

A scenic aerial view of Monaco, showing the old town on a cliff overlooking the sea, modern buildings in the foreground, and a harbor filled with yachts.

Emc² 

Les nouveaux critères de sepsis de l'enfant

Dr Laurent Duplic,
Réanimation
Pédiatrie
Paris

**11 | 12
SEPTEMBRE
2025**

**NOVOTEL
MONTE-CARLO
MONACO**

Pourquoi?

TEMPS

Hôte

Mécanisme

Pathogène

S





Mortality related to invasive infections, sepsis, and septic shock in critically ill children in Australia and New Zealand, 2002–13: a multicentre retrospective cohort study

Luregn J Schlapbach*, Lahn Straney*, Janet Alexander, Graeme MacLaren, Marino Festa, Andreas Schibler, Anthony Slater, for the ANZICS Paediatric Study Group†

	2002–07			2008–13			Risk		
	Deaths	Patients	Mortality (% , 95% CI)	Deaths	Patients	Mortality (% , 95% CI)	Absolute risk reduction (%)	Relative risk reduction (%)	Adjusted OR
No invasive infection	1036	37 698	2.75% (2.59–2.92)	1092	47 855	2.28% (2.15–2.42)	0.47 (0.25–0.68)	16.97 (9.97–23.96)	0.87 (0.79–0.97)
Invasive infection	132	2717	4.86% (4.08–5.74)	129	3971	3.22% (2.70–3.82)	1.63 (0.66–2.61)	33.65 (17.48–49.82)	0.72 (0.56–0.94)
Sepsis	89	1304	6.83% (5.52–8.33)	70	1543	4.54% (3.55–5.70)	2.29 (0.57–4.01)	33.53 (12.75–54.31)	0.66 (0.47–0.93)
Septic shock	172	894	19.24% (16.70–21.98)	174	1145	15.20% (13.16–17.41)	4.04 (0.73–7.36)	21.01 (5.70–36.33)	0.79 (0.61–1.01)
Sepsis and septic shock	261	2198	11.87% (10.55–13.30)	244	2688	9.08% (8.02–10.23)	2.80 (1.06–4.53)	23.56 (10.86–36.25)	0.77 (0.63–0.94)

OR=odds ratio.

Table 3: Mortality and risk for invasive infections, sepsis, and septic shock for 2002–07 versus 2008–13

SAVING LIVES

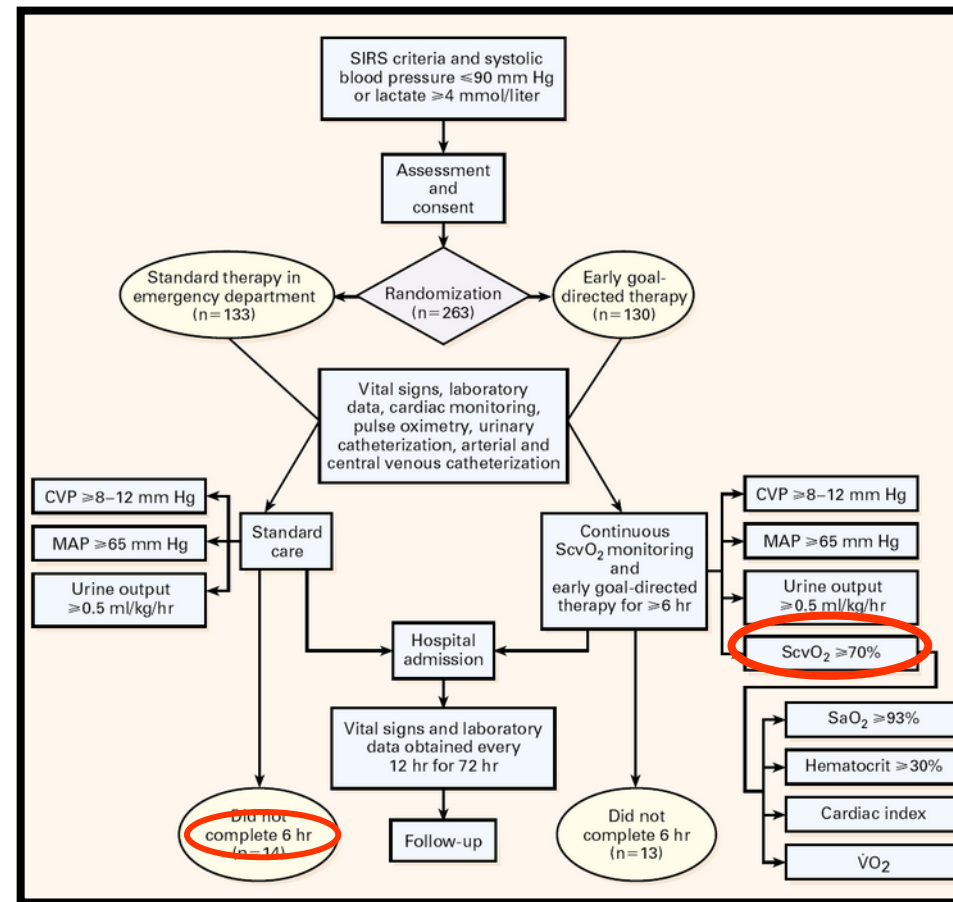
Treating Sepsis in the Golden Hour

Lancet
2015

EARLY GOAL-DIRECTED THERAPY IN THE TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

