SEPSIS

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A HEALTH SYSTEMS ISSUE

FROM INFECTION TO RECOVERY

@SepsisUK

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WHO Technical Expert Group

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SEPSIS is a life-threatening condition that arises when the body's response to an infection injures its own tissues and organs.


Breast cancer
Bowel cancer
Annual UK sepsis deaths

NEW YORK STATE 2018

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Table 1. Adult Severe Sepsis or Septic Shock Cases by Sex and Age, 2018

Characteristic	Level	Cases (N)	Cases (%)	Cases per 100,000
Sex	Female	30,653	47%	377.0
	Male	34,500	53%	461.2
Age Group	18-29	1,676	3%	50.5
	30-39	2,294	4%	85.7
	40-49	3,670	6%	146.7
	50-59	8,370	13%	306.6
	60-69	13,552	21%	592.7
	70-79	15,481	24%	1192.9
	80+	20,110	31%	2505.9
Total	Total Adults	65,153	100%	417.3

NEW YORK STATE 2018

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Table 2. Pediatric Severe Sepsis or Septic Shock Cases by Sex and Age, 2018

Characteristic	Level	Cases (N)	Cases (%)	Cases per 100,000
Sex	Female	298	52%	14.6
	Male	272	48%	12.7
Age	< 1 year	82	14%	35.8
	1-2	110	19%	23.6
	3-5	80	14%	11.4
	6-11	116	20%	8.4
	12-17	182	32%	13.0
Total	Total Children	570	100%	13.6

SOURCES OF INFECTION

Source	% of cases (approx.)
Pneumonia	50%
Urinary tract	20%
Abdomen	15%
Skin, soft tissue, bone and joint	10%
Endocarditis	1%
Device-related infection	1%
Meningitis	1%
Others	2%

‘MIGHT BE’ SEPSIS CODES

J18.0	Bronchopneumonia, unspecified organism
J18.1	Lobar pneumonia, unspecified organism
J18.9	Pneumonia, unspecified organism
K65.0	Generalised peritonitis
L03.9	Cellulitis, unspecified
L03.1	Cellulitis of limb
N39.0	Urinary tract infection

‘MIGHT BE’ SEPSIS CODES

J18.0
J18.1
J18.9
K65.0
L03.9
L03.1
N39.0

1,700,000
CASES

(HES data 2017)

Embargoed for Release Until
17:01, JANUARY 16th, 2020

New study - deadly sepsis rates double prior estimates

Poor countries and children hit hardest as nearly 50m cases recorded annually worldwide

Study confirms that sepsis is likely cause of 11 million deaths worldwide – that's a life lost every three seconds

GLOBAL SEPSIS MORTALITY

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Sepsis
11 M
*

Ischaemic Heart Disease
7.2M
(CDC 2015)

Cancer
9.6M
(WHO 2018)

Tobacco
8M
(WHO 2019)

COVID-19: 6.3 M
(JHU July 2022)

*Rudd K, Lancet 2020

G7 Health Ministers Commit to Boost the Implementation of the WHA 70.7 Resolution on Sepsis

Five years after the adoption of the Resolution "Improving the Prevention, Diagnosis and Clinical Management of Sepsis" by the World Health Assembly in 2017, G7 Health Ministers commit to intensify efforts to strengthen early detection, diagnosis, and

