Risk stratification
Acute MI cardiogenic shock

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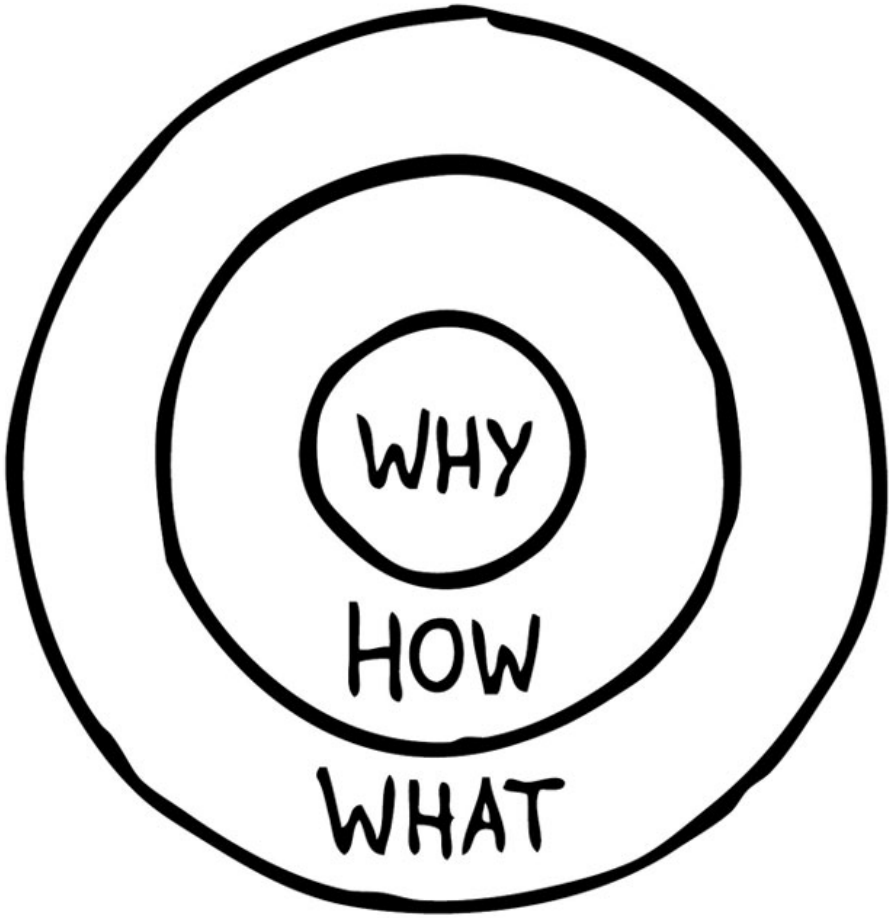
- No disclosures

The Golden Circle



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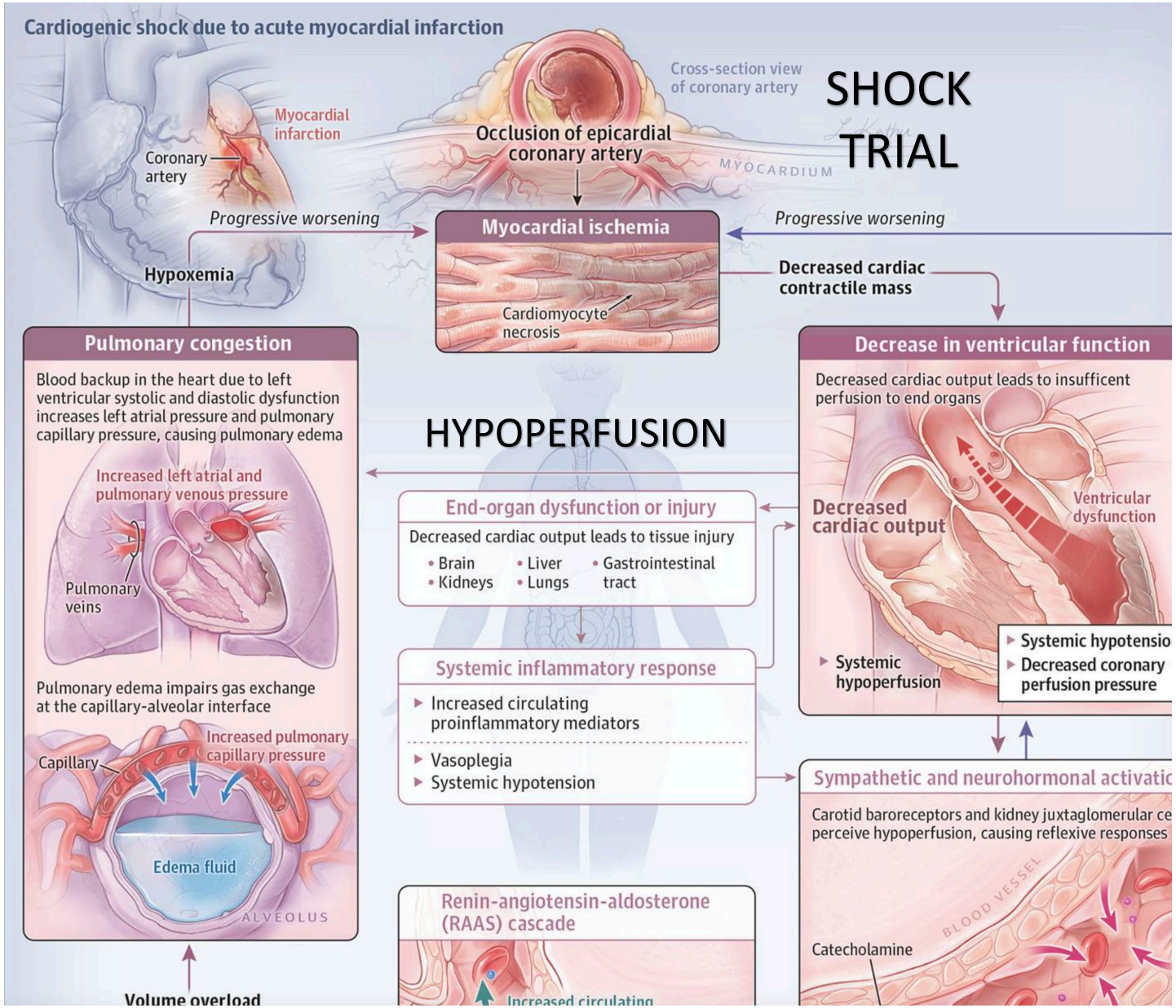
Start with ‘WHY’

