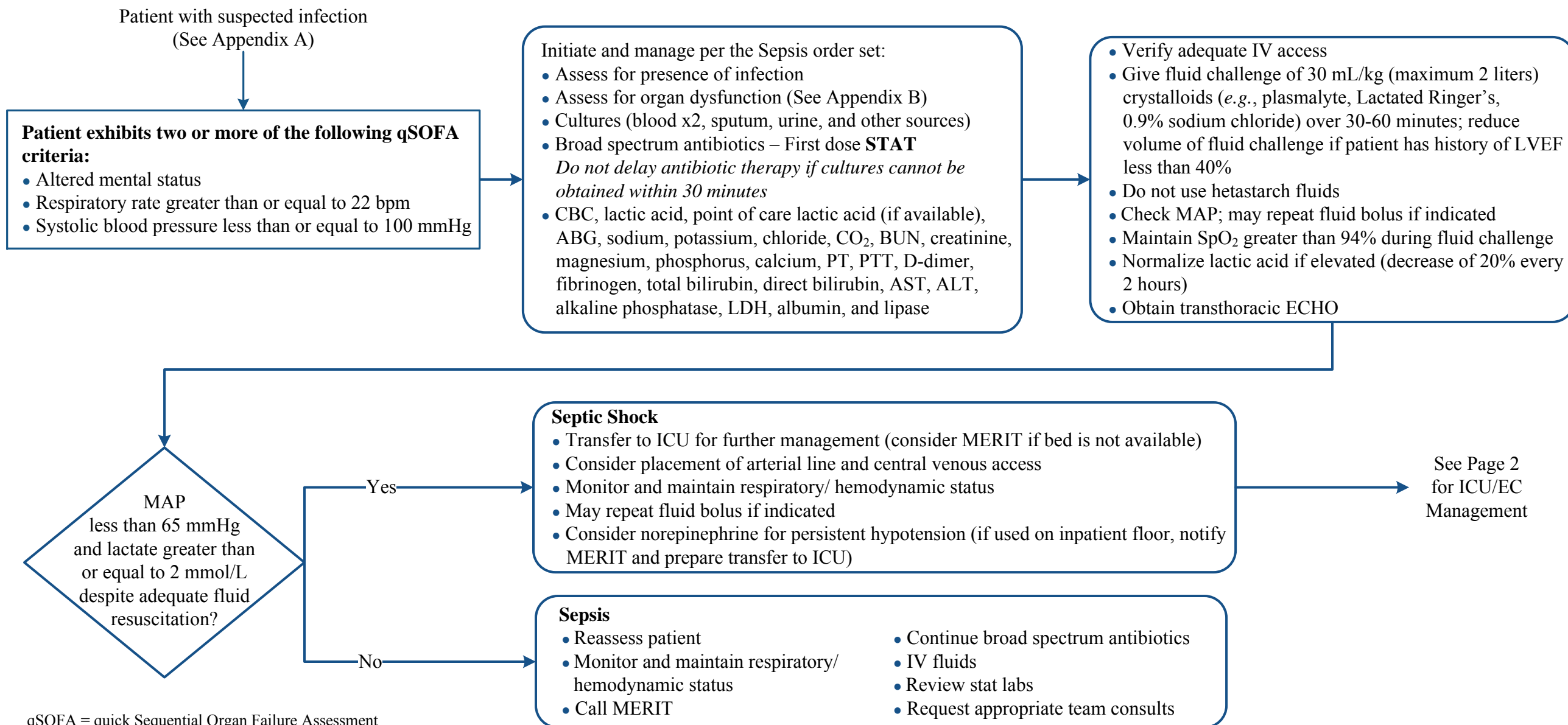


*This practice algorithm has been specifically developed for MD Anderson using a multidisciplinary approach and taking into consideration circumstances particular to MD Anderson, including the following: MD Anderson's specific patient population; MD Anderson's services and structure; and MD Anderson's clinical information. Moreover, this algorithm is not intended to replace the independent medical or professional judgment of physicians or other health care providers. This algorithm should not be used to treat pregnant women.*



