

# **Saving lives from Sepsis – the role of primary care and NEWS**



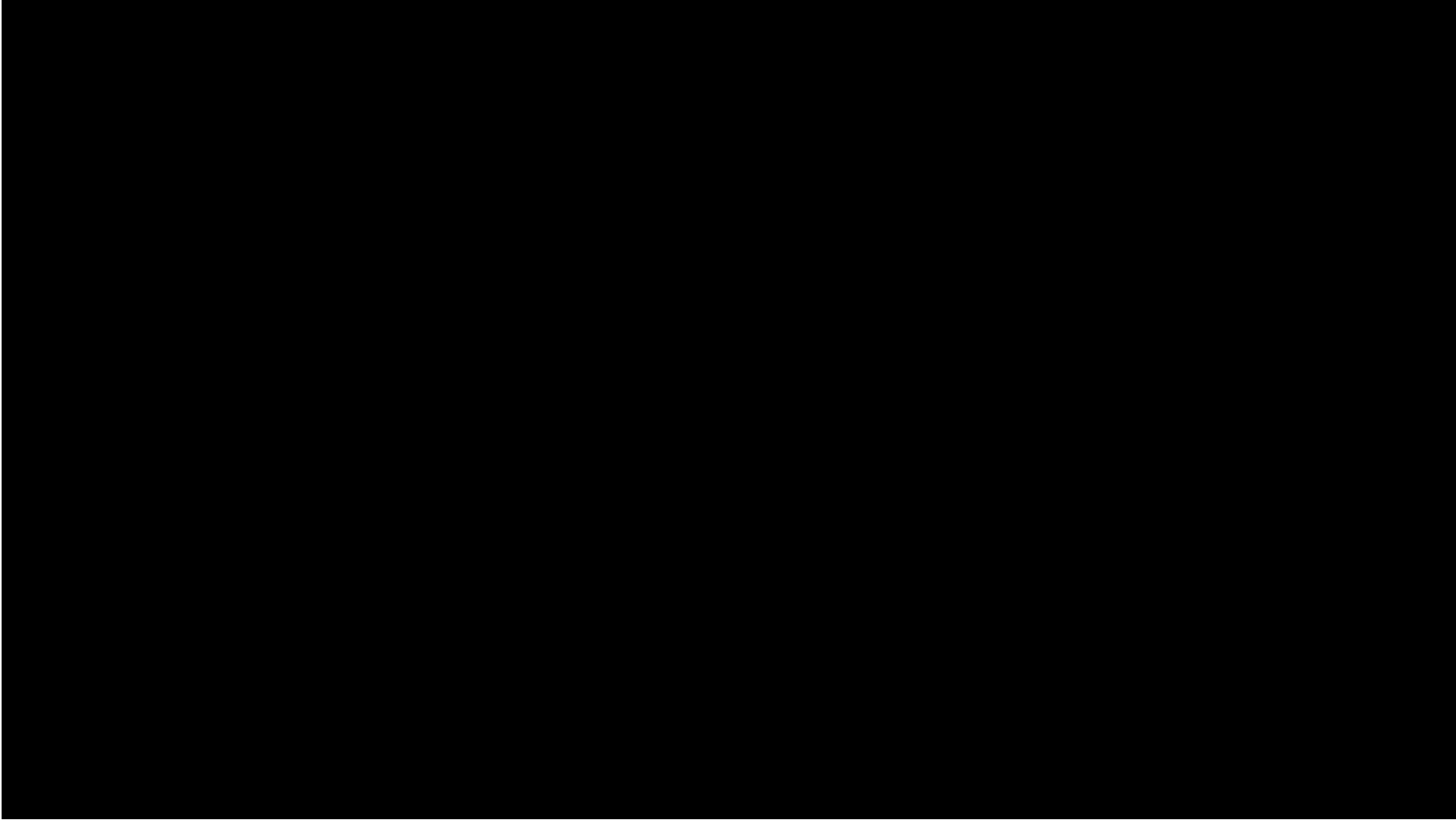
**Wayne Robson –Patient Safety Lead  
Barnsley Hospital NHS Foundation Trust**