EMANUEL RIVERS, M.D., M.P.H., BRYANT NGUYEN, M.D., SUZANNE HAVSTAD, M.A., JULIE RESSLER, B.S.,
ALEXANDRIA MUZZIN, B.S., BERNHARD KNOBLICH, M.D., EDWARD PETERSON, Ph.D., AND MICHAEL TOMLANOVICH, M.D.,
FOR THE EARLY GOAL-DIRECTED THERAPY COLLABORATIVE GROUP*

- 263 patients
- Monocentrique
- Protocolisé
- Temps
- ScVO₂



New Eng. J. Med. 2001

Timeline of the SSC Guidelines

First edition in 2004

Previous Revisions in 2008 and 2012

Current revision started in 2014-2021

Jointly sponsored by ESICM and SCCM



CONFERENCE REPORTS AND EXPERT PANEL



Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016

Andrew Rhodes^{1*}, Laura E. Evans², Waleed Alhazzani³, Mitchell M. Levy⁴, Massimo Antonelli⁵, Ricard Ferrer⁶, Anand Kumar⁷, Jonathan E. Sevransky⁸, Charles L. Sprung⁹, Mark E. Nunnally^{2,4}, Bram Rochwerf³, Gordon D. Rubenfeld¹⁰, Derek C. Angus¹¹, Djillali Annane¹², Richard J. Beale¹³, Geoffrey J. Bellinghan¹⁴, Gordon R. Bernard¹⁵, Jean-Daniel Chiche¹⁶, Craig Coopersmith⁸, Daniel P. De Backer¹⁷, Craig J. French¹⁸, Seitaro Fujishima¹⁹, Herwig Gerlach²⁰, Jorge Luis Hidalgo²¹, Steven M. Hollenberg²², Alan E. Jones²³, Dilip R. Karnad²⁴, Ruth M. Kleinpell²⁵, Younsuk Koh²⁶, Thiago Costa Lisboa²⁷, Flavia R. Machado²⁸, John J. Marini²⁹, John C. Marshall³⁰, John E. Mazuski³¹, Lauralyn A. McIntyre³², Anthony S. McLean³³, Sangeeta Mehta³⁴, Rui P. Moreno³⁵, John Myburgh³⁶, Paolo Navalesi³⁷, Osamu Nishida³⁸, Tiffany M. Osborn³¹, Anders Perner³⁹, Colleen M. Plunkett²⁵, Marco Ranieri⁴⁰, Christa A. Schorr²², Maureen A. Seckel⁴¹, Christopher W. Seymour⁴², Lisa Shieh⁴³, Khalid A. Shukri⁴⁴, Steven Q. Simpson⁴⁵, Mervyn Singer⁴⁶, B. Taylor Thompson⁴⁷, Sean R. Townsend⁴⁸, Thomas Van der Poll⁴⁹, Jean-Louis Vincent⁵⁰, W. Joost Wiersinga⁴⁹, Janice L. Zimmerman⁵¹ and R. Phillip Dellinger²²