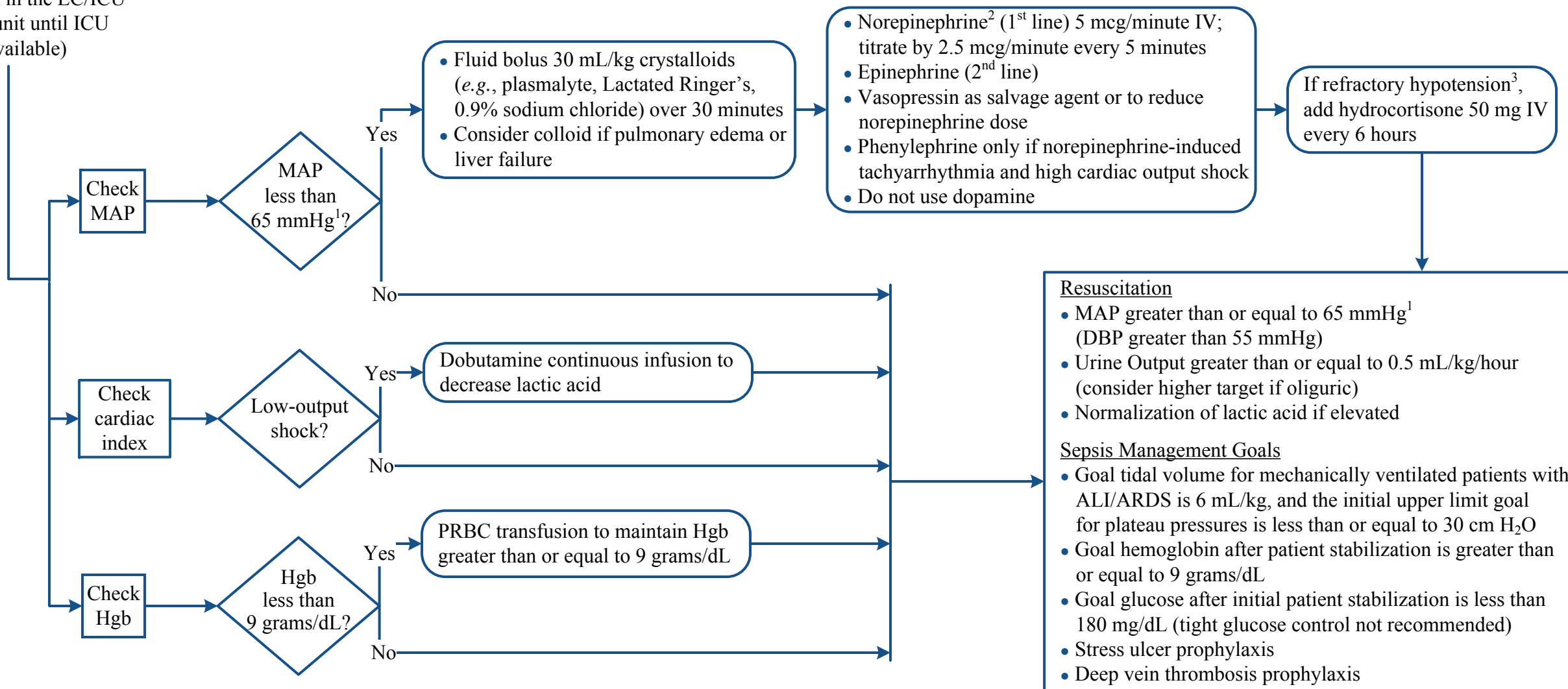
qSOFA = quick Sequential Organ Failure Assessment

LVEF = left ventricular ejection fraction

MAP = mean arterial pressure = 1/3 (SBP - DBP) + DBP

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Septic Shock in the EC/ICU  
 (inpatient unit until ICU  
 bed available)



<sup>1</sup>Consider higher target if patient has history of hypertension, diabetes mellitus, vasculopathy, increased abdominal pressure, ensuing renal failure, or pulmonary hypertension.

<sup>2</sup>If inpatient, may start norepinephrine as listed above while awaiting transfer to ICU (notify MERIT and prepare for immediate transfer to ICU)

<sup>3</sup>Refractory hypotension is hypotension despite adequate fluid resuscitation and vasopressors.