# Why does it matter?

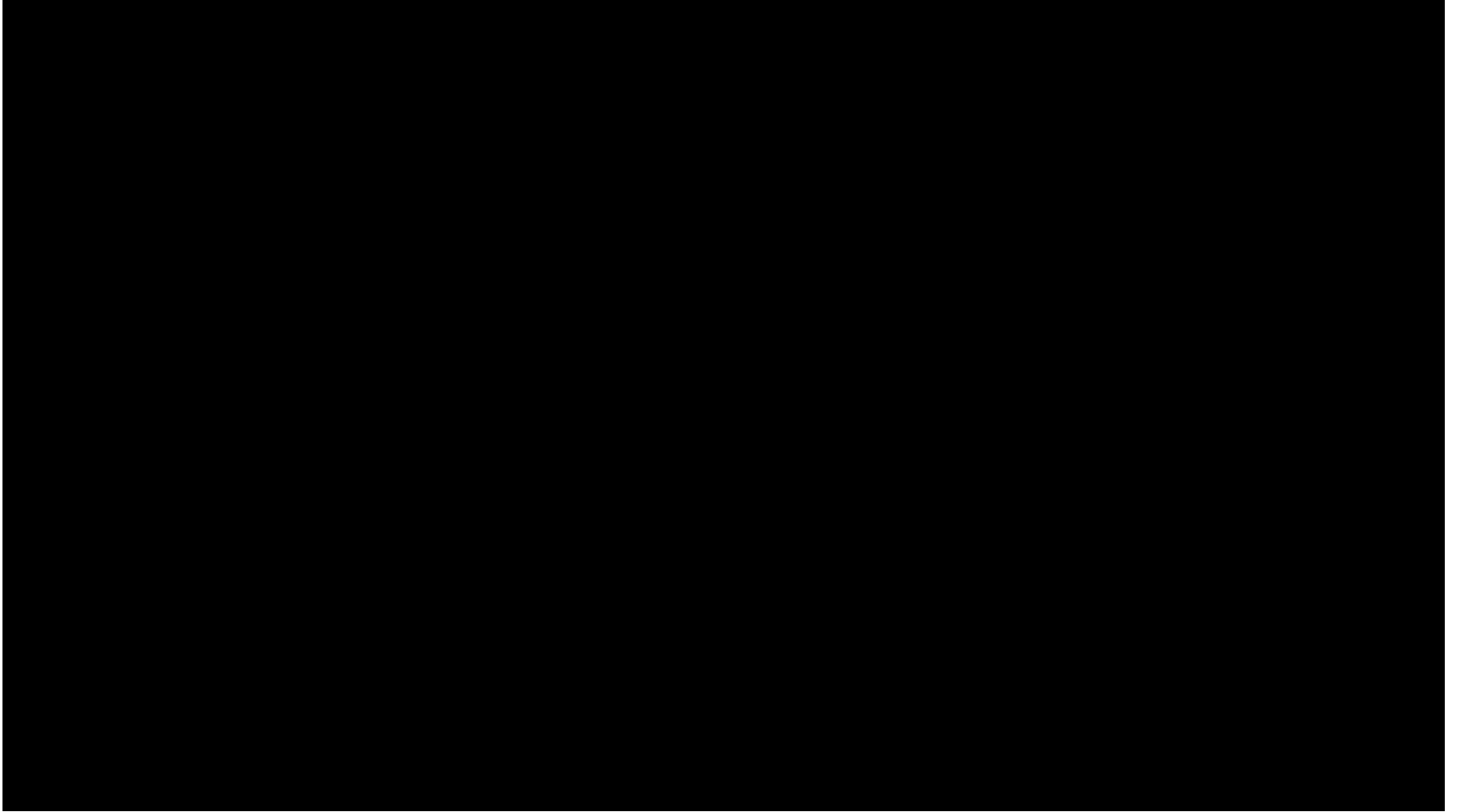


<http://sepsistrust.org/professional/educational-tools/>

Why does it matter ?

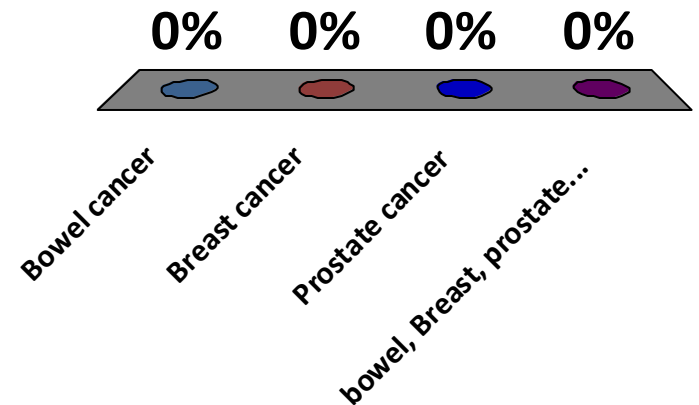


# Sepsis Matters




# In in the UK Sepsis kills: same number as die from

- A. Bowel cancer
- B. Breast cancer
- C. Prostate cancer
- D. bowel, Breast,  
prostate cancer  
combined



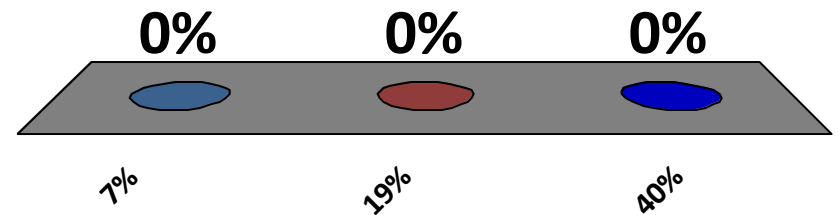
# QUIZ

## In in the UK Sepsis kills -

- A . Same number as die each year from bowel cancer
- B. Same number who die each year from breast cancer
- C. Same number who die each year from bowel, Breast, prostate cancer combined 

# What percentage of intensive care beds are used for patients with sepsis

- A. 7%
- B. 19%
- C. 40%



# QUIZ

**What percentage of intensive care beds are used for patients with sepsis**

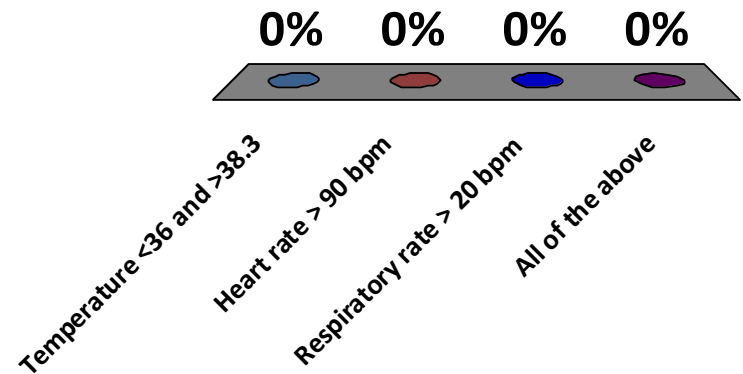
- A. 7%
- B. 19%
- C. 40%





# Which of the following are signs of an inflammatory response

- A. Temperature  $<36$  and  $>38.3$
- B. Heart rate  $> 90$  bpm
- C. Respiratory rate  $> 20$  bpm
- D. All of the above