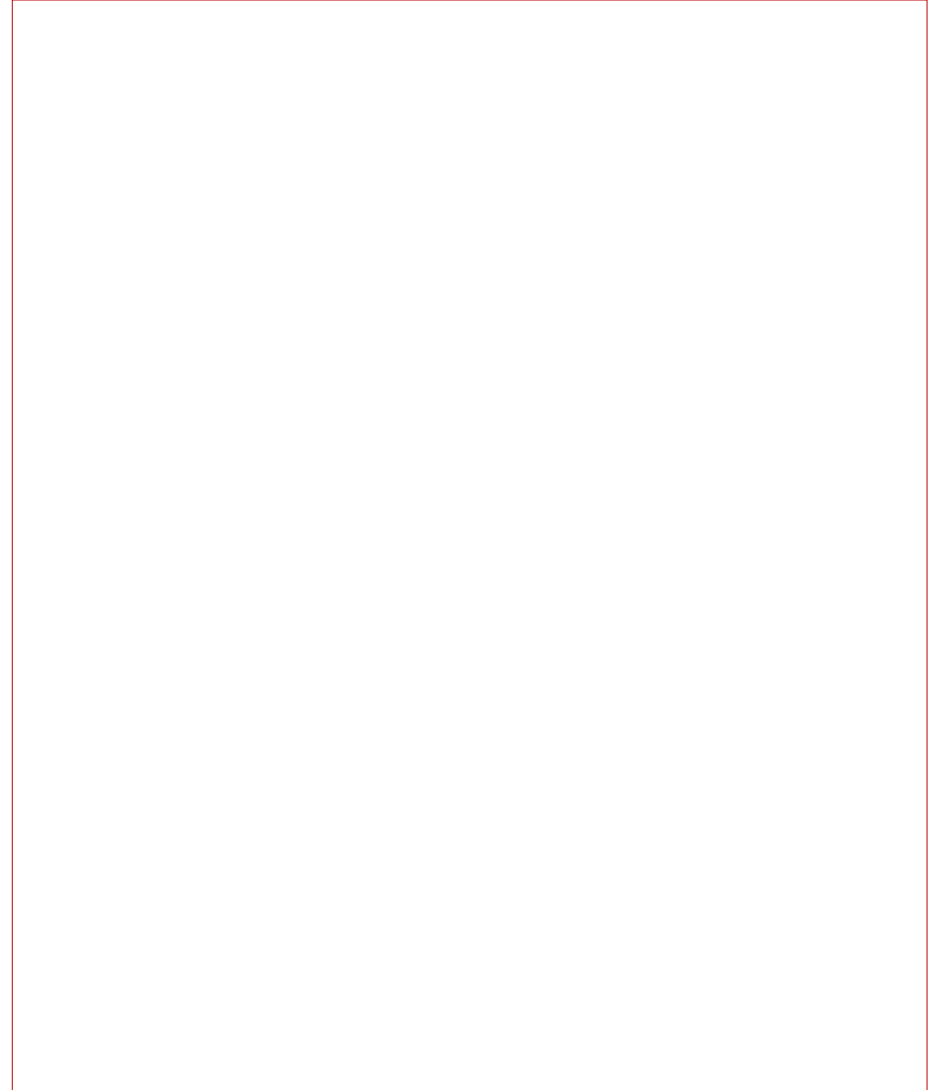
Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2021

Evans, Laura¹; Rhodes, Andrew²; Alhazzani, Waleed³; Antonelli, Massimo⁴; Coopersmith, Craig M.⁵; French, Craig⁶; Machado, Flávia R.⁷; McIntyre, Lauralyn⁸; Ostermann, Marlies⁹; Prescott, Hallie C.¹⁰; Schorr, Christa¹¹; Simpson, Steven¹²; Wiersinga, W. Joost¹³; Alshamsi, Fayez¹⁴; Angus, Derek C.¹⁵; Arabi, Yaseen¹⁶; Azevedo, Luciano¹⁷; Beale, Richard¹⁸; Beilman, Gregory¹⁹; Belley-Cote, Emilie²⁰; Burry, Lisa²¹; Cecconi, Maurizio²²; Centofanti, John²³; Coz Yataco, Angel²⁴; De Waele, Jan²⁵; Dellinger, R. Phillip²⁶; Doi, Kent²⁷; Du, Bin²⁸; Estenssoro, Elisa²⁹; Ferrer, Ricard³⁰; Gomersall, Charles³¹; Hodgson, Carol³²; Hylander Møller, Morten³³; Iwashyna, Theodore³⁴; Jacob, Shevin³⁵; Kleinpell, Ruth³⁶; Klompas, Michael³⁷; Koh, Younsuck³⁸; Kumar, Anand³⁹; Kwizera, Arthur⁴⁰; Lobo, Suzana⁴¹; Masur, Henry⁴²; McGloughlin, Steven⁴³; Mehta, Sangeeta⁴⁴; Mehta, Yatin⁴⁵; Mer, Mervyn⁴⁶; Nunnally, Mark⁴⁷; Oczkowski, Simon⁴⁸; Osborn, Tiffany⁴⁹; Papathanassoglou, Elizabeth⁵⁰; Perner, Anders⁵¹; Puskarich, Michael⁵²; Roberts, Jason⁵³; Schweickert, William⁵⁴; Seckel, Maureen⁵⁵; Sevransky, Jonathan⁵⁶; Sprung, Charles L.⁵⁷; Welte, Tobias⁵⁸; Zimmerman, Janice⁵⁹; Levy, Mitchell⁶⁰

[Author Information](#) 😊

Critical Care Medicine 49(11):p e1063-e1143, November 2021. | DOI: 10.1097/CCM.0000000000005337

SSC



Sepsis-3 Definitions

Sepsis: Life-threatening organ dysfunction caused by dysregulated host response to infection

Septic Shock: Subset of sepsis with circulatory and cellular/metabolic dysfunction associated with higher risk of mortality

JAMA. 2016;315(8):801-810.