- Pathophysiology of acute MI CS
- Hemodynamic shock → Hemo - metabolic Shock
- Spectrum of Cardiogenic Shock

Start with ‘WHY’

CONGESTION



SHOCK TRIAL

HYPOTENSION

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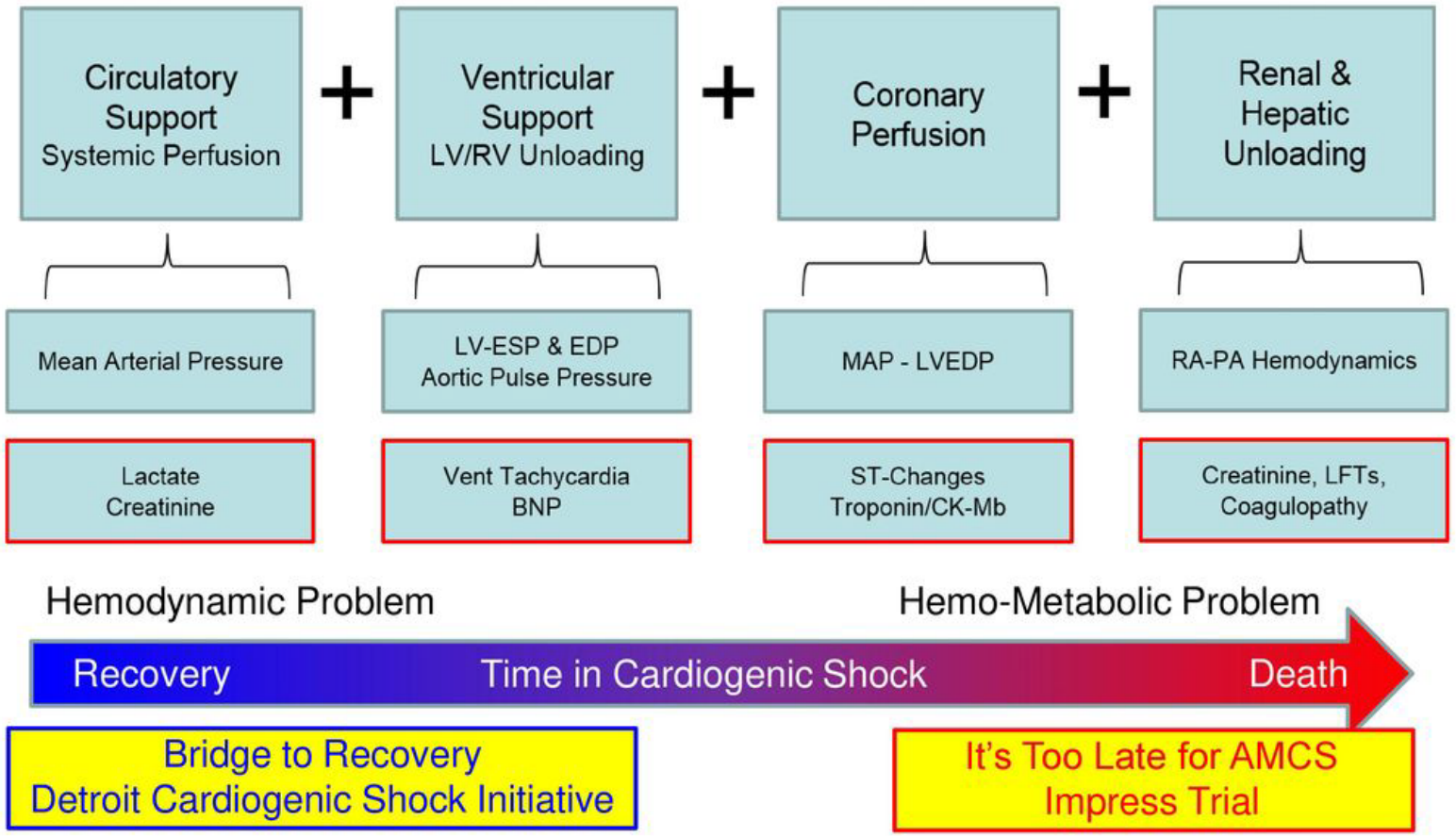
The Hemodynamic Support Equation for Acute MCS
From Arithmetic to Calculus