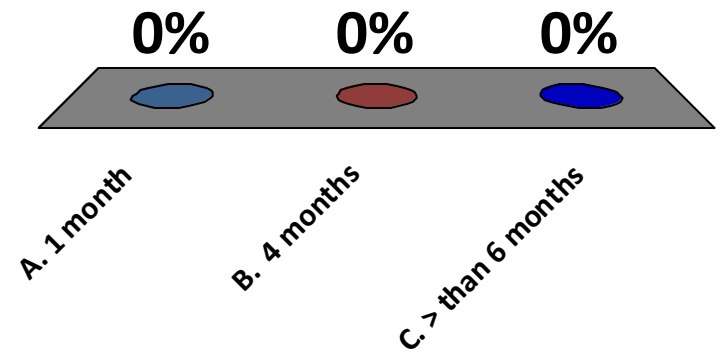
# QUIZ

**Which of the following are signs of an inflammatory response**

- A. Temperature  $< 36$  and  $> 38.3$  ✓
- B. Heart rate  $> 90$  bpm ✓
- C. Respiratory rate  $> 20$  bpm ✓

# Recovery from sepsis can commonly take

- A. A. 1 month
- B. B. 4 months
- C. C. > than 6 months



# QUIZ

## Recovery from sepsis can commonly take

- A. 1 month
- B. 4 months
- C. > than 6 months



# A priority for the NHS

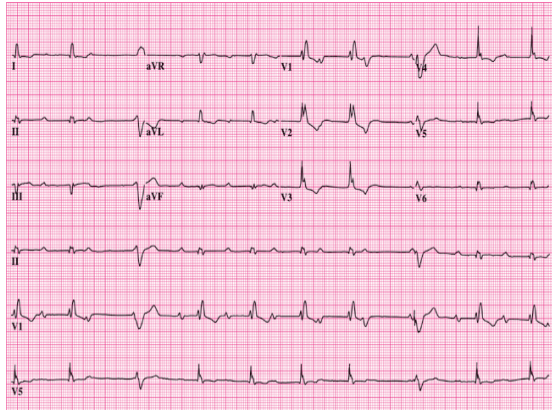
September 2013 'A Time to Act', the Parliamentary and Health Service Ombudsman called upon the NHS and the Department of Health to act rapidly to reduce unnecessary deaths from sepsis. As a direct result of this work, NICE will produce a clinical guideline and Quality Standard against sepsis.



