

Supplemental material

Table 1: Score parameters

a) qSOFA

Criterion	Parameters (1 point for each)
Respiratory rate (breaths per minute)	≥22
Altered mental state	VPU or GCS <15
Systolic blood pressure (mmHg)	<100

b) SOFA score

Component	Score				
	0	1	2	3	4
Respiratory					
PaO ₂ /FiO ₂	>400	≤400	≤300	≤200	≤100
SpO ₂ /FiO ₂	>302	≤302	≤221	≤142	≤67
Coagulation					
Platelets x10 ³ /mm ³	≥150	<150	<100	<50	<20
Cardiovascular*					
Hypotension	MAP ≥ 70mmHg	MAP < 70mmHg	Dopamine ≤5 or any dopamine	Dopamine >5 Adrenaline ≤0.1 Noradrenaline ≤0.1	Dopamine >15 Adrenaline >0.1 Noradrenaline >0.1
Liver					
Bilirubin mg/dL (μmol/L)	<1.2 (<20)	1.2-1.9 (20-32)	2.0-5.9 (33-101)	6.0-11.9 (102-204)	>12.0 (204)
Renal					
Creatinine mg/dL (μmol/L)	<1.2 (<110)	1.2-1.9 (110-170)	2.0-3.4 (171-299)	3.5-4.9 (300-440)	>5.0 (440)
or urine output (mL/day)				<500	<200
Neurological					
GCS	15	13-14	10-12	6-9	<6

Abbreviations: PaO₂, partial pressure of oxygen; FiO₂, fraction of inspired oxygen; SpO₂, peripheral capillary oxygen saturation; MAP, mean arterial pressure; GCS, Glasgow Coma Score.

*Vasoactive doses are given as μg/kg/min administered for at least 1 hour.
Adapted from Singer et al., (2016)¹.

c) NEWS score

Physiological variable	Score						
	3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9-11	12-20		21-24	≥25
SpO ₂ (oxygen saturation)	≤91	92-93	94-95	≥96			
Air or oxygen		Oxygen		Air			
Systolic BP (mmHg)	≤90	91-100	101-110	111-219			≥220
Pulse (per minute)	≤40		41-50	51-90	91-110	111-130	≥131
Consciousness (AVPU)				A			VPU
Temperature (°C)	≤35		35.1-36	36.1-38	38.1-39	≥39.1	

Abbreviations: BP blood pressure, AVPU: A alert, V responds to voice, P responds to pain, U unresponsive.

Figure 1: Month of presentation to the ED for the study population

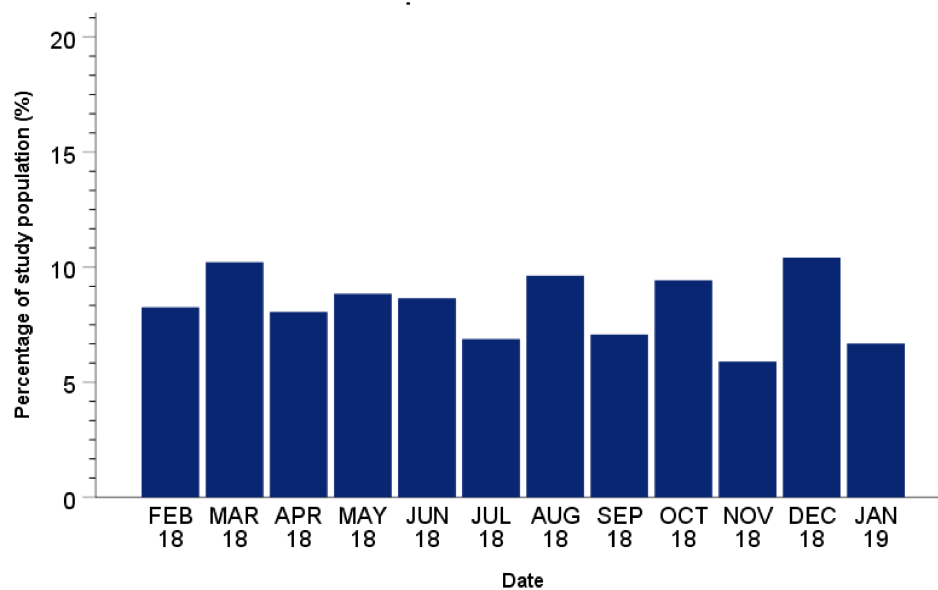
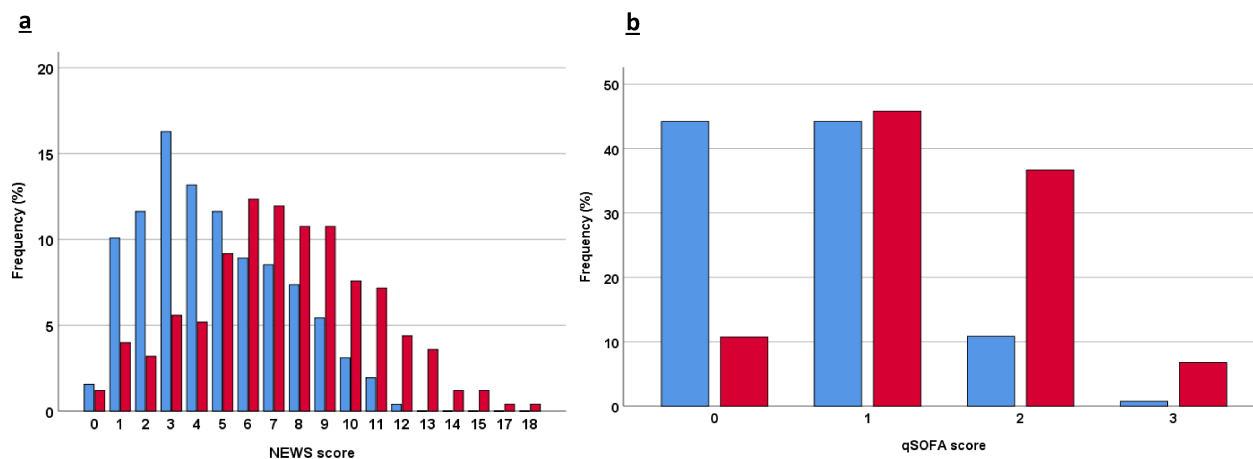