ALI = acute lung injury

ARDS = acute respiratory distress syndrome

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## APPENDIX A: Suspicion of Infection

- Fever
- Recent surgical procedure
- Immunocompromised
  - Chemotherapy
  - Steroids/immunosuppressed
  - Loss of skin integrity
  - HIV/suspected HIV
- Skin wound
- Invasive device
  - Central line
  - Foley catheter
- Infiltrate on chest x-ray
- Cough with sputum production
- Diarrhea with or without abdominal pain
- History of diabetes mellitus

## APPENDIX B: SOFA Score to Assess for Organ Dysfunction<sup>1</sup>

Variables	0	1	2	3	4
Respiratory PaO <sub>2</sub> /FiO <sub>2</sub> (mmHg)	Greater than 400	301 to 400	201 to 300	101 to 200	Less than or equal to 100
Coagulation Platelets (K/microliter)	Greater than 150	101 to 150	51 to 100	21 to 50	Less than or equal to 20
Liver Bilirubin (mg/dL)	Less than 1.2	1.2 to 1.9	2.0 to 5.9	6.0 to 11.9	Greater than 12.0
Cardiovascular Hypotension	No hypotension	MAP less than 70 mmHg	Dopamine less than or equal to 5 mcg/kg/minute or dobutamine (any dose)	Dopamine 5 to 14 mcg/kg/minute, or epinephrine or norepinephrine less than or equal to 0.1 mcg/kg/minute	Dopamine greater than 15 mcg/kg/minute, or epinephrine or norepinephrine greater than 0.1 mcg/kg/minute
Central nervous system Glasgow Coma Scale	15	13 to 14	10 to 12	6 to 9	Less than 6
Renal Creatinine (mg/dL) or Urine Output (mL/day)	Less than 1.2 -	1.2 to 1.9 -	2 to 3.4 -	3.5 to 4.9 or less than 500 mL/day	Greater than 5.0 or less than 200 mL/day

<sup>1</sup>Increase in SOFA score by 2 or more points from baseline is indicative of organ dysfunction.

PaO<sub>2</sub> = partial pressure of oxygen  
 FiO<sub>2</sub> = fraction of inspired oxygen

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## SUGGESTED READINGS

- Arise Investigators, & ANZICS Clinical Trials Group. (2014). Goal-directed resuscitation for patients with early septic shock. *N Engl J Med*, (371), 1496-1506.
- Badin, J., Boulain, T., Ehrmann, S., Skarzynski, M., Bretagnol, A., Buret, J., ... & Mathonnet, A. (2011). Relation between mean arterial pressure and renal function in the early phase of shock: a prospective, explorative cohort study. *Critical Care*, 15(3), 1.
- Cata, J. P. (2015). Perioperative anemia and blood transfusions in patients with cancer: when the problem, the solution, and their combination are each associated with poor outcomes. *The Journal of the American Society of Anesthesiologists*, 122(1), 3-4.
- Chawla, L. S., Abell, L., Mazhari, R., Egan, M., Kadambi, N., Burke, H. B., ... & Kimmel, P. L. (2005). Identifying critically ill patients at high risk for developing acute renal failure: a pilot study. *Kidney international*, 68(5), 2274-2280.
- Jones, A. E. (2013). Lactate clearance for assessing response to resuscitation in severe sepsis. *Academic emergency medicine*, 20(8), 844-847.
- Kumar, A., Roberts, D., Wood, K. E., Light, B., Parrillo, J. E., Sharma, S., ... & Gurka, D. (2006). Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. *Critical Care Medicine*, 34(6), 1589-1596.
- Leone, M., Asfar, P., Radermacher, P., Vincent, J. L., & Martin, C. (2015). Optimizing mean arterial pressure in septic shock: a critical reappraisal of the literature. *Critical Care*, 19(1), 1.
- Mouncey, P. R., Osborn, T. M., Power, G. S., Harrison, D. A., Sadique, M. Z., Grieve, R. D., ... & Coats, T. J. (2015). Trial of early, goal-directed resuscitation for septic shock. *N Engl J Med*, 372(14), 1301-1311.
- Naeije, R., & Manes, A. (2014). The right ventricle in pulmonary arterial hypertension. *European Respiratory Review*, 23(134), 476-487.
- ProCESS Investigators. (2014). A randomized trial of protocol-based care for early septic shock. *N Engl J Med*, (370), 1683-1693.
- Rhodes, A., Evans, L. E., Alhazzani, W., Levy, M. M., Antonelli, M., Ferrer, R., ... & Rochwerg, B. (2017). Surviving Sepsis Campaign: International guidelines for management of sepsis and septic shock: 2016. *Intensive Care Medicine*, 1-74.
- Singer, M., Deutschman, C. S., Seymour, C. W., Shankar-Hari, M., Annane, D., Bauer, M., ... & Hotchkiss, R. S. (2016). The third international consensus definitions for sepsis and septic shock (sepsis-3). *JAMA*, 315(8), 801-810.

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## DEVELOPMENT CREDITS

This practice consensus algorithm is based on majority expert opinion of the Sepsis Work Group at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

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