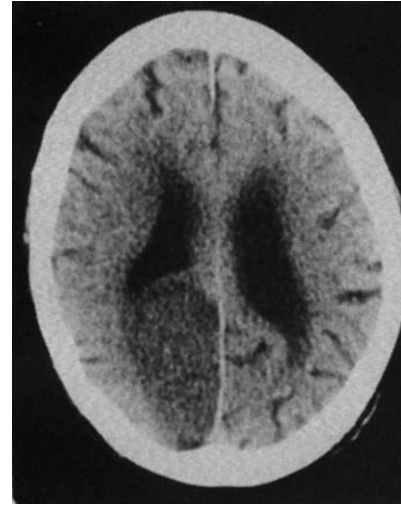
# Sepsis – the unacknowledged killer



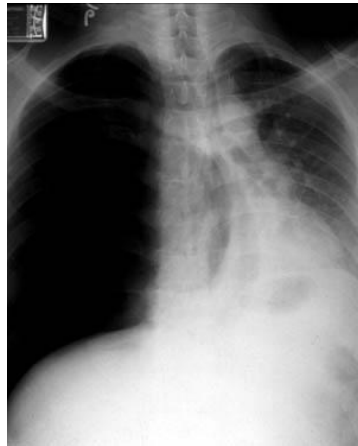
# Time critical conditions



ACS



CVA



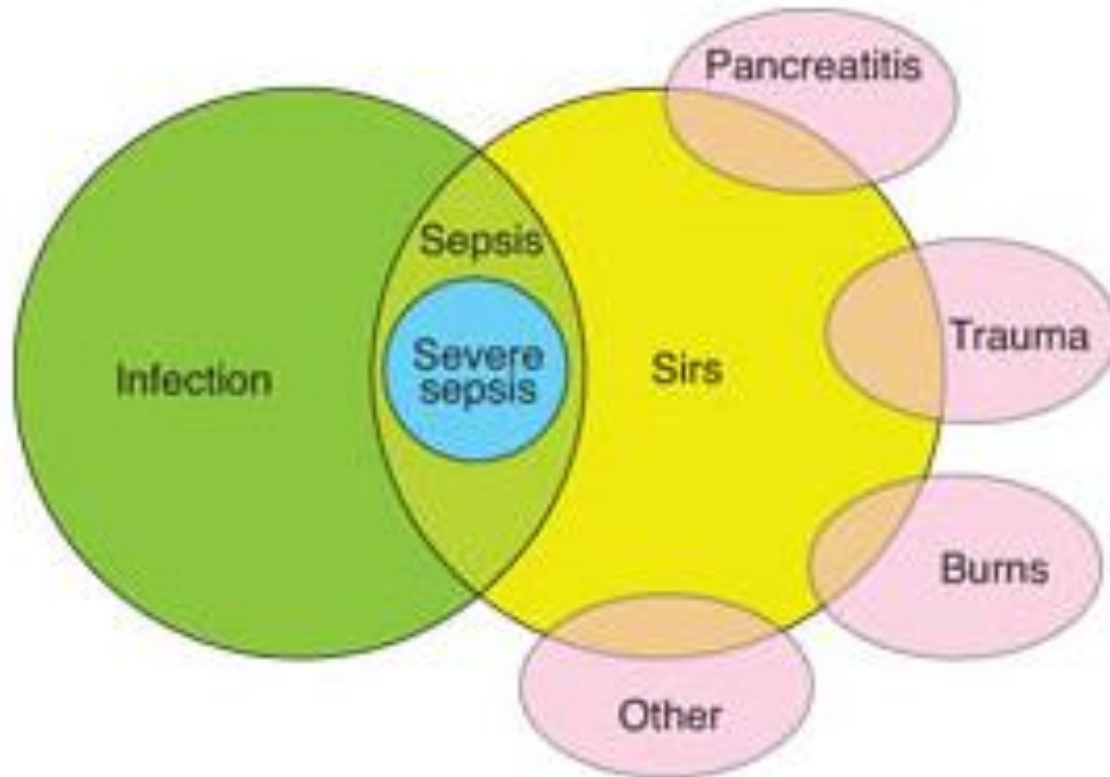
Trauma



Sepsis

# What is sepsis

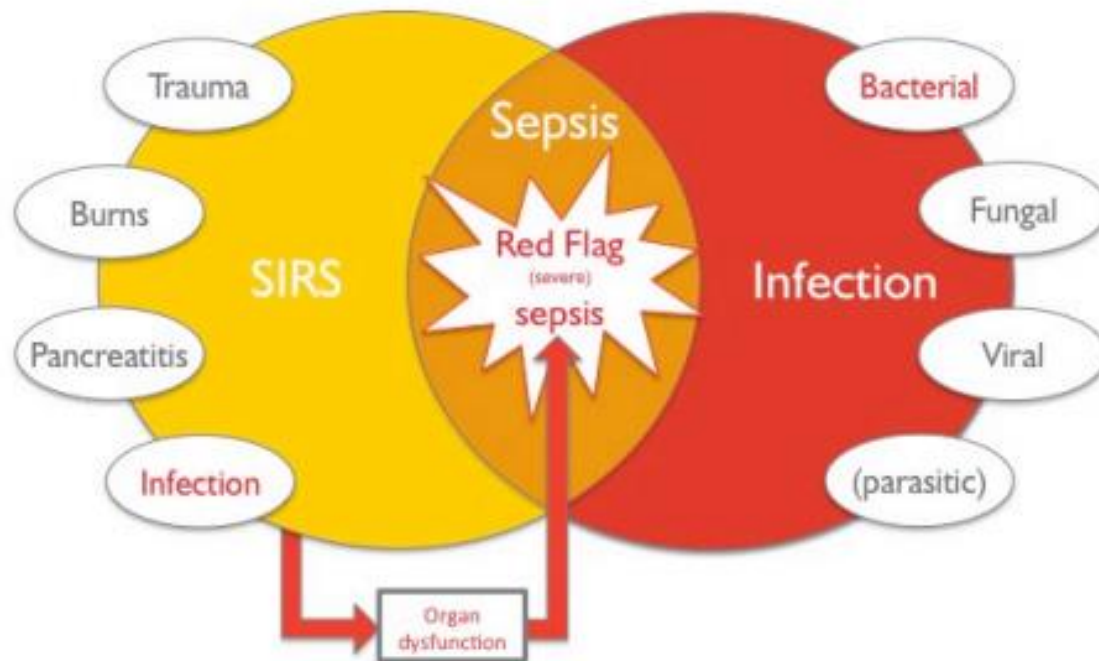
*Sepsis is an overwhelming response to infection in which the immune system initiates a potentially damaging systemic inflammatory response. The body's response to an infection injures its own tissues and organs.*





# What is sepsis

Figure 1: Relationship between SIRS, Infection, Sepsis and Red Flag Sepsis



SIRS can be caused by multiple triggers

SIRS due to infection = Sepsis

Sepsis + organ dysfunction = Red Flag Sepsis (severe sepsis once tests confirm in hospital)