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A WHOLE SYSTEM ISSUE

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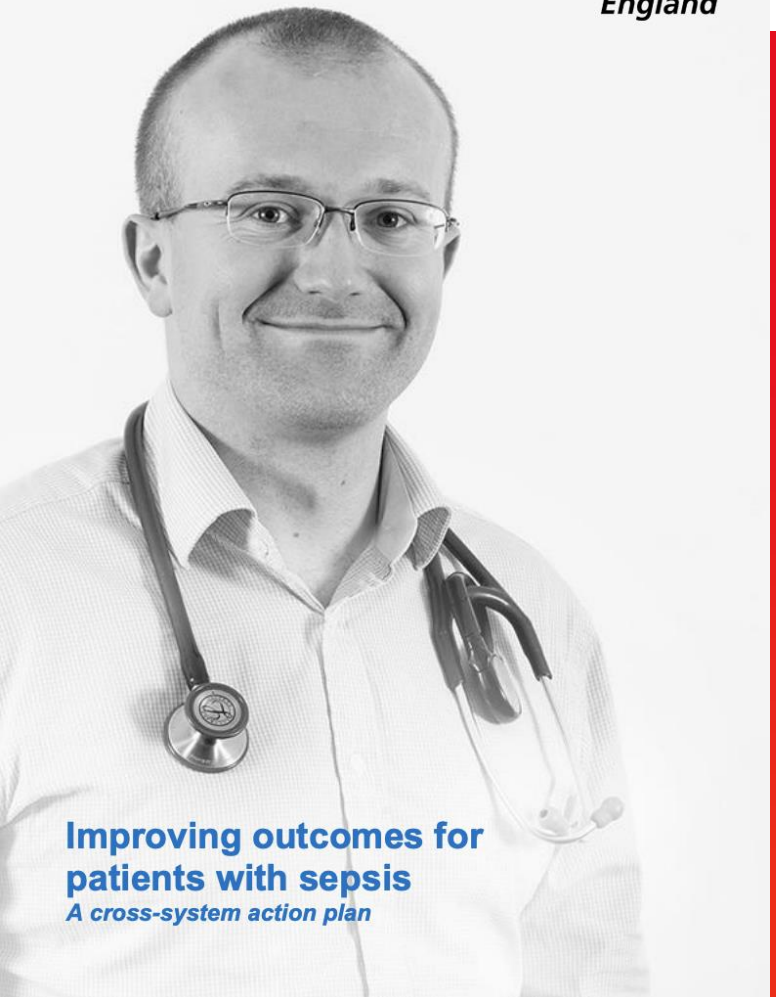
NHS England



Improving outcomes for patients with sepsis

A cross-system action plan

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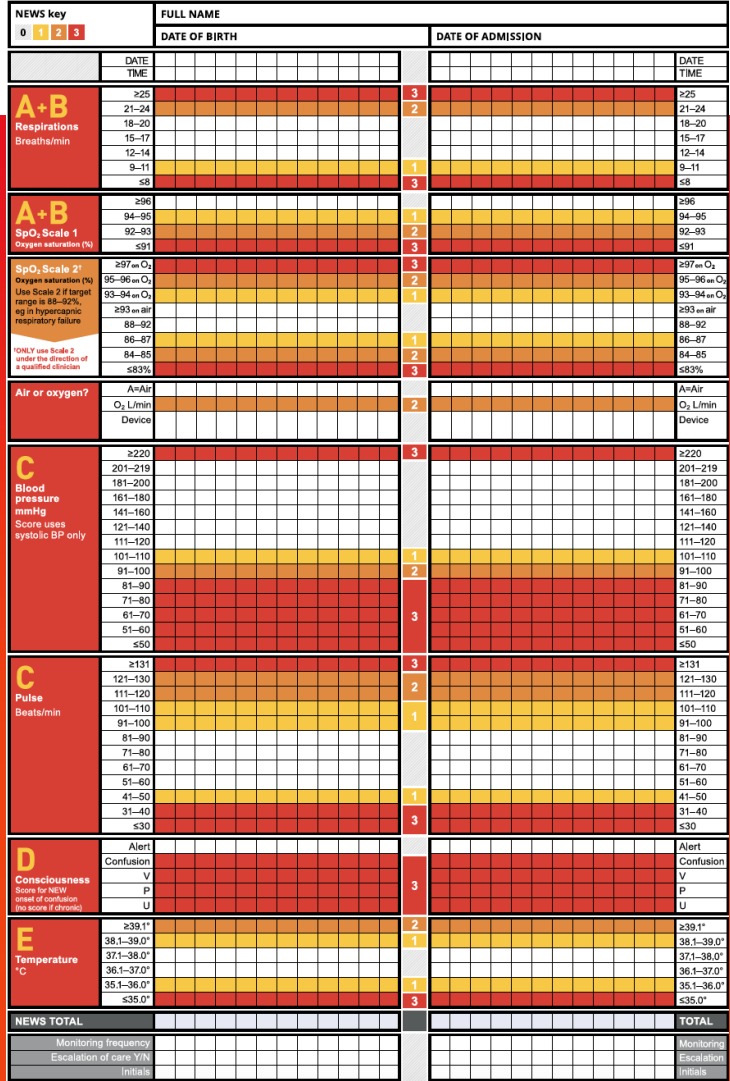
NEWS2