Figure 2: Distribution of NEWS and qSOFA scores by Sepsis-3 criteria



a) Distribution of NEWS scores by those that did not meet Sepsis-3 criteria (blue), and those that did meet the Sepsis-3 criteria (red).

b) Distribution of qSOFA scores by those that did not meet Sepsis-3 criteria (blue), and those that did meet the Sepsis-3 criteria (red).

Variables	N	Suspected sepsis (n=509)
Suspected focus, n(%)		
Chest	509	190 (37.3)
Urinary	509	83 (16.3)
Abdominal	509	30 (5.9)
Skin/Soft tissue	509	35 (6.9)
Central nervous system	509	15 (2.9)
Ear/Nose/Throat	509	3 (0.6)
Genital tract	509	1 (0.2)
Blood	509	1 (0.2)
Joint/Bone	509	1 (0.2)
Post procedural	509	2 (0.4)
Multiple sites suspected	509	100 (19.6)
Unclear source	509	42 (8.3)
Missing	509	6 (1.2)
Definitive evidence of infection, n(%)		
Yes	509	490 (96.3)
No	509	19 (3.7)
Source of infection identified, n(%)		
Chest	490	172 (35.1)
Urinary	490	73 (14.9)
Skin/Soft tissue	490	41 (8.4)
Abdominal	490	26 (5.3)
Joint/Bone	490	4 (0.8)
Central nervous system	490	3 (0.6)
Ear/Nose/Throat	490	2 (0.4)
Genital tract	490	2 (0.4)
Vascular	490	1 (0.2)
Ophthalmological	490	1 (0.2)
Line infection	490	1 (0.2)
Multiple sites found	490	61 (12.4)
Viral	490	8 (1.6)
Unknown source	490	95 (19.4)
Radiological evidence of infection, n(%)	509	285 (56.0)
Microbiological or virological evidence of infection, n(%)	509	202 (39.7)
Blood culture, n(%)	509	109 (21.4)
Biochemical evidence of infection, n(%)	509	484 (95.1)

Variables	N	Suspected sepsis (n=509)
Treatment, n (%)		
Antibiotics	509	503 (98.8)
Fluids	509	475 (93.3)
Oxygen	509	235 (46.2)
Metaraminol	509	6 (1.2)

Table 4: Disposition, length of stay and mortality		
Variables	N	Suspected sepsis (n=509)
Disposition, n(%)		
Home	509	5 (1.0)
Ward	509	478 (93.9)
High Dependency Unit	509	13 (2.6)
Intensive Care Unit	509	9 (1.8)
Died in the Emergency department	509	4 (0.8)
Hospital length of stay (days), median (IQR)	442	7 (4-15)
Mortality, n(%)		
In-hospital mortality n(%)	509	67 (13.2)
Median (IQR), days	67	5 (14.0)
30-day mortality n(%)	490*	63 (12.9)
Median (IQR), days	63	5 (12.0)
Cause of death, n(%)		
Infection related mortality during this admission	67	44 (65.7)
Non infection related mortality during this admission	67	23 (34.3)
Unavailable	509	22 (4.3)
*Total numbers excluding those that died after this admission where the date of death was not available (not including 3 patients that met this criteria but length of stay >30 days).		