Septic shock is a subset of severe sepsis

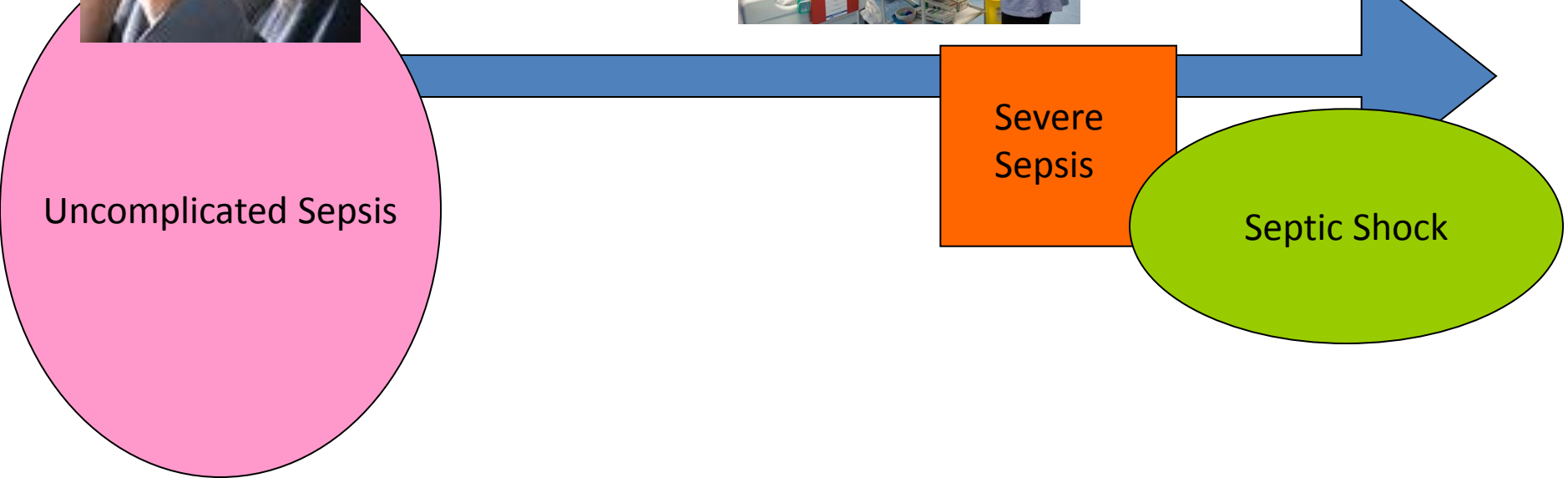
# Defining Sepsis



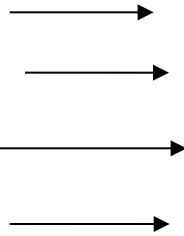
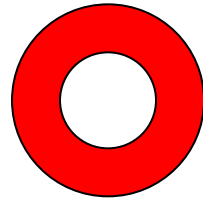
Uncomplicated Sepsis

Severe Sepsis

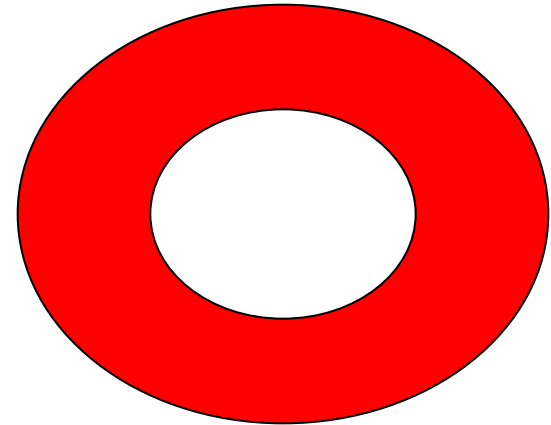
Septic Shock



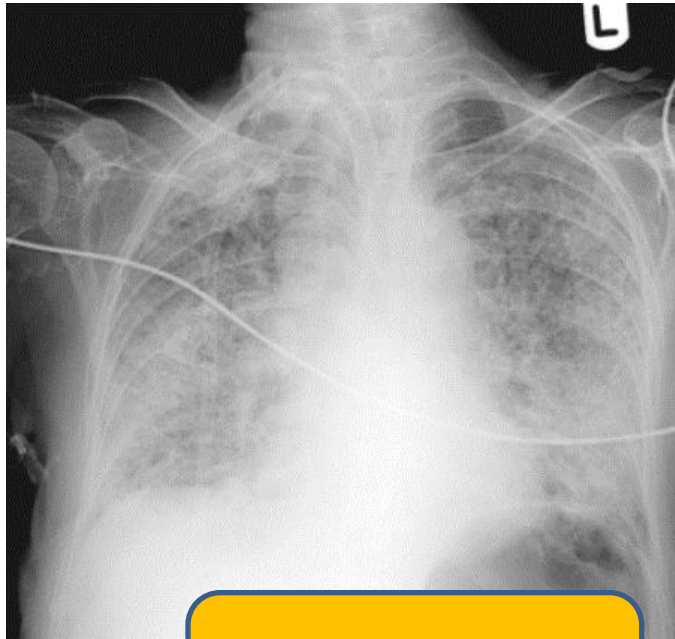
# Physiological effects of sepsis



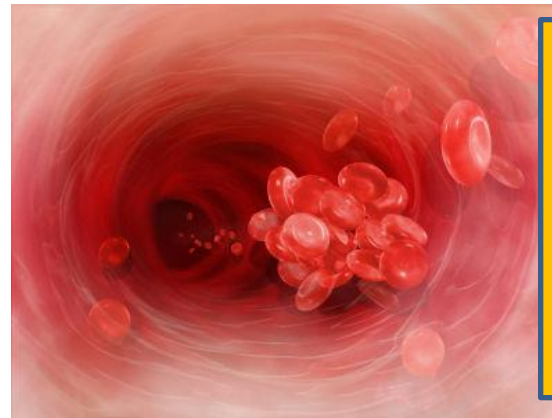
bradykinin  
interleukins  
nitric oxide  
histamine



Massive vasodilatation



Leaky capillaries



Activation of the  
coagulation cascade

# Recognising sepsis in adults

- Initial symptoms are often put down to other conditions
- Patients often delay seeking medical help
- No single test for sepsis
- Not everyone with infection develops sepsis and sepsis doesn't always progress to severe sepsis
- GPs may only see a few cases of severe sepsis in a year

# Which patients should be screened?

- with clinical evidence of systemic infection (such as recent history of fever)
- in whom you are considering antibiotic prescription or stewardship discussion
- you suspect to have “flu”
- you suspect to have gastroenteritis
- who are obviously unwell without clear cause
- who are elderly or immunosuppressed and present with signs of infection
- who have deteriorated on antibiotic therapy