Kapur and Esposito Curr Cardio Risk 2016 & F1000 2017

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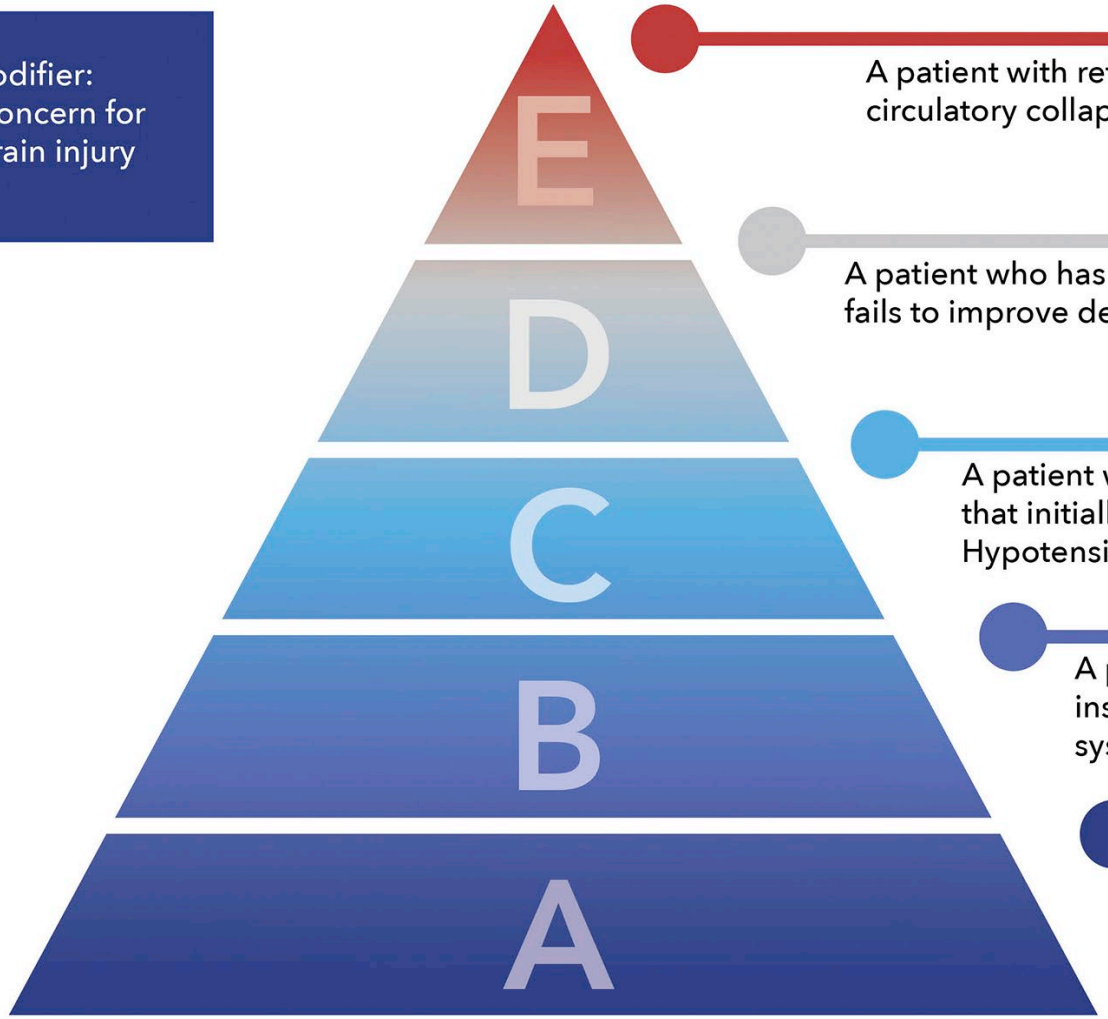
SCAI stages of CS

(A) Modifier:
CA with concern for anoxic brain injury



EXTREMIS

A patient with refractory shock or actual/impending circulatory collapse.

DETERIORATING

A patient who has clinical evidence of shock that worsens or fails to improve despite escalation of therapy.

CLASSIC

A patient who has clinical evidence of hypoperfusion that initially requires pharmacologic or mechanical support. Hypotension is usually present.

BEGINNING

A patient who has clinical evidence of hemodynamic instability (including hypotension, tachycardia or abnormal systemic hemodynamics) without hypoperfusion.

AT RISK

A hemodynamically stable patient who is NOT experiencing signs or symptoms of CS, but is at risk for its development (i.e. large AMI or decompensated HF).