ONLINE SPECIAL ARTICLE

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Goldstein 2005



Goldstein 2005



Can the Pediatric Logistic Organ Dysfunction-2 Score on Day 1 Be Used in Clinical Criteria for Sepsis in Children?*

Francis Leclerc, MD, PhD^{1,2}; Alain Duhamel, PhD^{2,3}; Valérie Deken^{2,3};
Bruno Grandbastien, MD, PhD^{2,4}; Stéphane Leteurtre, MD, PhD^{1,2}; on behalf of
the Groupe Francophone de Réanimation et Urgences Pédiatriques (GFRUP)

- qPELOD
- Fc
 - Glasgow
 - Hypotensi

TABLE 4. Mortality Rate According to Quick Pediatric Logistic Organ Dysfunction-2 on Day 1

Score Value	Patients (n)	Death (%)
qPELOD-2 systolic blood pressure (score)		
0	330	0.9
1	374	4.5
2	131	19.8
3	27	51.8
qPELOD-2 mean blood pressure (score)		
0	249	0.8
1	400	3.25
2	182	15.9
3	31	51.6

qPELOD-2 = quick Pediatric Logistic Organ Dysfunction-2.

Criteria				
Altered Mentation	Hypotension			Tachycardia
		Systolic Blood Pressure* (mm Hg)	Mean Blood Pressure* (mm Hg)	
Glasgow Coma Score < 11	< 1 mo	< 65	< 46	< 12 years > 195
	1–11 mo	< 75	< 55	≥ 12 years > 150
	12–23 mo	< 85	< 60	
	24–59 mo	< 85	< 62	
	60–143 mo	< 85	< 65	
	≥ 144 mo	< 95	< 67	

Score

Absent: 0/present: 1

Absent: 0/present: 1

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*Adapted from Leteurtre et al (12). Adaptations are themselves works protected by copyright. So in order to publish this adaptation, authorization must be obtained both from the owner of the copyright in the original work and from the owner of copyright in the translation or adaptation.

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PCCM

2017
Duplic JPP 2019



Prediction of pediatric sepsis mortality within 1 h of intensive care admission

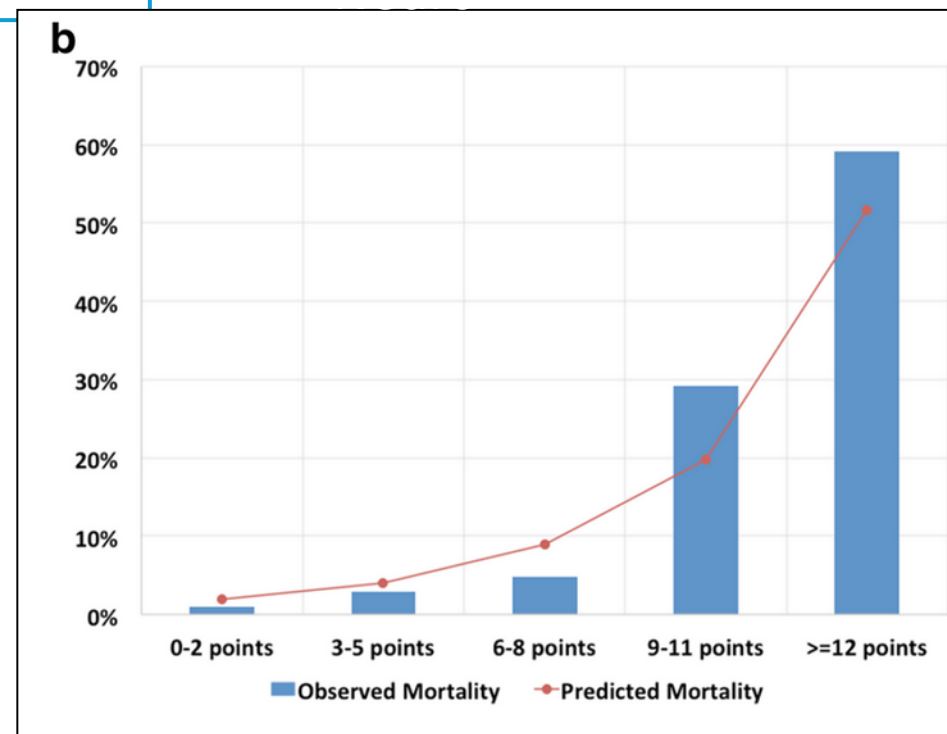
Luregn J. Schlapbach^{1,2,3*}, Graeme MacLaren^{4,5}, Marino Festa⁶, Janet Alexander^{7,8}, Simon Erickson⁹, John Beca¹⁰, Anthony Slater², Andreas Schibler^{1,2}, David Pilcher^{7,11,12}, Johnny Millar⁵, Lahn Straney¹³ and On behalf of the Australian & New Zealand Intensive Care Society (ANZICS) Centre for Outcomes & Resource Evaluation (CORE) and Australian & New Zealand Intensive Care Society (ANZICS) Paediatric Study Group