# Sepsis Screening

## If infection suspected



### a. *Screening for SIRS*

Systemic Inflammatory Response Syndrome

SIRS is confirmed if ANY TWO of the following are present:

#### Immediate

- New onset of Confusion or Altered Mental State
- Temperature  $>38.3$  or  $<36$  degrees Celsius
- Heart Rate  $>90$  beats per minute\*
- Respiratory Rate (counted over 60 seconds)  $>20$  breaths per minute<sup>§</sup>

#### POCT (commonly available)

- Blood Glucose  $>7.7$ mmol/L in the absence of known diabetes

#### POCT (not yet widely available)

- WCC  $>12$  or  $<4 \times 10^9/L$

# Sepsis Screening

## Infection plus SIRS = Sepsis



### ***b. Evaluation for Red Flag Sepsis***

Act immediately if ANY ONE of the following are present:

- Systolic BP <90mmHg (or >40mmHg fall from baseline)\*
- Heart rate >130 per minute
- Oxygen saturations <91% §
- Respiratory rate >25 per minute §
- Responds only to voice or pain/ unresponsive

POCT (not yet widely available)

- Lactate >2.0mmol/

# Screening the role of NEWS

National Early Warning Score (NEWS)\*

PHYSIOLOGICAL PARAMETERS	3	2	1	0	1	2	3
Respiration Rate	≤8		9 - 11	12 - 20		21 - 24	≥25
Oxygen Saturations	≤91	92 - 93	94 - 95	≥96			
Any Supplemental Oxygen		Yes		No			
Temperature	≤35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥39.1	
Systolic BP	≤90	91 - 100	101 - 110	111 - 219			≥220
Heart Rate	≤40		41 - 50	51 - 90	91 - 110	111 - 130	≥131
Level of Consciousness				A			V, P, or U

\*The NEWS initiative based from the Royal College of Physicians NEWS Development and Implementation Group (NEWSDIG) report, and was jointly developed and funded in collaboration with the Royal College of Physicians, Royal College of Nursing, National Outreach Forum and NHS Training for Innovation

Please see next page for explanatory text about this chart.



# Screening and the role of NEWS

The National Early Warning Score (NEWS) thresholds and triggers

NEWS scores	Clinical risk
0	Low
Aggregate 1 – 4	
<b>RED score*</b> <b>(Individual parameter scoring 3)</b> Aggregate 5 – 6	Medium
Aggregate 7 or more	High

Consider admission to hospital. If Red flag sepsis – admit to hospital by 999

If Red Flag sepsis admission to hospital 999

Please see next page for explanatory text about this chart.

# **A case example of unrecognised severe sepsis**

- Patient admitted to BHFT SDA on a Sunday with ? Wound infection post cholecystectomy
- Patient was seen by GP – drowsy confused, BP 79/45 pulse 99 bpm, Temp 38.5
- Patient was sent to hospital in her husbands car
- On arrival to SDA was very unwell with NEWS of 8

# Management of Sepsis in primary care

## *Sepsis (no Red Flag signs):*

- A documented decision whether to manage patient in the community or refer to hospital
- Discussion with a senior doctor (where initial assessment has been by trainee) within 30 minutes of diagnosis
- A full set of observations including heart rate, respiratory rate, blood pressure, temperature, conscious level recorded and documented
- If to be treated in the community, safety netting advice offered and documented
- If to be treated in the community, arrangements to be made for review within 24 hours
- If to be referred for hospital assessment, handover including relevant clinical history and antibiotic history including allergies to be provided

# Management of Red Flag Sepsis in Primary Care

*'Red Flag' sepsis pending confirmatory tests:*

- Immediate discussion with a senior doctor (where initial assessment has been by trainee)
- Immediate request for 999 Ambulance with Paramedic crew
- Handover including relevant clinical history and antibiotic history including allergies to be provided
- Where resources available, administer oxygen therapy
- Where transfer times may be prolonged, consider need for intravenous antibiotics and fluid therapy if available

# The Sepsis Six

## Sepsis Six

- Oxygen
- Blood Cultures
- Antibiotics
- Fluids
- Lactate & Hb
- Insert Catheter & monitor urine output



**Deliver within 1 hour**

# Sepsis 6 saves lives

- In a prospective observational study across a district general hospital, it was independently associated with survival suggesting that, if it alone were responsible for outcome differences, the number needed to treat (NNT) to prevent one death is 4.68 . This compares to an NNT of 42 for Aspirin in major heart attack and 45-90 for PCI in ST elevation myocardial infarction.

# Lactate

## Testing for Lactate

### Three Affordable Options

en español



Results in 15 Seconds  
Free PC cable/software



Cost \$235  
\$1.14 - \$1.60 per test



Results in 13 Seconds

**Lactate** **SCOUT**

**Accutrend®** **Lactate**

**LACTATE PLUS**

**For Professional  
Use only**

## Cryptic Shock

Severe sepsis with  
normal blood pressure  
but raised lactate –  
indicating shock state

# Yorkshire Ambulance Service



YAS pre alert ED about cases of severe sepsis (Red Flag Sepsis)



# Recognising Sepsis in Children



## An avoidable death of a three-year-old child from sepsis

A report by the Health Service Ombudsman for England on an investigation into a complaint from Mr and Mrs Morrish about The Cricketfield Surgery, NHS Direct, Devon Doctors Ltd, South Devon Healthcare NHS Foundation Trust and NHS Devon Plymouth and Torbay Cluster

A screenshot of a BBC News article. The top navigation bar includes 'BBC', 'Sign in', 'News', 'Sport', 'Weather', and 'iPlayer'. Below this is a red banner with 'NEWS' in white. A secondary navigation bar lists 'Home', 'UK', 'World', 'Business', 'Politics', 'Tech', 'Science', 'Health', and 'Education'. A third bar shows 'England', 'Regions', and 'Devon' (which is underlined). The main headline reads 'NHS blunders led to Devon toddler's death'. Below the headline is the date '© 26 June 2014' and the location 'Devon'.