Second version, created by Royal College of Physicians

NHS recommends ‘Think Sepsis’ if total NEWS-2 is 5 or above



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SEPSIS SCREENING TOOL ACUTE ASSESSMENT

AGE 12+

PATIENT DETAILS:

DATE: **TIME:**

NAME:

DESIGNATION:

SIGNATURE:

01 START THIS CHART IF THE PATIENT LOOKS UNWELL OR NEWS2 IS 5 OR ABOVE

RISK FACTORS FOR SEPSIS INCLUDE:

- ☐ Age > 75
- ☐ Impaired immunity (e.g. diabetes, steroids, chemotherapy)
- ☐ Recent trauma / surgery / invasive procedure
- ☐ Indwelling lines / IVDU / broken skin

02 COULD THIS BE DUE TO AN INFECTION?

YES

LIKELY SOURCE:

- ☐ Respiratory
- ☐ Urine
- ☐ Skin / joint / wound
- ☐ Indwelling device
- ☐ Brain
- ☐ Surgical
- ☐ Other

NO

SEPSIS UNLIKELY, CONSIDER OTHER DIAGNOSIS

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03 ANY RED FLAG PRESENT?

YES

- ☐ Objective evidence of new or altered mental state
- ☐ Systolic BP ≤ 90 mmHg (or drop of >40 from normal)
- ☐ Heart rate ≥ 130 per minute
- ☐ Respiratory rate ≥ 25 per minute
- ☐ Needs O_2 to keep SpO_2 ≥ 92% (88% in COPD)
- ☐ Non-blanching rash / mottled / ashen / cyanotic
- ☐ Lactate ≥ 2 mmol/l
- ☐ Recent chemotherapy
- ☐ Not passed urine in 18 hours (<0.5ml/kg/hr if catheterised)

YES

RED FLAG SEPSIS

START

SEPSIS SIX

SEPSIS SCREENING TOOL - THE SEPSIS SIX

AGE 16+

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PATIENT DETAILS:

DATE: **TIME:**

NAME:

DESIGNATION:

SIGNATURE:

COMPLETE ALL ACTIONS WITHIN ONE HOUR

01 ENSURE SENIOR CLINICIAN ATTENDS

NOT ALL PATIENTS WITH RED FLAGS WILL NEED THE 'SEPSIS 6' URGENTLY. A SENIOR DECISION MAKER MAY SEEK ALTERNATIVE DIAGNOSES/ DE-ESCALATE CARE.

TIME ☐☐:☐☐

02 GIVE OXYGEN IF REQUIRED

START IF O2 SATURATIONS LESS THAN 92% - AIM FOR O2 SATURATIONS OF 94-98%
IF AT RISK OF HYPERCARBIA AIM FOR SATURATIONS OF 88-92%

TIME ☐☐:☐☐

03 SEND BLOODS INCLUDING CULTURES

BLOOD CULTURES, BLOOD GLUCOSE, LACTATE, FBC, U&Es, CRP AND CLOTTING LUMBAR PUNCTURE IF INDICATED

TIME ☐☐:☐☐

04 GIVE IV ANTIBIOTICS, THINK SOURCE CONTROL

TIME ☐☐:☐☐

MAXIMUM DOSE BROAD SPECTRUM THERAPY
CONSIDER: LOCAL POLICY / ALLERGY STATUS / ANTIVIRALS
EVALUATE NEED FOR IMAGING/ SPECIALIST REVIEW
IF SOURCE AMENABLE TO DRAINAGE ENSURE ACHIEVED AS SOON AS POSSIBLE BUT ALWAYS WITHIN 12H