Table 5: Summary table: demographics, social circumstances, comorbidities, and DNAR decisions

Variables	Suspected sepsis (n=509)	Sepsis-3 defined sepsis (n =251)
Number of patients, n(%)	509 (100)	251 (49.3)
Age (years), median (IQR)	74 (58.0-82.0)	77 (65.0-85.0)
Female gender, n(%)	246 (48.3)	100 (39.8)
NEWS, median (IQR)		
Missing values considered as 0 points	6 (3-8)	7 (5-9)
First available values used	6 (3-8)	7 (5-10)
Place of residence, n(%)		
Home - independent	217 (42.6)	86 (34.3)
Home with a care package	83 (16.3)	42 (16.7)
Home with support from relatives	76 (14.9)	46 (18.3)
Home with district nurse support	9 (1.8)	6 (2.4)
Home with support from relatives and district nurse	2 (0.4)	0 (0.0)
Sheltered/Supported accommodation	5 (1.0)	1 (0.4)
Sheltered/Supported accommodation with a care package +/- district nurse support	5 (1.0)	4 (1.6)
Intermediate care/Active recovery	3 (0.6)	1 (0.4)
Rehabilitation centre (Substance misuse)	2 (0.4)	0 (0.0)
Care home resident	98 (19.3)	63 (25.1)
No fixed abode	3 (0.6)	1 (0.4)
Not documented	6 (1.2)	1 (0.4)
Mobility, n(%)		
Independent	211 (41.5)	86 (34.3)
Needs walking aid	181 (35.6)	92 (36.7)
Wheelchair	22 (4.3)	11 (4.4)
Needs walking aid or wheelchair	4 (0.8)	3 (1.2)
Bedbound	36 (7.1)	23 (9.2)
Bed or wheelchair bound	2 (0.4)	1 (0.4)
Hoist transfers [^]	16 (3.1)	9 (3.6)
Other*	20 (3.9)	15 (6.0)
Not documented	17 (3.3)	11 (4.4)
No co-morbidities**, n(%)	55 (10.8)	15 (6.0)
CCI score, median (IQR)	5 (2-6)	5 (3-7)
DNAR in place on presentation, n(%)		
Yes	113 (22.2)	69 (27.5)
No	318 (62.5)	153 (61.0)
Not documented	78 (15.3)	29 (11.6)
Abbreviations:		
NEWS, national early warning score, CCI, Charlson Co-morbidity Index, DNAR, Do not attempt resuscitation.		
[^] No other information available, so recorded as separate category.		
*Included comments that were difficult to classify: "poor mobility", "housebound", "dependent"		
** 0 CCI score		

Table 6: Baseline characteristics for Sepsis-3 cohort		
Variables	N	Sepsis-3 defined sepsis
Number of patients, n(%)	509	251 (49.3)
Age (years), median (IQR)	251	77.0 (65.0-85.0)
Female gender, n(%)	251	100 (39.8)
Method of arrival, n(%)		
Ambulance	251	227 (90.4)
General practitioner referral	251	9 (3.6)
Self-presented	251	12 (4.8)
Community team referral	251	2 (0.8)
Outpatient clinic referral	251	1 (0.4)
Police transport	251	0 (0.0)
Location within the ED, n(%)		
Resuscitation room	251	149 (59.4)
Majors	251	54 (21.5)
Minors	251	0 (0.0)
Majors transferred to resuscitation room	251	10 (4.0)
Resuscitation room transferred to majors	251	1 (0.4)
Not documented	251	37 (14.7)
Initial Emergency Department observations, mean \pm SD or median (IQR)		
RR (breaths per minute) (first available RR used)*	250 (251)	24.1 \pm 6.3 (24.1 \pm 6.3)
HR (beats per minute)	251	104.7 \pm 25.4
Systolic BP (mmHg) (first available sBP used)*	248 (251)	121.4 \pm 32.1 (121.3 \pm 32.0)
Diastolic BP (mmHg) (first available dBP used)*	248 (251)	66.9 \pm 17.0 (67 \pm 17.1)
Mean Arterial Pressure (mmHg) (first available BP used)*	248 (251)	85.1 \pm 20.8 (85.1 \pm 20.8)
Saturations (%) (first available saturation used)*	243 (251)	94.7 \pm 4.2 (94.9 \pm 4.2)
FiO₂ (first available FiO ₂ used)*	248 (250)	0.28 (0.21-0.50) (0.28 (0.21-0.50))
Temperature (°C) (first available temperature used)*	247 (250)	37.6 \pm 1.3 (37.6 \pm 1.3)
GCS (first available GCS used)*	239 (251)	14(13-15) (14(13-15))
qSOFA\geq2, n(%)		
Missing values considered as 0 points	251	104(41.4)
First available values used	251	109(43.4)
NEWS, median (IQR)		
Missing values considered as 0 points	251	7(5-9)
First available values used	251	7(5-10)
Change in SOFA score, median (IQR)	251	3 (2-4)
Abbreviations: RR, respiratory rate, BP, blood pressure, FiO ₂ , fraction of inspired oxygen, GCS, Glasgow comma scale, qSOFA, quick sequential organ failure assessment, NEWS, national early warning score, SOFA, Sequential (sepsis-related) Organ Failure Assessment. *if the first value was missing, the next recorded value was used.		