# Raising public awareness - Children

## WHAT IS 'SEPSIS'?

DESIGN BY HUGO BEAUMONT<sup>x</sup>

ALSO KNOWN AS SEPTICAEMIA OR BLOOD POISONING, SEPSIS IS WHEN YOUR BODY'S RESPONSE TO AN INFECTION GOES WRONG AND BEGINS TO INJURE ITS OWN TISSUES AND ORGANS.

IT AFFECTS ABOUT 10,000 CHILDREN EVERY YEAR IN THE U.K.



THE UK  
SEPSIS  
TRUST

## HOW DO I SPOT IT?

SEPSIS COULD HAPPEN AS A RESULT OF ANY INFECTION.

IF YOUR CHILD IS UNWELL WITH EITHER A

FEVER OR A VERY LOW TEMPERATURE

(OR HAS HAD A FEVER IN THE LAST 24 HOURS) THEN THINK ABOUT SEPSIS.

THERE IS NO ONE SIGN FOR SEPSIS. THINGS TO LOOK OUT FOR...

# Raising public awareness- children (Use for safety netting too)

## ANY CHILD WHO:

1 FEELS ABNORMALLY COLD TO TOUCH

2 LOOKS MOTTLED, BLUISH,  
OR HAS VERY PALE SKIN

3 HAS A RASH THAT DOES NOT FADE  
WHEN YOU PRESS IT

4 IS BREATHING VERY FAST

5 HAS A 'FIT' OR CONVULSION

6 IS VERY LETHARGIC  
OR DIFFICULT TO WAKE UP  
MIGHT BE CRITICALLY ILL.

ONE OR MORE OF THESE? SEE A DOCTOR URGENTLY:  
CALL 999 AND SAY YOU'RE WORRIED ABOUT SEPSIS.