05 GIVE IV FLUIDS

TIME ☐☐:☐☐

GIVE IN DIVIDED FLUID BOLUSES OF 500ml
NICE RECOMMENDS USING LACTATE TO GUIDE FURTHER FLUID THERAPY

06 MONITOR

TIME ☐☐:☐☐

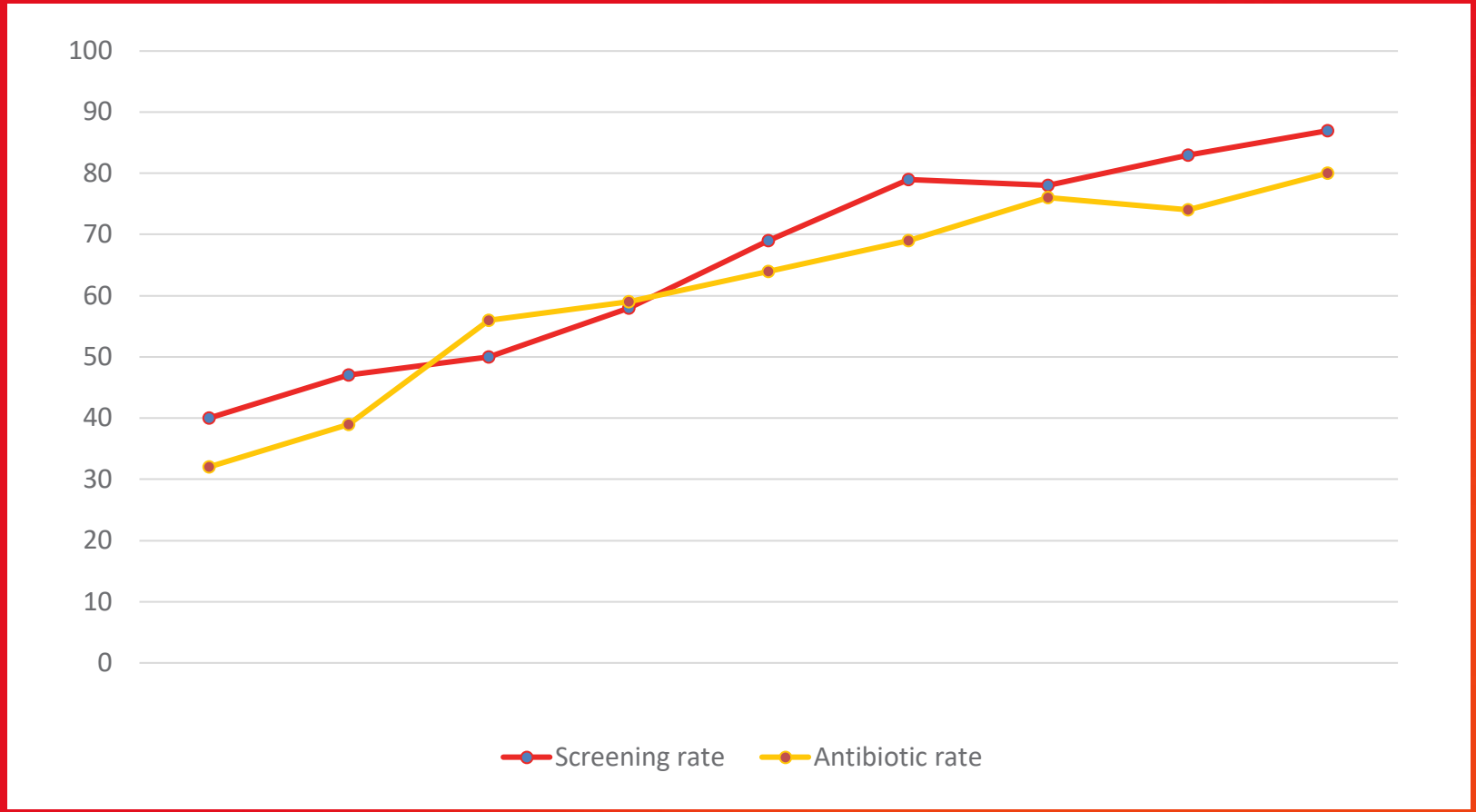
USE NEWS2. MEASURE URINARY OUTPUT: THIS MAY REQUIRE A URINARY CATHETER
REPEAT LACTATE AT LEAST HOURLY IF INITIAL LACTATE ELEVATED OR IF CLINICAL CONDITION CHANGES

