

Table 1 Sepsis Criteria Comparison 1992-2016

	Sepsis 1 (1992)			Sepsis 2 (2001)			SSC: International Guidelines for Severe Sepsis & Septic Shock (2012)			CMS Sep-1 Measure Definitions (2015)			Sepsis 3 (2016)					
	Sepsis	Severe Sepsis	Septic Shock	Sepsis	Severe Sepsis	Septic Shock	Sepsis	Severe Sepsis	Septic Shock	Sepsis	Severe Sepsis	Septic Shock	Sepsis	Severe Sepsis	Septic Shock			
Definitions	SIRS due to infection (infection + 2 or more SIRS criteria)	Sepsis associated with organ dysfunction, hypoperfusion, or hypotension	Sepsis-induced, with hypotension despite adequate fluid resuscitation or vasopressors and perfusion abnormalities	SIRS due to infection with more signs and symptoms	Sepsis associated with organ dysfunction, hypoperfusion, or hypotension with more signs and symptoms and detailed parameters (can use Marshall et al. definitions or SOFA criteria to define organ dysfunction)	Sepsis-induced, with hypotension despite adequate fluid resuscitation and perfusion abnormalities	Infection documented with some (≥ 2) of the following (see below):	Sepsis-induced tissue hypoperfusion or organ dysfunction (any of the following thought to be due to the infection)	Severe sepsis plus hypotension not reversed with fluid resuscitation	SIRS due to infection	Infection or suspected infection with two or more SIRS criteria plus one sign of organ dysfunction	Hypotension despite adequate fluid resuscitation or hyperlactatemia	Life-threatening organ dysfunction caused by a dysregulated host response to infection (infection + 2 or more SOFA or qSOFA criteria)			High mortality risk due to profound abnormalities in circulatory and cellular/metabolic function		
Indicators	SIRS (≥ 2 criteria)			SIRS (≥ 2 criteria)	Multiple Organ Dysfunction Score (Marshall et al. 1995 definitions)	SOFA (score ≥ 2)				SIRS (≥ 2 criteria)			qSOFA (score ≥ 2)	SOFA (score ≥ 2)				
Temperature	< 96.80° F OR > 101.40° F			< 96.80° F OR > 101.40° F						< 96.80° F OR > 101.40° F								
Cardiac	> 90 beats per min.			> 90 beats per min.						> 90 beats per min. or > 2 SD above normal value for age								
Respiratory	> 20 breaths per min. OR partial pressure of CO2 < 32 mmHg			> 20 breaths per min. OR partial pressure of CO2 < 32 mmHg; PaO2/FiO2 (mmHg) < 300	Arterial hypoxemia: PaO2/FiO2 (mmHg) < 300	0: PaO2/FiO2 (mmHg) ≥ 400 1: PaO2/FiO2 (mmHg) < 400 2: PaO2/FiO2 (mmHg) ≥ 300 3: PaO2/FiO2 (mmHg) ≥ 200 4: PaO2/FiO2 (mmHg) ≥ 100	Tachypnea; Arterial hypoxemia: PaO2/FiO2 (mmHg) < 300	Acute lung injury with PaO2/FiO2 (mmHg) < 250 in absence of pneumonia as infection source; Acute lung injury with PaO2/FiO2 (mmHg) < 200 in presence of pneumonia as infection source;		> 20 breaths per min. OR partial pressure of CO2 < 32 mmHg	Acute respiratory failure by need for new invasive or noninvasive ventilation		≥ 22 breaths per min.	0: PaO2/FiO2 (mmHg) ≥ 400 1: PaO2/FiO2 (mmHg) < 400 2: PaO2/FiO2 (mmHg) ≥ 300 3: PaO2/FiO2 (mmHg) ≥ 200 4: PaO2/FiO2 (mmHg) ≥ 100				
Inflammatory variables	4,000 > WBC > 12,000 OR > 10% bands			4,000 > WBC > 12,000 OR > 10% bands; Plasma C-reactive protein > 2 SD above normal; Plasma procalcitonin > 2 SD above normal						4,000 > WBC > 12,000 OR > 10% bands						Lactate > 2 mmol/L		