## A CHILD UNDER 5 WHO:

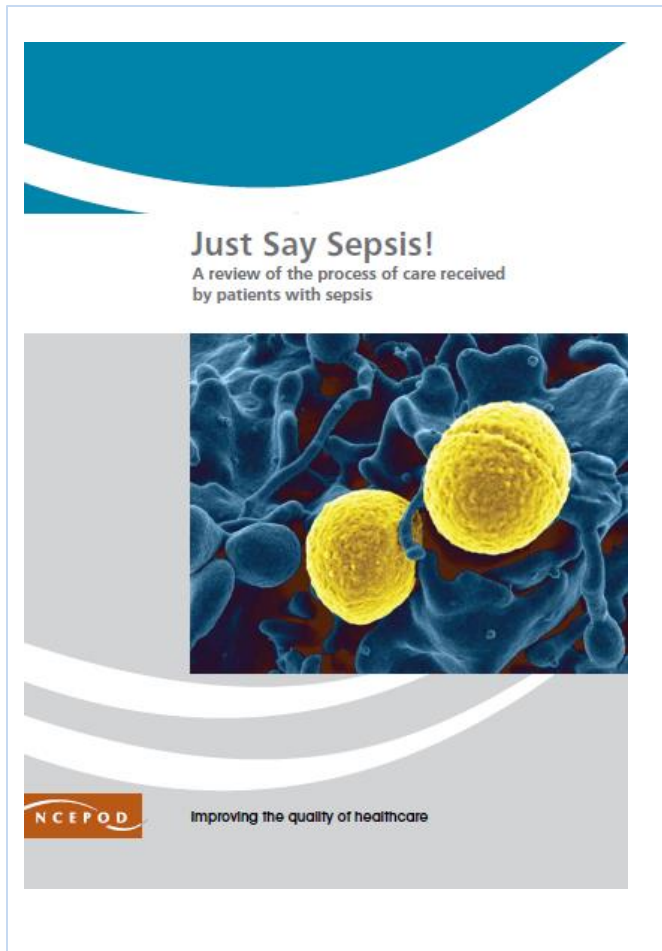
1 IS NOT FEEDING

2 IS VOMITING REPEATEDLY

3 HASN'T HAD A WEE OR WET NAPPY FOR 12 HOURS  
MIGHT HAVE SEPSIS.

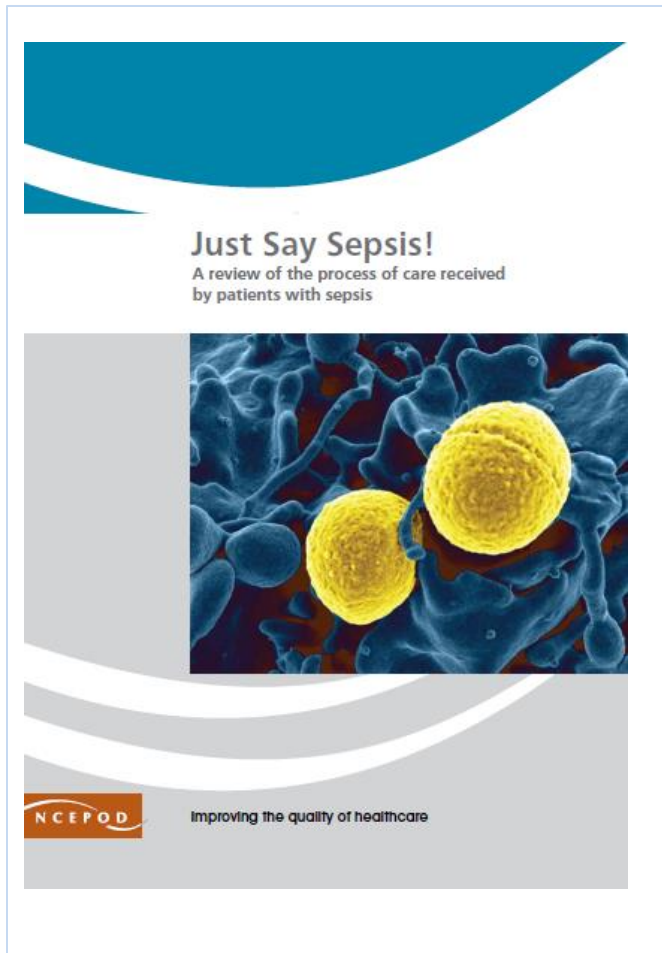
ONE OR MORE OF THESE?  
SPEAK TO A DOCTOR  
& SAY YOU'RE WORRIED ABOUT SEPSIS.

# NCEPOD 2015



- In only 9% patients seen by GP were pre alerts sent to hospitals
- Poor adherence to recording of vital signs by GPs assessing patients – less than half had their temperature or blood pressure recorded
- No early warning score was used in any of the GP case notes
- Half of the patients referred to hospital had no referral letter
- Patients delayed seeking medical help and attending GP

# NCEPOD 2015



- Sepsis was not mentioned in the discharge summary in 46% cases
- Sepsis was not mentioned on the death certificate in 40% patients who died
- Insufficient information given to patients on discharge

# Raising public awareness (use for safety netting too)

SEPSIS IS A RARE BUT SERIOUS CONDITION THAT CAN LOOK JUST LIKE FLU, GASTROENTERITIS OR A CHEST INFECTION.

SEEK MEDICAL HELP URGENTLY IF YOU DEVELOP ANY ONE OF THE FOLLOWING:

**S**LURRED SPEECH

**E**XTREME SHIVERING OR MUSCLE PAIN

**P**ASSING NO URINE (IN A DAY)

**S**EVERE BREATHLESSNESS

**"I FEEL LIKE I MIGHT DIE"**

**S**KIN MOTTLED OR DISCOLOURED



THE UK  
SEPSIS  
TRUST

# Empowering patients - patients can prevent us falling into error traps

We believe that, once sepsis is accepted as a medical emergency and as a clinical priority for the NHS, we can save up to 10,000 lives each year.

We will achieve this through the promotion of earlier recognition of sepsis and more reliable delivery of immediate life-saving treatments including earlier antibiotics and fluids, by raising awareness, and through innovation, research and the sharing of good practice. To make this happen, we need to ensure that members of the public, patients and their relatives, and health professionals work together to **think sepsis**.

For further information, to join our campaign, or to make a donation, please visit:

[www.sepsistrust.org](http://www.sepsistrust.org)

Tel: 0845 606 6255



Suspect sepsis.

Say sepsis.

Save someone's life today.

Working in partnership with the Global Sepsis Alliance



© U.K Sepsis Group 2012  
All rights reserved. We cannot accept responsibility for individual cases.

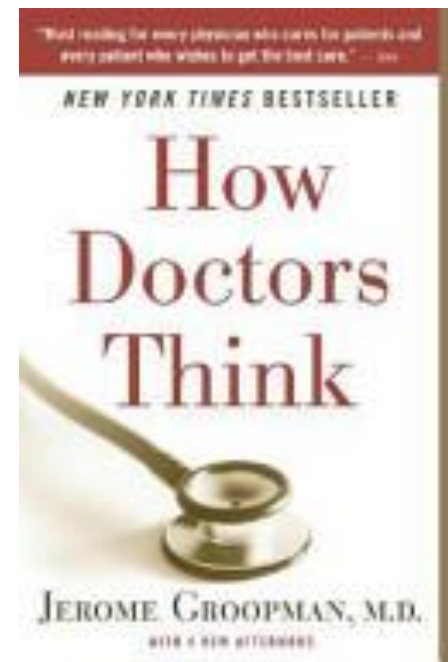
Sepsis kills

...but together we can beat it

Sepsis was previously known as septicaemia or blood poisoning. Sepsis is the body's reaction to an infection and means your body attacks its own organs and tissues. If not spotted and treated quickly, sepsis can rapidly lead to organ failure and death. Patients and health workers need to work together to ensure life-saving treatment is delivered as soon as possible.

the uk sepsis trust

Don't be afraid to say - 'I think this might be Sepsis'



# Changes to how we screen for Sepsis

- In 2016 SIRS will no longer be used to diagnose sepsis and screening and diagnosis will be focused on :

Physiological changes of organ dysfunction, including hypotension, tachypnoea and altered mental state

Watch this space – more information to follow



# Summary

- Sepsis is a major killer and prompt recognition and management will save lives
- Over 70% cases are believed to arise in the community
- There is a huge variability in clinical presentation of sepsis
- Sepsis is difficult to diagnose
- Maintain a high index of suspicion for sepsis
- Record NEWS if suspect sepsis
- Pre-alert ED / AMU
- Review the UK Sepsis Trust Exemplar standards for Primary Care management of Sepsis

Further question please contact Wayne Robson Patient Safety Lead Barnsley Hospital  
[wrobson@nhs.net](mailto:wrobson@nhs.net)