RED FLAGS AFTER ONE HOUR – ESCALATE TO CONSULTANT NOW

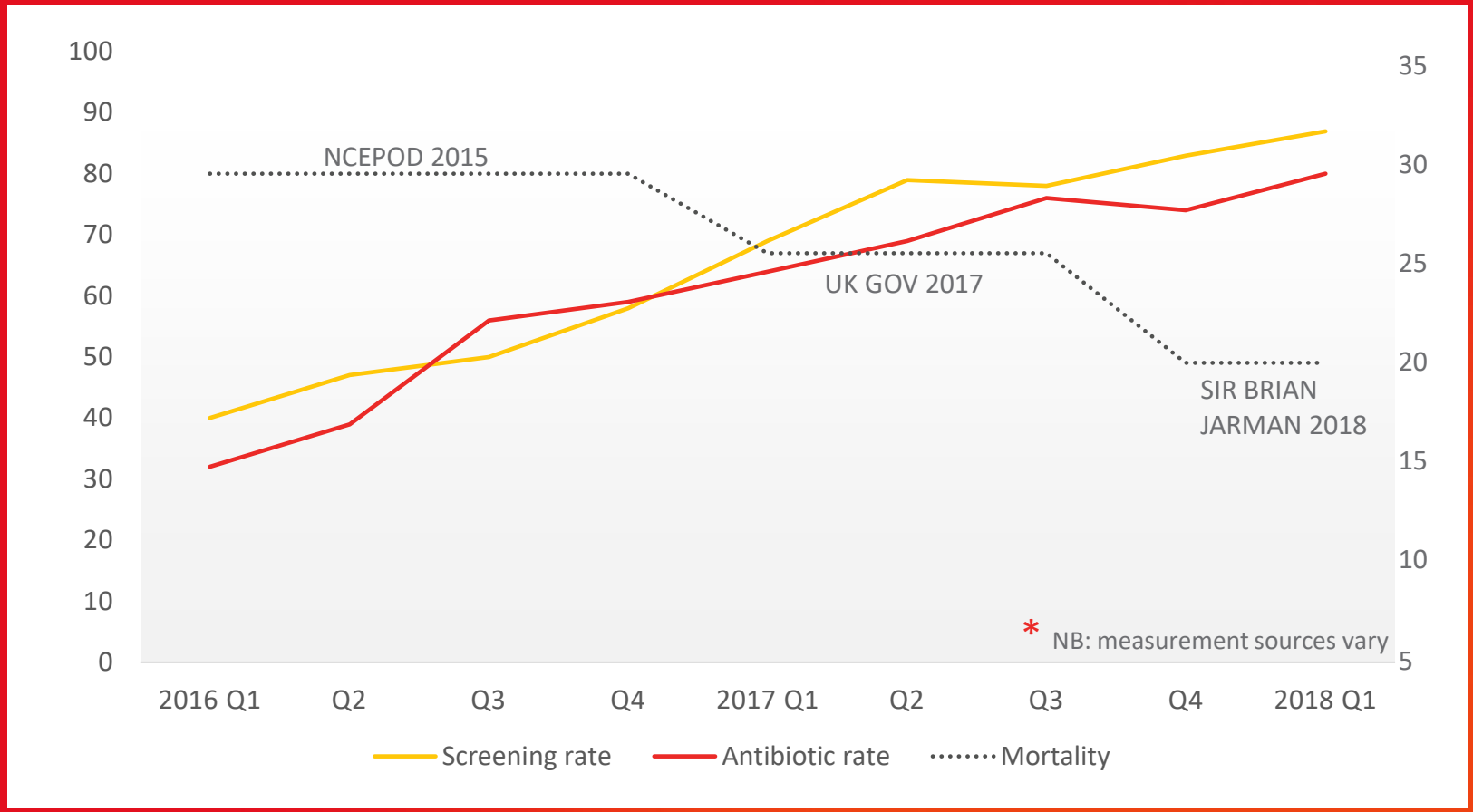
RECORD ADDITIONAL NOTES HERE:

e.g. allergy status, arrival of specialist teams, de-escalation of care, delayed antimicrobial decision making, variance from Sepsis Six

NHS ENGLAND CQUIN DATA



OVERLAID WITH EST^{D} MORTALITY*



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BARRIERS

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The NEW ENGLAND JOURNAL of MEDICINE

Perspective

Recognizing Sepsis as a Global Health Priority — A WHO Resolution

Konrad Reinhart, M.D., Ron Daniels, M.D., Niranjan Kissoon, M.D., Flavia R. Machado, M.D., Ph.D., Raymond D. Schachter, L.L.B., and Simon Finfer, M.D.