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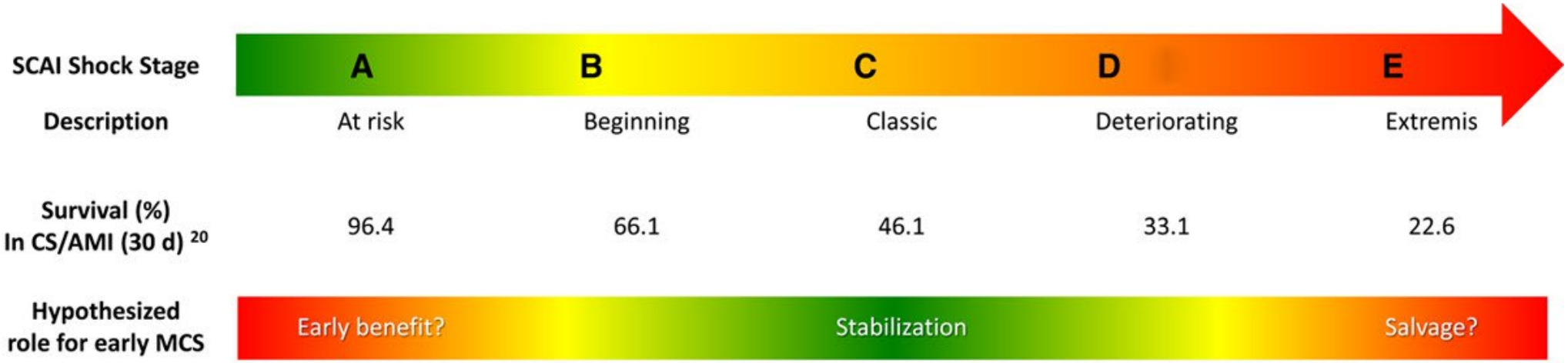
Mortality increases with SCAI staging



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Cardiogenic Shock Working Group (CSWG)

- A goal of the Cardiogenic Shock Working Group is to create a centralized registry, compiled of data from multiple institutions, to analyze clinical outcomes.

The Cardiogenic Shock Working Group

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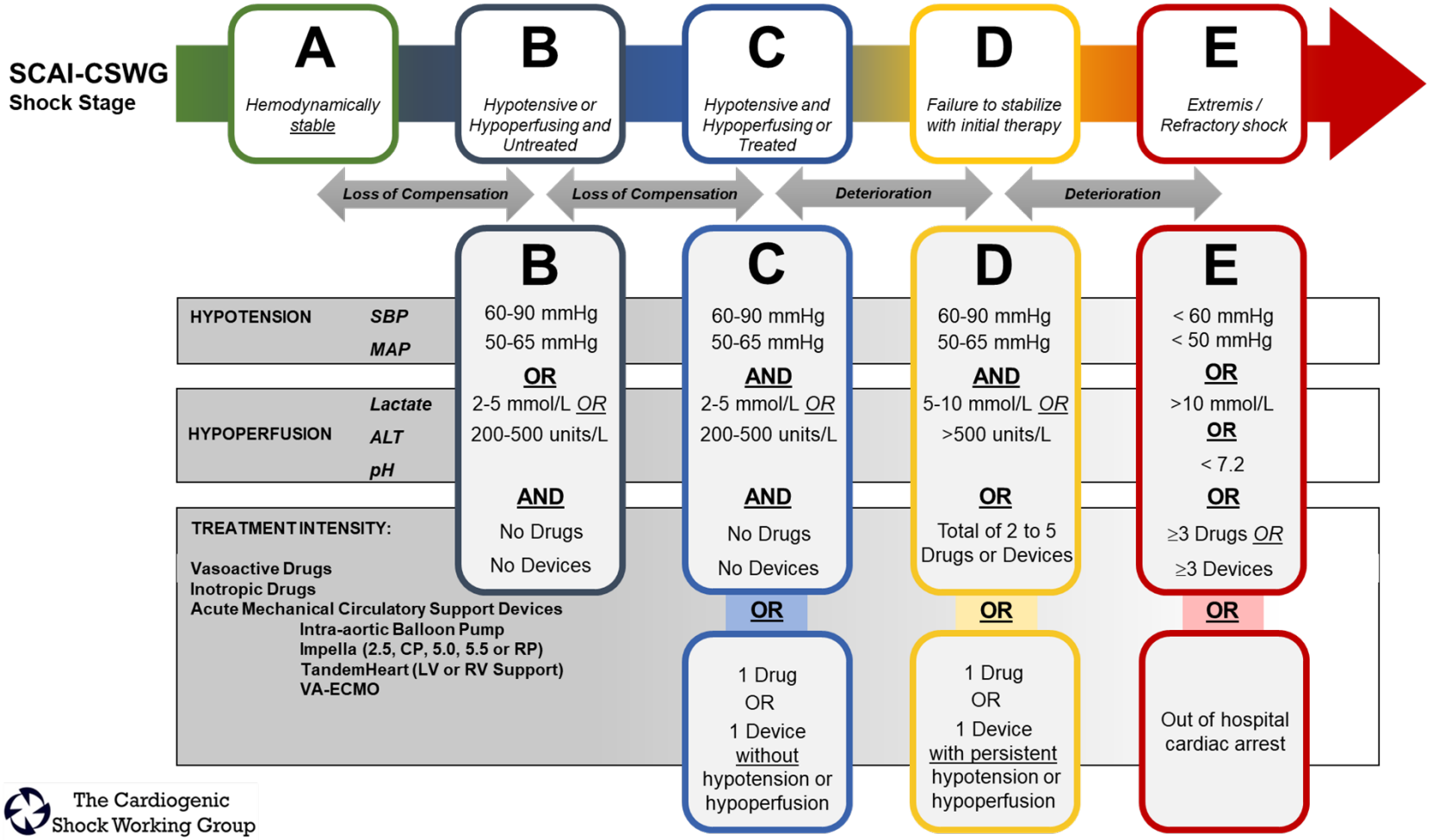
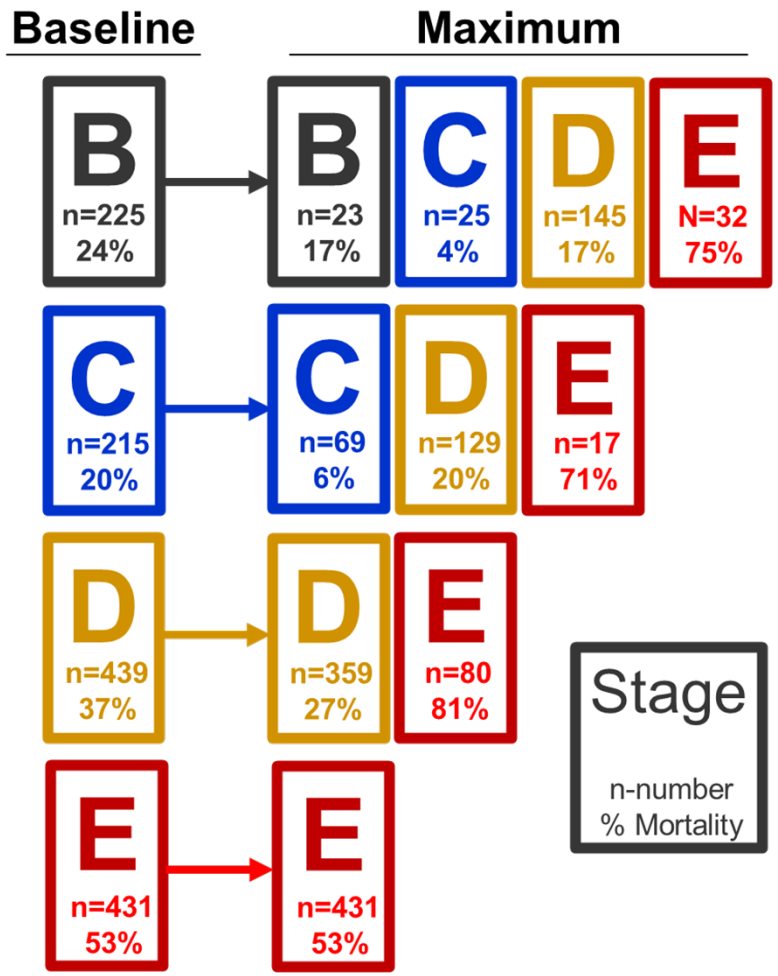
How to assess severity?