Blood Pressure / Vasopressors		Systolic BP < 90 mm Hg or a reduction of ≥ 40 mm Hg from baseline in the absence of other causes for hypotension.	Hypotension despite adequate fluid resuscitation with presence of perfusion abnormalities (lactic acidosis, oliguria, or an acute alteration in mental status). Patients receiving inotropic or vasopressor agents may not be hypotensive at the time perfusion abnormalities are measured		Systolic BP ≤ 90 mm Hg; MAP < 70 mm Hg or < 2 SD below normal; Mixed venous oxygen saturation > 70%; cardiac index > 3.5 L/min/m2	0: MAP ≥ 70 mmHg 1: MAP < 70 mmHg 2: Dopamine < 5 or dobutamine (any) 3: Dopamine 5.1 - 15 or dobutamine (any) 4: Dopamine > 15 or norepinephrine > 0.1	Systolic BP ≤ 90 mm Hg; MAP < 70 mm Hg or < 2 SD below normal; Mixed venous oxygen saturation > 70%; cardiac index > 3.5 L/min/m2	Arterial hypotension (SBP < 90 mmHg, MAP < 70 mmHg, or an SBP decrease > 40 mmHg in adults or < 2 SD below normal for age)	Systolic BP < 90 mmHg or mean arterial pressure (MAP) < 70 mmHg or a SBP decrease > 40 mmHg or less than two standard deviations below normal for age in the absence of other causes of hypotension,				Systolic blood pressure < 90 mm Hg or MAP < 65 mm Hg or decreased in SBP more than 40 mm Hg from previously recorded patient normal.	Either 1) SBP < 90 mm Hg, 2) a mean arterial pressure < 65 mm HG, or 3) a reduction in SBP by more than 40 mm Hg from a previously recorded measurement (e.g., in a clinic visit). These criteria are valid only after the patient has received a 30 mL/kg crystalloid fluid bolus or with the initial lactate level greater than or equal to 4 mmol/L	Systolic BP ≤ 100 mmHg	0: MAP ≥ 70 mmHg 1: MAP < 70 mmHg 2: Dopamine < 5 or dobutamine (any) 3: Dopamine 5.1 - 15 or dobutamine (any) 4: Dopamine > 15 or norepinephrine > 0.1	Vasopressor for MAP ≥ 65 mmHg and lactate > 2mmol/L after fluid resuscitation	
Tissue Perfusion			Lactate > 3 mmol / L; decreased capillary refill; mottling	*Significant edema or positive fluid balance (20 ml/kg over 24 hr						Hyperlactatemia (> 1 mmol/L); Significant edema or positive fluid balance (20 ml/kg over 24 hr; decreased capillary refill or mottling	Lactate above upper limits of laboratory normal			Lactate > 2 mmol/L	Lactate > 4 mmol/L			
Mental Status				*Altered mental status	Altered mental status (encephalopathy); Glasgow Coma Score < 15	0: Glasgow Coma Score 15 1: Glasgow Coma Score 13 - 14 2: Glasgow Coma Score 10 - 12 3: Glasgow Coma Score 6 - 9 4: Glasgow Coma Score < 6				Altered mental status					Altered mental status (GCS < 15)	0: Glasgow Coma Score 15 1: Glasgow Coma Score 13 - 14 2: Glasgow Coma Score 10 - 12 3: Glasgow Coma Score 6 - 9 4: Glasgow Coma Score < 6		
Coagulation				*INR > 1.5; aPTT > 60 sec; Platelets < 100,000 microL	INR > 1.5; aPTT > 60 sec; Platelets < 100,000 microL	0: Platelets (10 ⁹ /mm ³) ≥ 150 1: Platelets (10 ⁹ /mm ³) < 150 2: Platelets (10 ⁹ /mm ³) < 100 3: Platelets (10 ⁹ /mm ³) < 50 4: Platelets (10 ⁹ /mm ³) < 20				INR > 1.5; aPTT > 60 sec; Thrombocytopenia (platelets < 100,000 microL)	INR > 1.5; Thrombocytopenia (platelets < 100,000 microL)			INR > 1.5; aPTT > 60 sec; Platelets < 100,000 microL;		0: Platelets (10 ⁹ /mm ³) ≥ 150 1: Platelets (10 ⁹ /mm ³) < 150 2: Platelets (10 ⁹ /mm ³) < 100 3: Platelets (10 ⁹ /mm ³) < 50 4: Platelets (10 ⁹ /mm ³) < 20		
Hepatic				*Plasma total bilirubin > 4 mg/dL or 70 umol/L	Plasma total bilirubin > 4 mg/dL or 70 umol/L	0: Bilirubin (mg/dL) < 1.2 1: Bilirubin (mg/dL) 1.2 - 1.9 2: Bilirubin (mg/dL) 2.0 - 5.9 3: Bilirubin (mg/dL) 6.0 - 11.9 4: Bilirubin (mg/dL) > 12.0				Plasma total bilirubin > 4 mg/dL or 70 umol/L	Plasma total bilirubin > 2 mg/dL or 34.2 umol/L			Plasma total bilirubin > 2 mg/dL		0: Bilirubin (mg/dL) < 1.2 1: Bilirubin (mg/dL) 1.2 - 1.9 2: Bilirubin (mg/dL) 2.0 - 5.9 3: Bilirubin (mg/dL) 6.0 - 11.9 4: Bilirubin (mg/dL) > 12.0		