"Some very important clinical issues, some of them affecting life and death, stay largely in a backwater which is inhabited by academics and professionals and enthusiasts, dealt with very well

actions to reduce the burden of sepsis through improved prevention, diagnosis, and management (see table).

The true burden of disease arising from sepsis remains unknown.

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The NEW ENGLAND JOURNAL of MEDICINE

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actions to reduce the burden of sepsis through improved prevention, diagnosis, and management (see table).

The true burden of disease arising from sepsis remains unknown.

. . The public and political space is the space in which [sepsis] needs to be in order for things to change."

Sir Liam Donaldson, Geneva ; May 2017

SSC 2021

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Guidelines | Published: 02 October 2021

Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021

Laura Evans ✉, Andrew Rhodes, [...] Mitchell Levy

Intensive Care Medicine (2021) | Cite this article

Introduction

Sepsis is life-threatening organ dysfunction caused by a dysregulated host response to infection [1]. Sepsis and septic shock are major healthcare problems, impacting millions of people around the world each year and killing between one in three and one in six of those it affects [2,3,4].[1] Early identification and appropriate management in the initial hours after the development of sepsis improve outcomes.

Surviving Sepsis Campaign

ABOUT SSC + GUIDELINES AND BUNDLES + TOOLS & EDUCATION +

Antibiotic Timing

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	Shock is present	Shock is absent
Sepsis is definite or probable	☑ Administer antimicrobials ***immediately***, ideally within 1 hour of recognition.	☑ Administer antimicrobials ***immediately***, ideally within 1 hour of recognition.
Sepsis is possible	☑ Administer antimicrobials ***immediately***, ideally within 1 hour of recognition.	☑ Rapid assessment* of infectious vs. noninfectious causes of acute illness. ☑ Administer antimicrobials ***within 3 hours*** if concern for infection persists.

**Rapid assessment includes history and clinical examination, tests for both infectious and noninfectious causes of acute illness, and immediate treatment of acute conditions that can mimic sepsis. Whenever possible, this should be completed within 3 hours of*

Statement on the initial antimicrobial treatment of sepsis

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SEPSIS SCREENING TOOL GENERAL PRACTICE

AGE 16+

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01 START THIS CHART IF NEWS2 HAS TRIGGERED / YOU'RE WORRIED ABOUT YOUR PATIENT AND THEY'RE LIKELY TO HAVE AN INFECTION

ADDITIONAL FACTORS PROMPTING SCREENING FOR SEPSIS INCLUDE:

- ☐ Carer or relative concern
- ☐ Recent chemotherapy/ known to be neutropenic
- ☐ Evidence of organ dysfunction (e.g. lactate >2mmol/l)

YES

CALCULATE NEWS2 SCORE USING LATEST VITAL SIGNS

02 IS NEWS2 7 OR ABOVE?

OR IS NEWS2 1-4 AND ONE OF:

- ☐ Chemotherapy in last 6 weeks
- ☐ Other organ failure evident (e.g. AKI)
- ☐ Patient looks extremely unwell
- ☐ Patient is actively deteriorating

03 IS NEWS2 5 OR 6?

OR IS NEWS2 1-4 AND ONE OF:

NO

- ☐ Chemotherapy in last 6 weeks
- ☐ Other organ failure evident (e.g. AKI)
- ☐ Patient looks extremely unwell
- ☐ Patient is actively deteriorating

YES

RED FLAG SEPSIS

START GP BUNDLE

YES

USE CLINICAL JUDGEMENT TO DETERMINE WHETHER PATIENT CAN BE MANAGED IN COMMUNITY SETTING.

IF TREATING IN THE COMMUNITY CONSIDER PLANNED SECOND ASSESSMENT AND BLOODS.

IF REFERRING FOR HOSPITAL ASSESSMENT COMMUNICATE POTENTIAL RISK OF SEPSIS.