The Cardiogenic Shock Working Group

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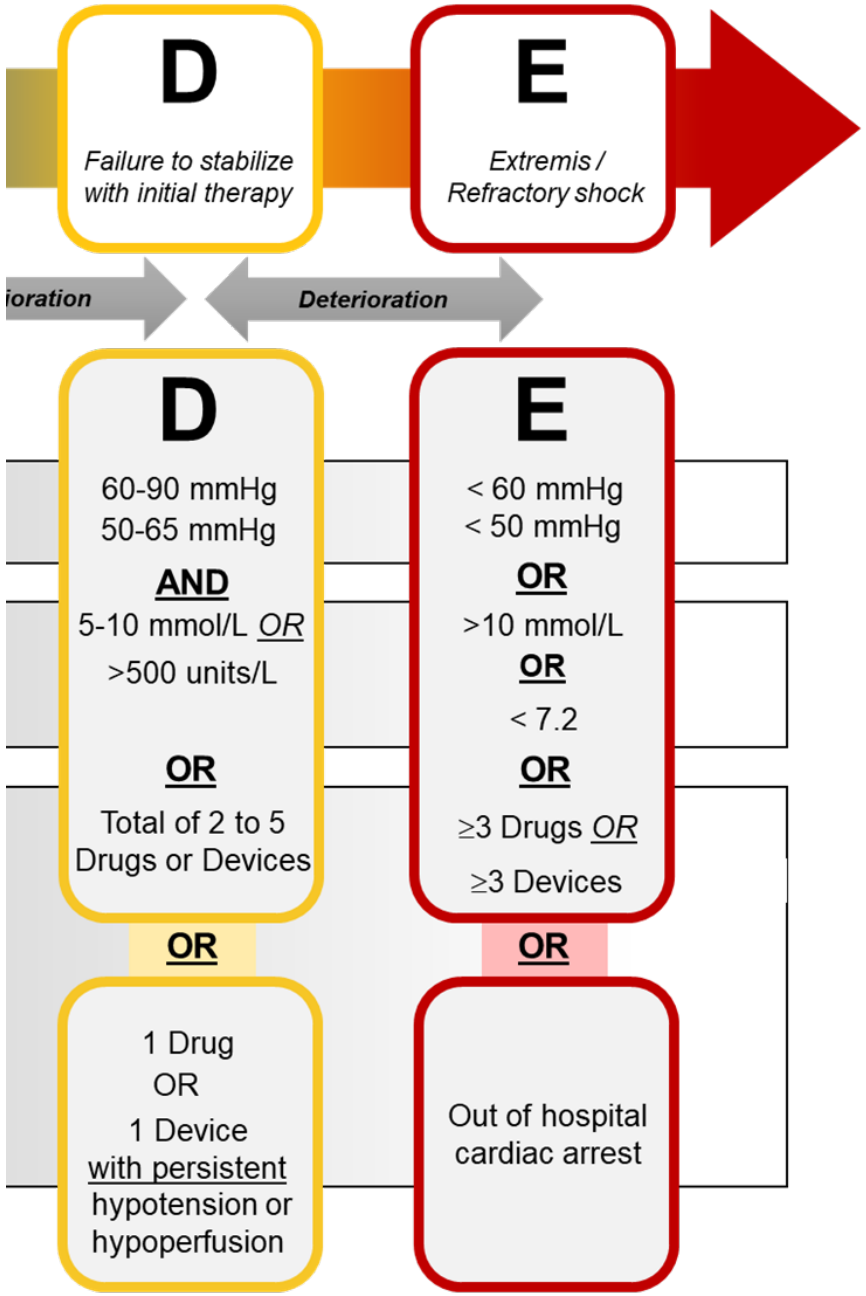
Kapur, Kanwar, Sinha et al, *Criteria for Defining Stages of Cardiogenic Shock Severity,* JACC 2022:185-198