Renal				*Urine output < 0.5 ml/kg/hr or 45 ml/hr for at least 2 hrs; Creatinine increase > 0.5 mg/dL	Urine output < 0.5 ml/kg/hr or 45 ml/hr for at least 2 hrs; Creatinine increase > 0.5 mg/dL	0: Creatinine (mg/dL) < 1.2 1: Creatinine (mg/dL) 1.2 - 1.9 2: Creatinine (mg/dL) 2.0 - 3.4 3: Creatinine (mg/dL) 3.5 - 4.9 4: Creatinine (mg/dL) > 5				Urine output < 0.5 ml/kg/hr or 45 ml/hr for at least 2 hrs despite adequate fluid resuscitation; Creatinine increase > 0.5 mg/dL	Urine output < 0.5 ml/kg/hr or 45 ml/hr for at least 2 hrs despite adequate fluid resuscitation; Creatinine > 2 mg/dL			Urine output < 0.5 ml/kg/hr x 2 hrs; Creatinine > 2mg/dL		0: Creatinine (mg/dL) < 1.2 1: Creatinine (mg/dL) 1.2 - 1.9 2: Creatinine (mg/dL) 2.0 - 3.4 3: Creatinine (mg/dL) 3.5 - 4.9 4: Creatinine (mg/dL) > 5		
Bowel					Ileus													
Pancreas				*Hyperglycemia (glucose > 110 mg/dL)						Hyperglycemia (glucose > 140 mg/dL or 7.7 mmol/L) in the absence of diabetes								
Concerns	SIRS criteria can be met for many conditions other than sepsis, which can lead to improper diagnosis or treatment.	Organ dysfunction criteria/ variables loosely defined.		No changes to traditional SIRS criteria, however, additional indicators (*) added to support diagnosis of sepsis, which are not included in traditional SIRS.	Multiple definitions of organ dysfunction accepted and criteria is not clear or consistent between SOFA, Multiple Organ Dysfunction Score, and Organ dysfunction variables listed in 2001 International Definitions. Confusing and complex criteria led to variation in practice and delayed acceptance and implementation.					Includes many other variables in addition to traditional SIRS	Multiple sepsis indicators are also organ dysfunction indicators			No change from traditional SIRS.	CMS definitions differ from Sepsis-2 and Sepsis 3 for severe sepsis organ dysfunction variables/criteria.	CMS definitions differ from Sepsis-2 and Sepsis 3 for septic shock criteria.	Sepsis diagnosed later & not until organ dysfunction exists, leading to delayed identification and care and increased mortality rates. Sepsis = old severe sepsis.	Severe sepsis abandoned
Sources:	https://journal.chestnet.org/action/showPdf?pii=S0012-3692%2816%2938415-X https://journal.chestnet.org/article/S0012-3692(16)38415-X/fulltext#intraref10 https://journal.chestnet.org/action/showPdf?pii=S0012-3692%2816%2938382-9			https://pubmed.ncbi.nlm.nih.gov/12682500/ https://journals.lww.com/cmjournal/Fulltext/2003/04000/2001_SCCM_ESICM_ACCP_ATS_SIS_International_Sepsis.38.aspx;file:///C:/Users/E067399/Downloads/2001_SCCM_ESICM_ACCP_ATS_SIS_International_Sepsis.38.pdf https://pubmed.ncbi.nlm.nih.gov/7587228/ ; https://www.dascena.com/articles/sirs-sofa-qsofa-and-mews-the-alphabet-soup			https://link.springer.com/article/10.1007/s00134-012-2769-8#Tab1			https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5576633/ ; https://www.sepsis-coordinator-network.org/wp-content/uploads/2018/05/Sepsis-Alliance-SEP-1-Core-Measure.pdf ; https://link.springer.com/article/10.1007/S00134-012-2769-8 https://qualitynet.cms.gov/files/5d0d3a18764be766b0103e9f?filename=HIQR_SpecMan_5_Ob_Oct2015_ZIP.zip https://qualitynet.cms.gov/files/61b0df4330ffbc00229c36ba?filename=2a-b_SEP-List_v5.12.pdf ; https://qualitynet.cms.gov/files/61b0e03a30ffbc00229c36c9?filename=Appendix_A1_v5.12.pdf ; https://qualitynet.cms.gov/files/61b0e0df37d7ec0022badeb1?filename=HIQR-ReleaseNotes_v5.12.pdf			https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4968574/ ; https://www.dascena.com/articles/sirs-sofa-qsofa-and-mews-the-alphabet-soup					

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