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NO AMBER FLAGS : ROUTINE CARE AND GIVE SAFETY-NETTING ADVICE:

CALL 111 IF CONDITION CHANGES OR DETERIORATES.
SIGNPOST TO AVAILABLE RESOURCES AS APPROPRIATE

CALL 999 IF ANY OF:

- **S**lurred speech or confusion
- **E**xtreme shivering or muscle pain
- **P**assing no urine (in a day)
- **S**evere breathlessness
- '**I** feel I might die'
- **S**kin mottled, ashen, blue or very pale

GP RED FLAG BUNDLE:

THIS IS TIME-CRITICAL: IMMEDIATE ACTION REQUIRED: **DIAL 999 AND ARRANGE BLUE LIGHT TRANSFER**

COMMUNICATION: Ensure communication of 'Red Flag Sepsis' to crew. Advise crew to pre-alert as 'Red Flag Sepsis'. Where possible a written handover is recommended including observations and antibiotic allergies.

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WHAT ABOUT SURVIVORS?

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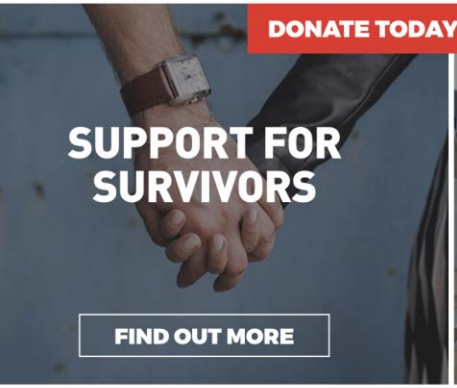
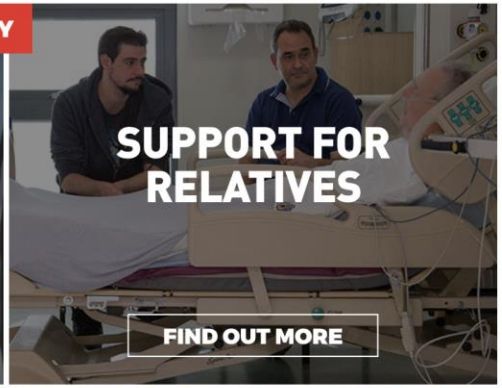
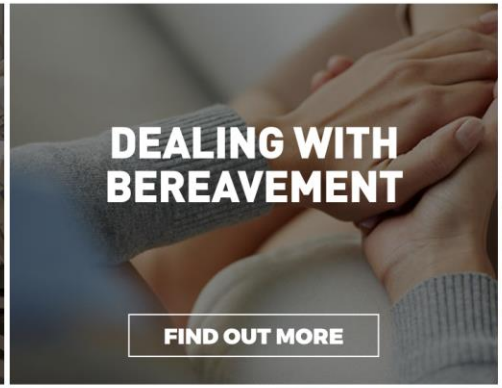
Around 40% of survivors of sepsis suffer at least one of a range of **physical**, **cognitive**, and **psychological** sequelae.

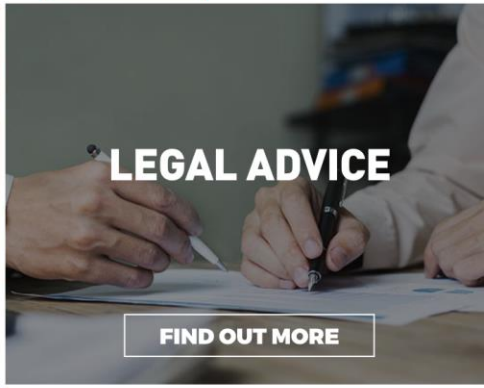
43% of survivors in one study were **still not back at work** at one year.

Poulsen JB, M.ller K, Kehlet H, Perner A. Acta Anaesthesiol Scand. 2009;53(6):724-730

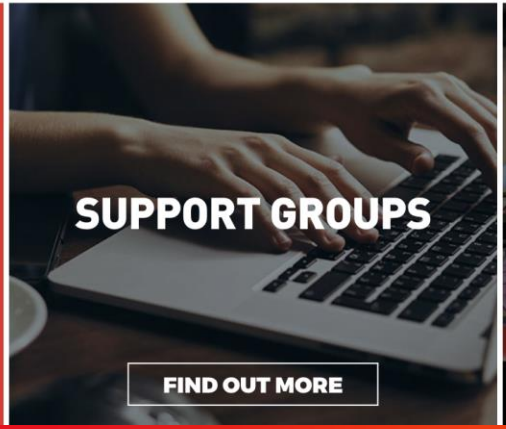








CONTACT US



FAQS AND USEFUL LINKS

THEIMC.ORG

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INFECTION MANAGEMENT COALITION

