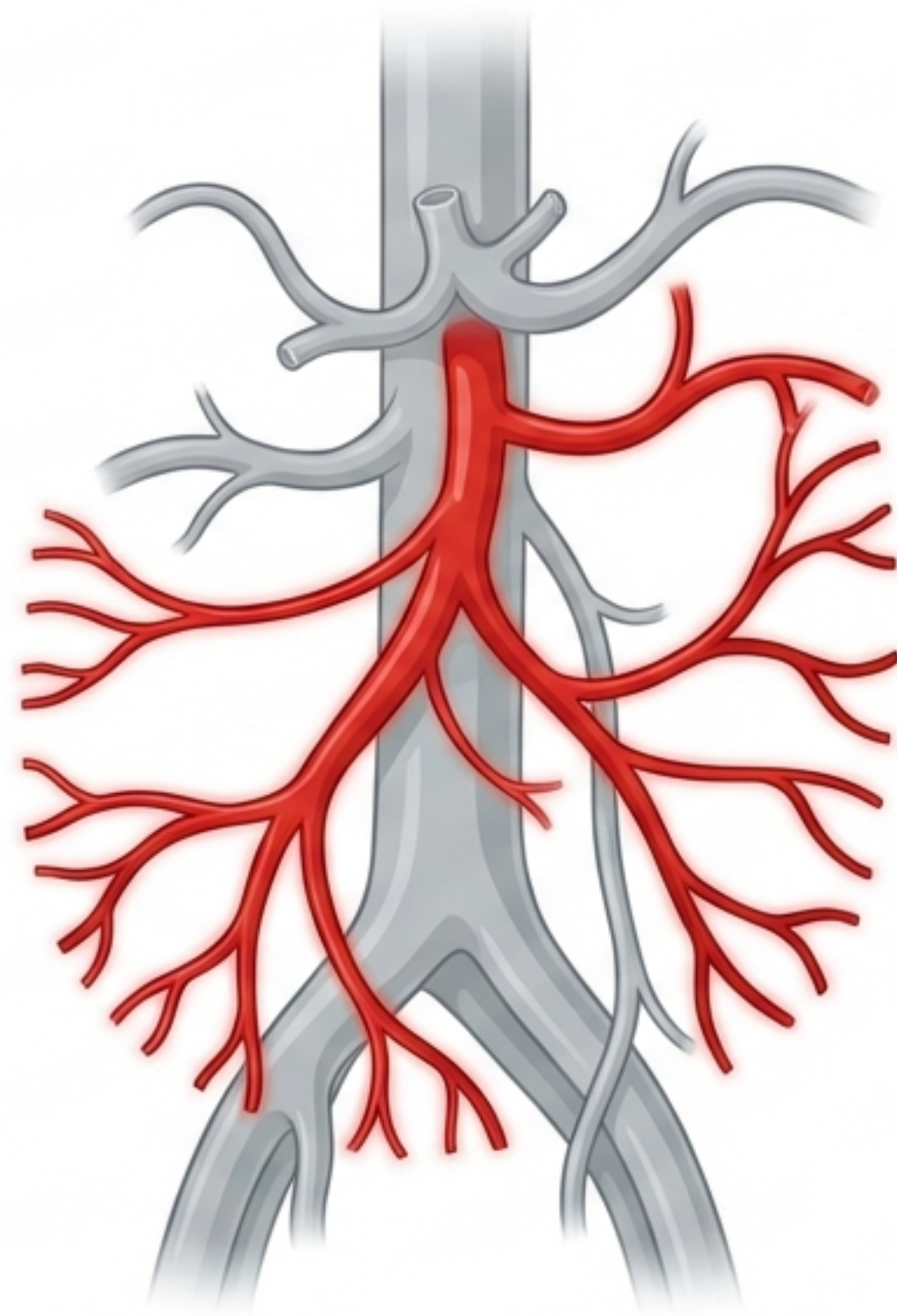


# ACUTE MESENTERIC ISCHEMIA

Updated October 2022

## The 2022 WSES Guidelines



Evidence-based strategies for diagnosis and management from the World Society of Emergency Surgery.