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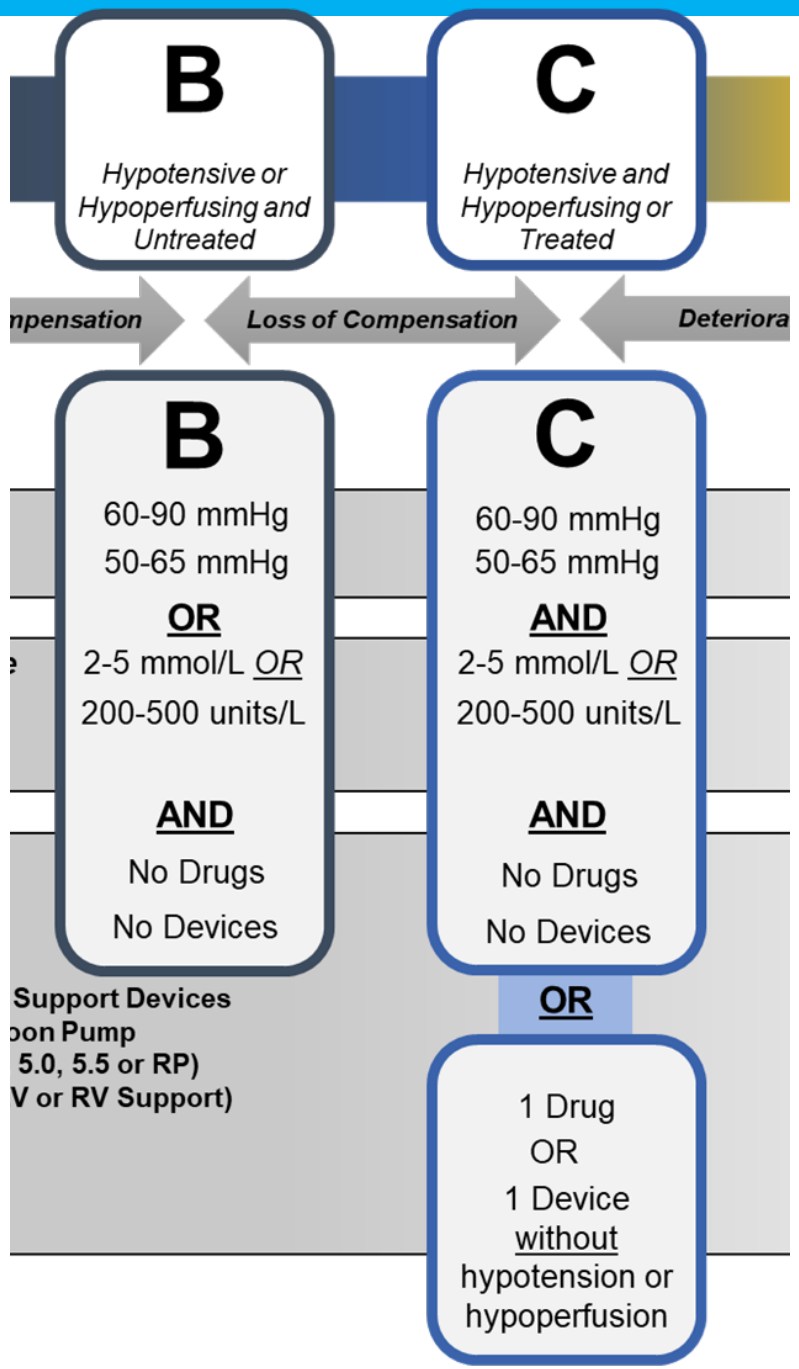

REPLY: "B" Is for Bad in SCAI Shock Staging

The Need for Early Diagnosis and Intervention

clinical deterioration. We agree that patients with SCAI B shock are a particularly vulnerable cohort that may be easily overlooked because of the lack of hypotension and as a result may not receive early intervention. This expanded definition for SCAI B is

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7:44

CSWG

The Cardiogenic Shock Working Group

Shock Stage Calculator

Hemodynamics Calculator

Congestion Profile Tracker

Shock Phenotype Calculator

Terms and Conditions

7:54

Blood pH

<7.2 | ≥7.2

Number of Vasopressors/Inotropes

0 | 1 | 2 | ≥3

Number of Mechanical Circulatory Devices

0 | 1 | 2 | ≥3

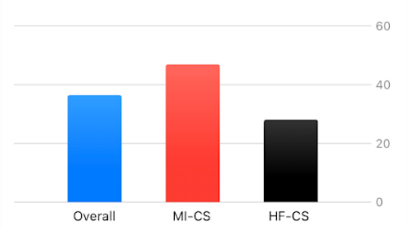
Is there persistent hypotension or hypoperfusion after therapy?