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PSC

- Resp
- Hypotensi
on
- Lactate >

Definition		Points by severity level			
		0	3	5	10
Respiratory	PaO ₂ /FiO ₂ ratio	≥ 300	100 to <300	<100	
	Ventilation during the first hour	No	Yes		
Circulatory	Systolic BP <5th percentile				
	<12 months		<65		
	>1 to <2 years		<67 (M), <68 (F)		
	>2 to <3 years		<70 (M), <71 (F)		
	>3 to <4 years		<73 (M), <71 (F)		
	>4 to <5 years		<75 (M), <74 (F)		
	>5 to <6 years		<78 (M), <76 (F)		
	>6 to <7 years		<78 (M), <78 (F)		
	>7 to <8 years		<79 (M), <78 (F)		
	>8 to <9 years		<82 (M), <81 (F)		
	>9 to <10 years		<82 (M), <83 (F)		
	>10 to <11 years		<85 (M), <85 (F)		
	>11 to <12 years		<87 (M), <85 (F)		
	>12 to <13 years		<89 (M), <87 (F)		
	>13 to <14 years		<90 (M), <90 (F)		
	>14 to <15 years		<94 (M), <92 (F)		
	>15 to <16 years		<95 (M), <93 (F)		
	Cardiac arrest pre admission	No		Yes	
Metabolic	Lactate (mmol/l)	<3.0	3.0 to <6.0	6.0 to <10.0	≥ 10.0
Neurologic	Pupils	Both reactive		Both dilated, unresponsive	



Applying Sepsis-3 Criteria for Septic Shock to Children—Not As Shocking As at First Sight?*

PCCM 2019

- SEPSIS 3
- Hypotension
- Lactate > 4 mmol/l

Comparison of International Pediatric Sepsis Consensus Conference Versus Sepsis-3 Definitions for Children Presenting With Septic Shock to a Tertiary Care Center in India: A Retrospective Study*

Sankar PCCM
2019

Comparison of International Pediatric Sepsis Consensus Conference Versus Sepsis-3 Definitions for Children Presenting With Septic Shock to a Tertiary Care Center in India: A Retrospective Study*

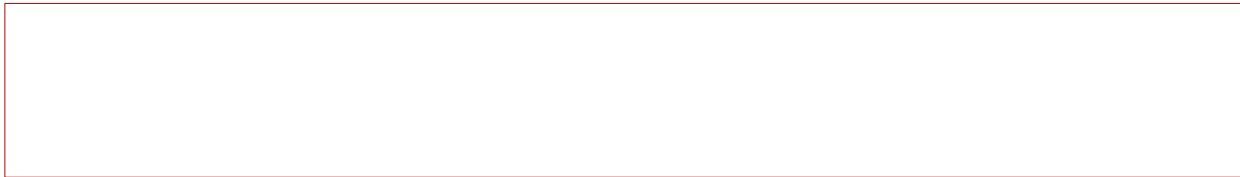
Variables	Sepsis 3 and IPSCC Group (<i>n</i> = 104)	IPSCC Only Group (<i>n</i> = 112)	Relative Risk (95% CI)	<i>p</i>
Primary outcome, <i>n</i> (%)				
In-hospital mortality	50 (48.5)	42 (37.5)	1.3 (0.94–1.75)	0.10
Secondary outcomes				
Proportion achieving therapeutic end points in first 6 hr, <i>n</i> (%)	26 (25.3)	46 (41)	0.60 (0.4–0.9)	0.006
Proportion achieving therapeutic end points in first 24 hr, <i>n</i> (%)	63 (61)	92 (82.1)	0.73 (0.62–0.88)	0.0004
Time to achieving therapeutic end points of shock, hr, median (IQR)	5.5 (5–23)	5 (3.5–22)	–	< 0.0001
Number of boluses in 1st hour, median (IQR)	1 (1–2)	1 (1–2)	–	0.47
Number of boluses in 24 hr, median (IQR)	1 (1–2)	2 (1–2)	–	0.35
Vasoactive-Inotrope Score, median (IQR)	30 (20–41)	20 (10–36)	–	0.005
Organ system failure				
Proportion with Multiple Organ Dysfunction Syndrome in first 24 hr, <i>n</i> (%)	88 (85)	76 (68)	1.24 (1.07–1.45)	0.0008
Number of organ system involved at 6 hr, median (IQR)	2 (2–3)	2 (1–3)	–	0.01
Number of organ system involved at 24 hr, median (IQR)	2 (2–3)	2 (1–3)	–	0.005
Number of organ system involved at 48 hr, median (IQR)	2 (1.5–3)	2 (1–3)	–	0.017
pSOFA score at 24 hr, median (IQR)	9 (6–11)	6 (4–8)	–	0.0008
pSOFA score at 48 hr, median (IQR)	8 (4–12)	5 (2–7)	–	0.0003
PELOD score at 24 hr, median (IQR)	12 (2–22)	11 (1–21)	–	0.04