Table 7: Comorbidities, CCI and medication for Sepsis-3 defined cohort	
Variables	Sepsis-3 defined sepsis (n = 251)
Co-morbidity, n(%)	
No co-morbidities*	15 (6.0)
Pulmonary disease	68 (27.1)
- COPD	53 (21.1)
Hypertension	71 (28.3)
Diabetes Mellitus	74 (29.5)
- End-organ damage	7 (2.8)
Ischaemic heart disease	56 (22.3)
Chronic kidney disease	60 (23.9)
- CCI criteria mod-severe CKD	12 (4.8)
Solid tumour (all)	49 (19.5)
- Metastatic	16 (6.4)
CVA or TIA	44 (17.5)
Atrial fibrillation	46 (18.3)
Dementia	47 (18.7)
Congestive heart failure	33 (13.1)
Connective tissue disease	9 (3.6)
Peripheral vascular disease	16 (6.4)
Haematological malignancy	8 (3.2)
Liver disease (all)	9 (3.6)
- Moderate-severe	6 (2.4)
Peptic ulcer disease	6 (2.4)
CCI score, median (IQR)	5 (3-7)
Immunosuppressant medication, n(%)	
LT steroids	20 (8.0)
Chemotherapy	8 (3.2)
Other (DMARDs, antiproliferative medication, calcineurin inhibitors)	8 (3.2)
None	211 (84.1)
Not documented	7 (2.8)
Abbreviations: COPD, chronic obstructive pulmonary disease, CKD, chronic kidney disease, CCI, Charlson Co-morbidity Index, CVA, cerebrovascular accident, TIA, transient ischaemic attack, LT, long term, DMARDs, disease modifying antirheumatic drugs.	
*0 CCI score	

Table 8: DNAR and escalation for Sepsis-3 defined sepsis cohort

Variables	Sepsis-3 defined sepsis (n = 251)
DNAR in place on presentation, n(%)	
Yes	69 (27.5)
No	153 (61.0)
Not documented	29 (11.6)
DNAR discussed in the ED, n(%)	
Yes, and implemented	12 (4.8)
Yes, and already in place	8 (3.2)
Yes, and not implemented	1 (0.4)
Considered by ED clinician	2 (0.8)
Yes, by the medical/ICU team	9 (3.6)
No documented discussion or form	219 (87.3)
Escalation of care (Explicit), n(%)	
Ward level care decision by ED team	17 (6.8)
Ward level care decision by medical team	2 (0.8)
Full escalation	35 (13.9)
For early medical review	0 (0.0)
Under palliative care team	5 (2.0)
Not documented	190 (75.7)
ICU decisions, n(%)	
Considered ICU, but decision for ward level care by team	13 (5.2)
Decision for ICU referral if not improving	2 (0.8)
Discussed with ICU:	
- Admitted under medical team	1 (0.4)
- For treatment/medical review initially	2 (0.8)
Referred to ICU	26 (10.4)
Seen by ICU team, and decision for level 0 care	7 (2.8)
Seen by ICU team, and decision for level 1 care	0 (0.0)
Seen by ICU team, and decision for level 2 care	9 (3.6)
Seen by ICU team, and decision for level 3 care	8 (3.2)
Referred to ICU by medical team	2 (0.8)
Not needed	170 (67.7)
Not documented	37 (14.7)
Abbreviations:	
ED, Emergency Department, ICU, Intensive care unit.	