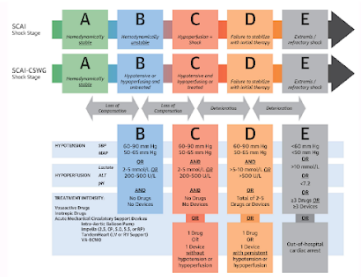
No | Yes

Out of Hospital Cardiac Arrest

No | Yes

The CSWG-SCAI shock stage is **D**
Predicted in-hospital mortality: **36.45%**
Predicted in-hospital mortality for MI-CS: **46.9%**
Predicted in-hospital mortality for HF-CS: **28.16%**
Predicted probability of stage escalation: **18%**





Kapur NK, Kanwar M, Sinha SS, et al. Criteria for Defining Stages of Cardiogenic Shock Severity. J Am Coll Cardiol. 2022;80(3):185-198 doi:10.1016/j.jacc.2022.04.049

John KJ, Stone SM, Zhang Y, et al. Application of Cardiogenic Shock Working Group-defined Society for Cardiovascular Angiography and Interventions (CSWG-SCAI) Staging of Cardiogenic Shock to the Medical Information Mart for Intensive Care IV (MIMIC-IV) database. Cardiovasc Revasc Med. 2023;S1553-8389(23)00666-8. doi:10.1016/j.carrev.2023.06.019

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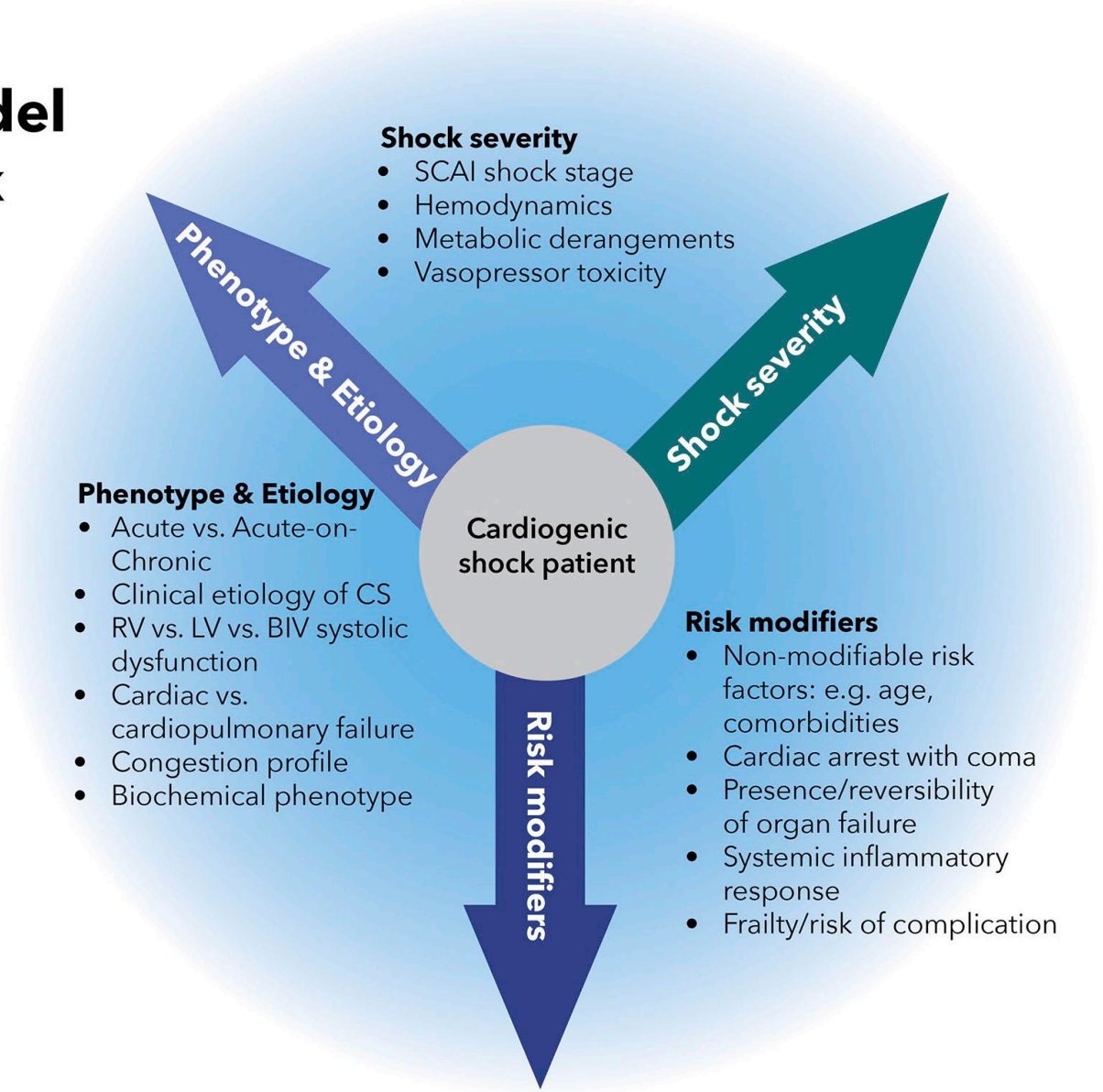
Factors to be considered when choosing tMCS