Sankar PCCM

2019

Dupic JPP 2019

EVOLUTION



HIGH and LOW
INCOME

SCORE >
2
7%
28,5%

Cliquez pour ajouter un titre

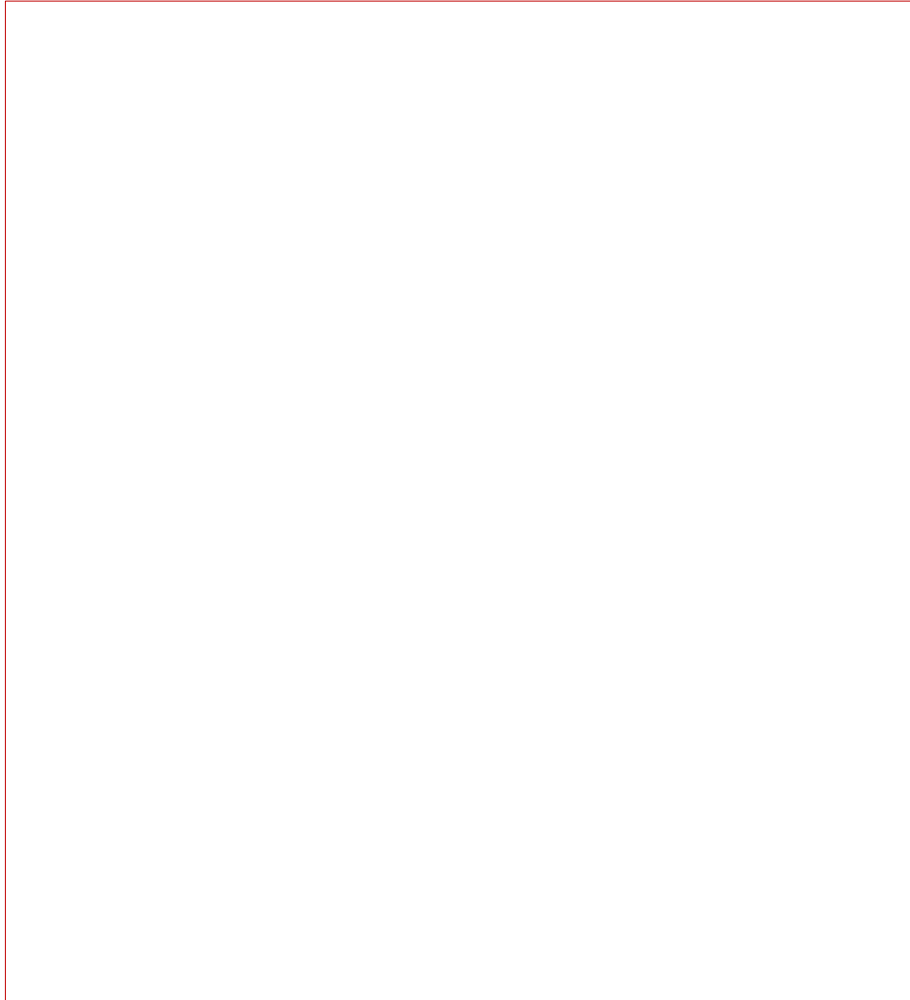
SEPSIS >
2
LACTATE

AVP
U

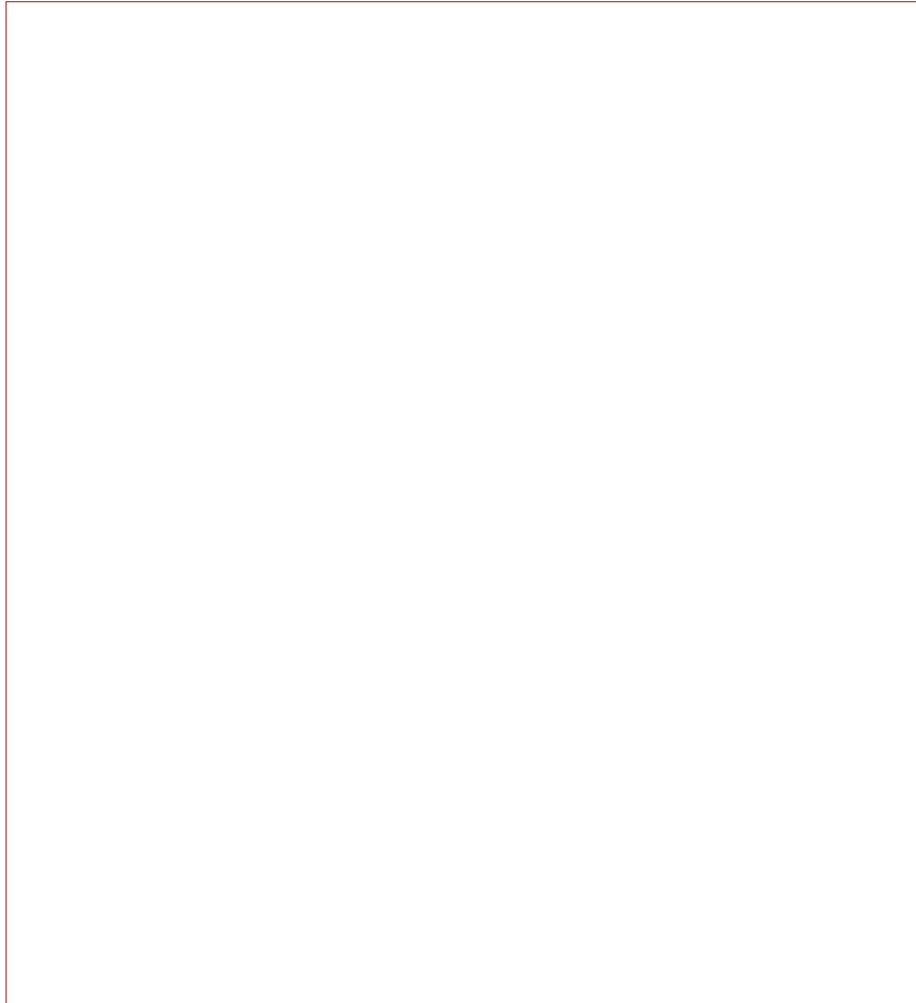
Cliquez pour ajouter un titre

SEPSIS > 2
CHOC SEPTIQUE
sepsis avec 1 atteinte
CCV
PAM
LACTATE

RECOMMENDATION HAS 2025



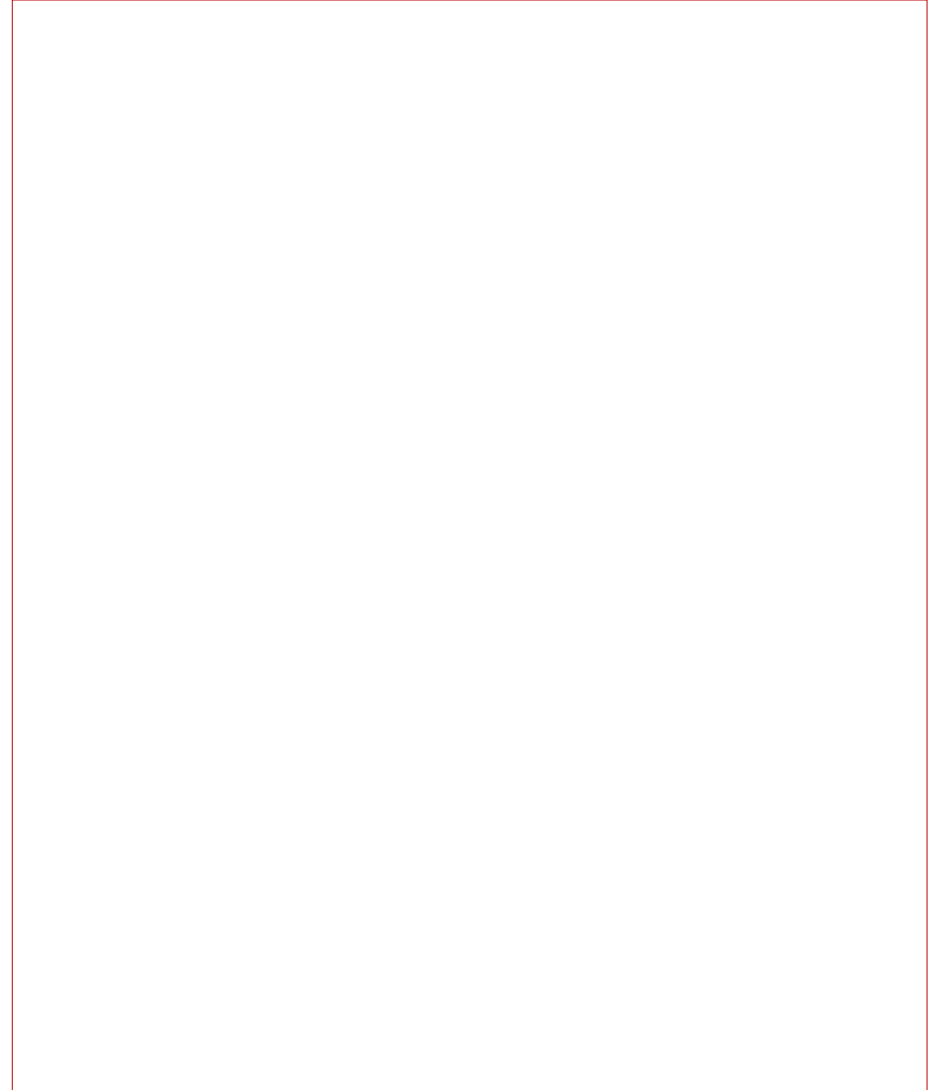
HAS



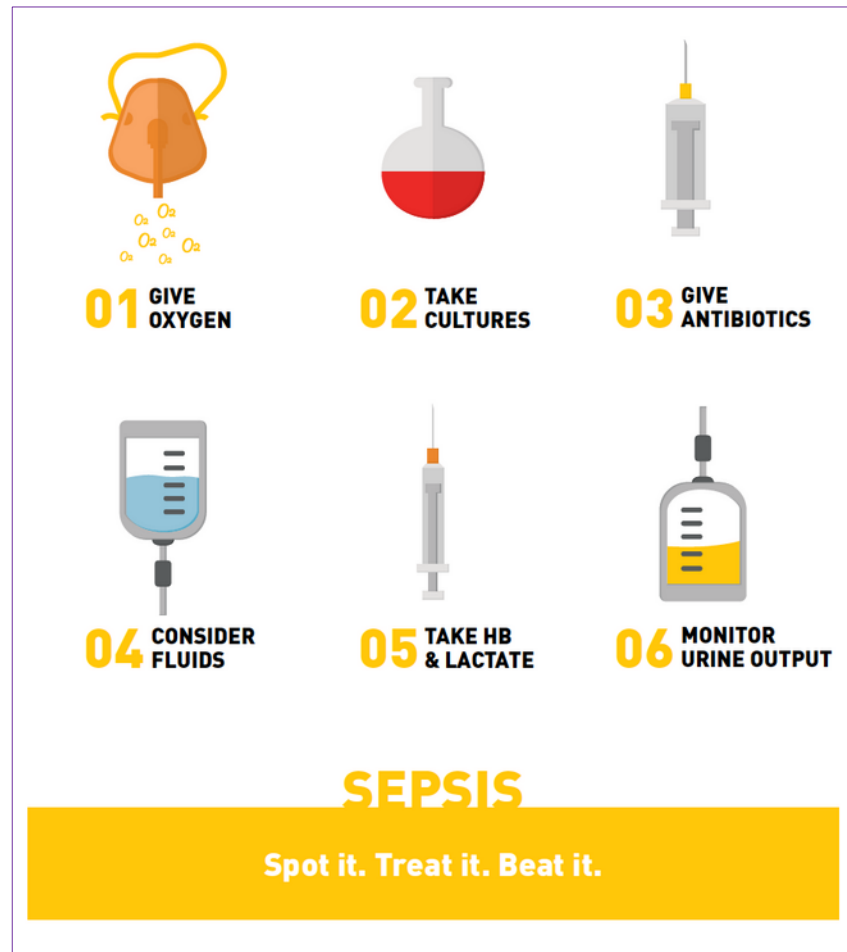
Cliquez pour ajouter un titre

CONCLUSION

SSC



UK SEPSIS TRUST



PPSS
SPO2
PAM
Plaquette I
DD

AVPU
0-5 mn

Pose IO
Pose VVP

15-20 mn



< 60 mn



GOLDEN HOUR

Reconnaître cliniquement état de choc septique compensé/
décompensé

Fc +4P

(décompensée si confusion , hypotension artérielle, anurie)

effectuer Ouverture des voies aérienne, **oxygénothérapie** un
accès veineux périphérique ou intra-osseux

1 à 2 Remplissages vasculaires de 10 cc/kg

**Administration d'une
antibiothérapie probabiliste
en fonction du foyer, du terrain
(communautaire nosocomiale) +/-
bilan**

Noradrénaline / Adrénaline

Monitoring non invasif

Pas de réponse / incomplète
aux 2 remplissages

LACTATE >5

AGE	PAM (mmHg)
NN	55
Nourrisson	58
Enfant	65

Objectifs

TRC < 2 sec , FC nle
Pouls normaux
PA normale
Débit urinaire >
1ml/kg/h
Normalisation RVS
Clairance des
lactates

PPSS
Lactate
D Dimère
Fibrinogèn
e
Plaquette

MERCI de votre attention

