standard observations	• Registered nurse review <1 h • Obs 4-6 hrly if stable. • Escalate if no improvement	• Obs hourly. • Review <1 hr by clinician competent in acute illness assessment • Escalate if no improvement	• Obs every 30 mins. • Review <30 min by clinician competent in acute illness assessment. • Senior doctor review <1 hr if no improvement: refer to Outreach or ICU
	Initial treatment of precipitating condition	Standard care	<6 hr	<3 hr	<1 hr
Likelihood of infection & specific actions	Unlikely	Standard care	Review daily and reconsider infection if diagnosis remains uncertain		
	Possible	Review at least daily	**< 6 h** • Source identification & control plan documented.	**< 3 h:** • Microbiology tests • Antimicrobials: administer or revise • Source identification & control plan documented. **< 6h** • Source control initiated **48 – 72 h** • Review antimicrobials with ID/micro/senior clinician	**< 1 h:** • Microbiology tests • Antimicrobials: administer or revise (broad-spectrum if causative organism uncertain). **< 3 h** • Source identification **3-6 h** • Source control initiated according to clinical urgency **48 – 72 h:** • Review antimicrobials with ID/micro/senior clinician
	Probable or definite	**< 6 h** • Diagnostic tests & Rx plan	**< 6 h** • Microbiology tests • Antimicrobials: administer or revise • Source identification & control plan. • D/w ID/micro if uncertain, & review		

October 2022 v2.0
(Replaces May 2022 version)

Academy of Medical Royal Colleges

Statement on the initial antimicrobial treatment of sepsis

https://www.aomrc.org.uk/reports-guidance/

The aim is not to delay treatment, but to allow sufficient time to make an informed clinical judgement. Antimicrobial treatment must be accompanied by source identification and control and antimicrobial stewardship through iterative review.

The frameworks aim to provide a balance between patient safety and antimicrobial stewardship, while allowing clinicians to exercise accountable judgement in the care of individual patients. As with all service delivery interventions, the framework should be subject to local audit and prospective research evaluation leading to future modifications and improvements.

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline

Suspected sepsis in people aged 16 or over who are not and have not recently been pregnant

Draft for consultation, March 2023

NICE National Institute for Health and Care Excellence

Timing of antibiotics

Given the lack of direct evidence, the committee decided, by consensus, to recommend adopting the initial antimicrobial treatment of sepsis outlined in the 2022 AoMRC statement. That is, for people with low to moderate, moderate to high and high risk of severe illness or death from sepsis, antibiotics should be given, respectively within 6, 3, and 1 hour and, for people at low risk, on a need for basis, in line with local practice.

The committee highlighted that:

- the purpose of deferring antibiotic delivery is not to delay treatment, but to have extra time to gather information for a more specific diagnosis, allowing for more targeted treatment
- the 1-, 3- and 6-hour time limits are a maximum (rather than an aim) for each risk level
- clinical judgement is key when considering someone's specific care needs.