Proposed 3-axis model of cardiogenic shock evaluation and prognostication



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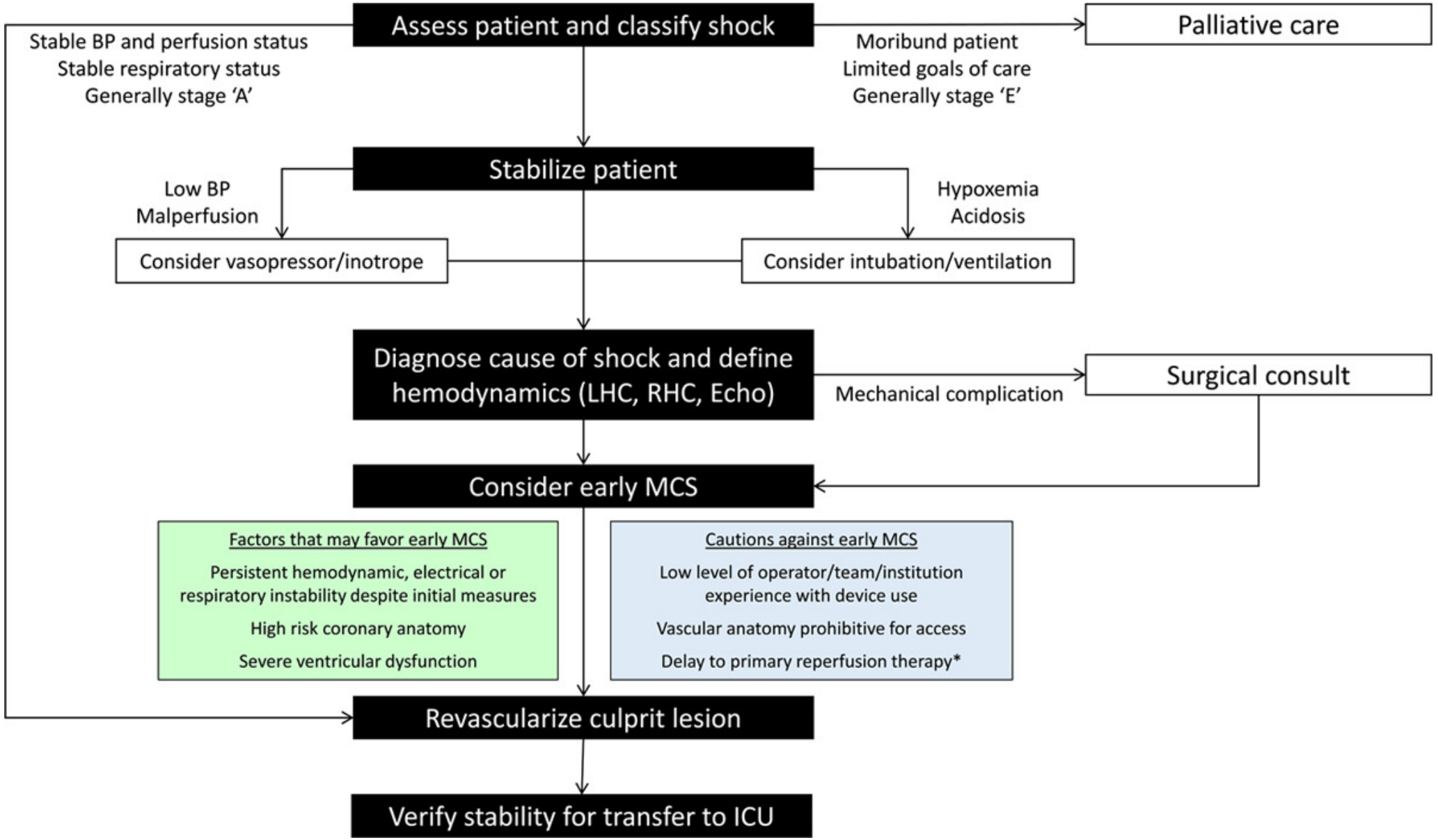
What to do in practice?



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Take home messages

- Cardiogenic Shock is a spectrum (Stage A → Stage E)
- Hemodynamic → Hemo metabolic → Death
- Vasopressors in CS can normalize BP  Normalize perfusion
- TTE/LHC/RHC – essential to phenotype CS
- Serum lactate, ABG, CMP – metabolic derangements
- Severity of CS – SCAI CSWG chart/app
- Non modifiable risk factors (age, frailty, co morbidities)