whitepaper

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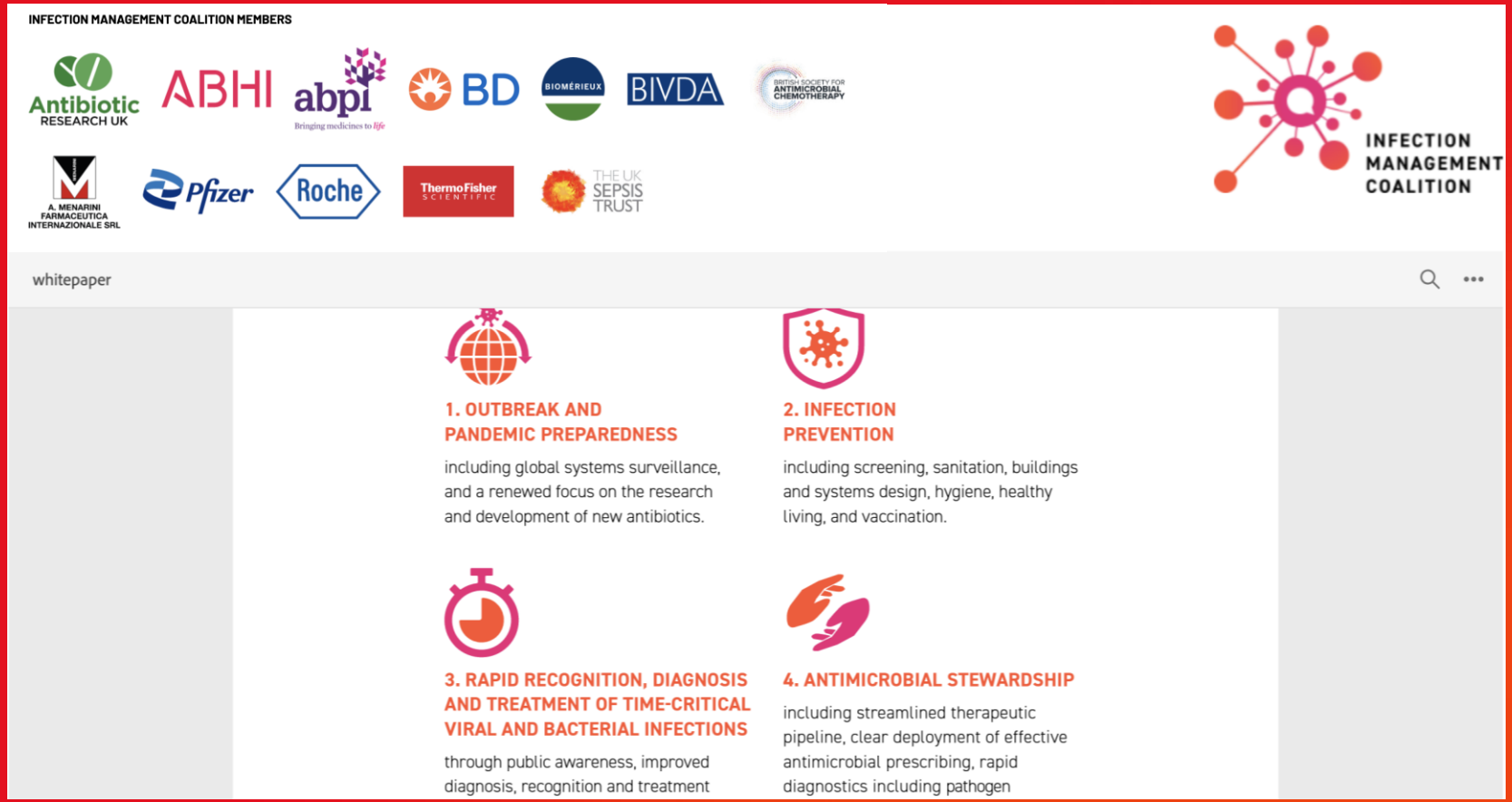

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TOGETHER WE CAN SAVE THOUSANDS OF LIVES