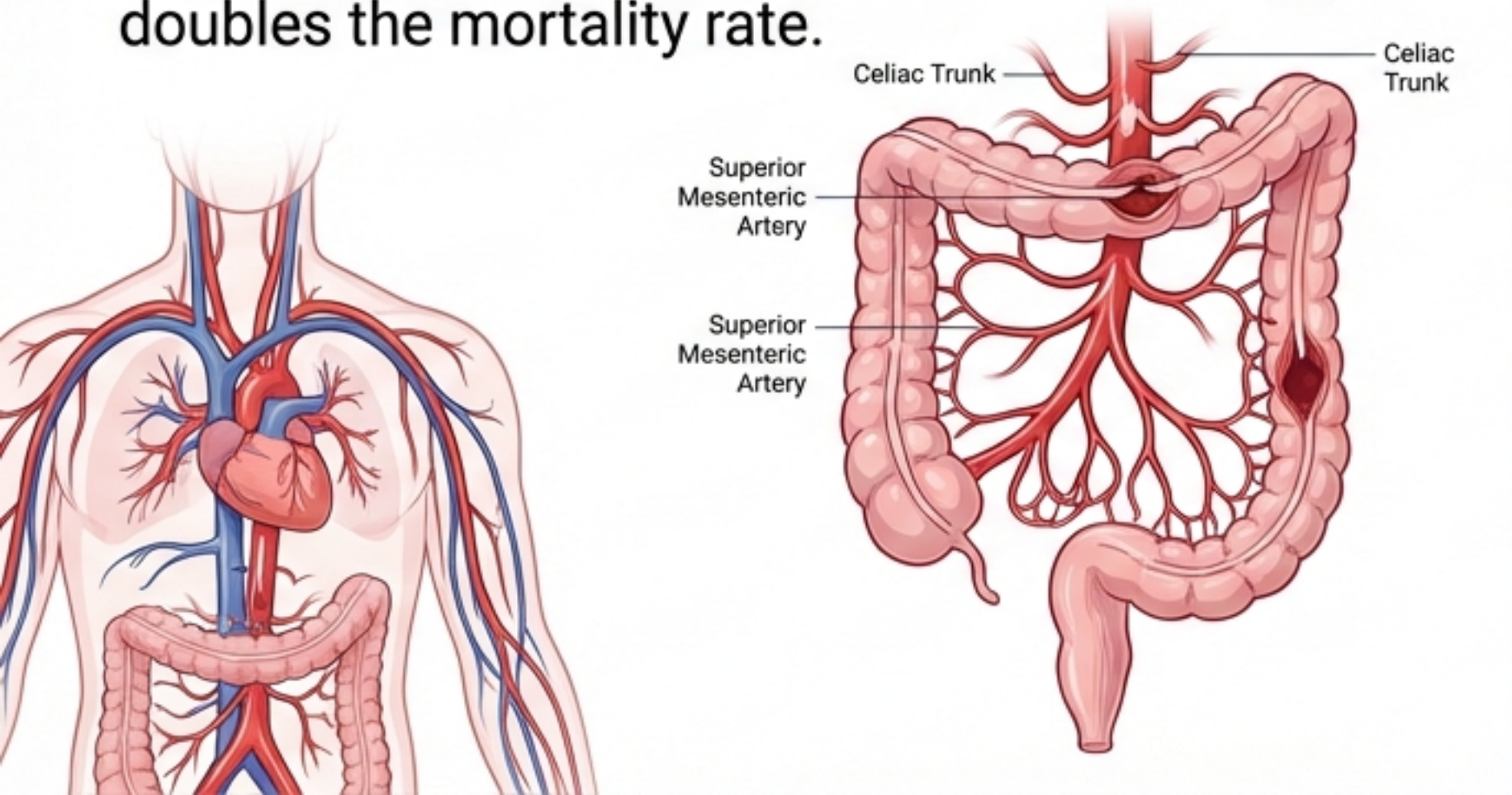
Based on the Review by Bala et al.,  
*World Journal of Emergency Surgery* (2022) 17:54  
NotebookLM

# A LETHAL RACE AGAINST TIME

## THE NARRATIVE

Acute Mesenteric Ischemia (AMI) is a vascular emergency. Despite advances in care, mortality remains >50%.

**The “Time is Tissue” Metric:**  
Every 6-hour delay in diagnosis doubles the mortality rate.



## VISUAL DATA

### Mortality Risk vs. Time to Diagnosis



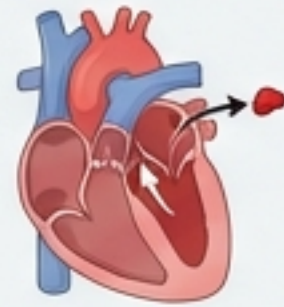
## EPIDEMIOLOGY

- **Incidence:** Rare (0.09–0.2% of acute admissions).
- **The Age Multiplier:** Risk increases exponentially. An 80-year-old has a 10x higher risk than a 60-year-old.

# THE FOUR PHENOTYPES OF ISCHEMIA

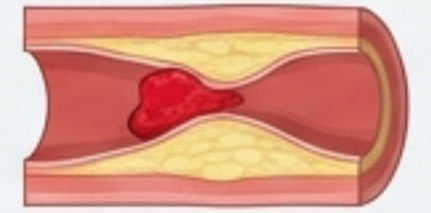
Identifying the etiology is critical for management.

## 1. ARTERIAL EMBOLISM (50%)



**Cause:** Cardiac origin (Afib, Valve disease).  
**Feature:** Sudden onset. Embolus lodges 3-10cm distal to SMA origin (spares proximal jejunum).

## 2. ARTERIAL THROMBOSIS (15-25%)



**Cause:** "Acute on chronic" atherosclerosis.  
**Feature:** History of "food fear" (postprandial pain) and weight loss. Occurs at vessel origin.

## 3. NOMI (20%)



Non-Occlusive Mesenteric Ischemia  
**Cause:** Low flow states (Cardiac failure, Sepsis, Vasopressors).  
**Feature:** Patent vessels but poor perfusion.

## 4. VENOUS THROMBOSIS (MVT) (<10%)



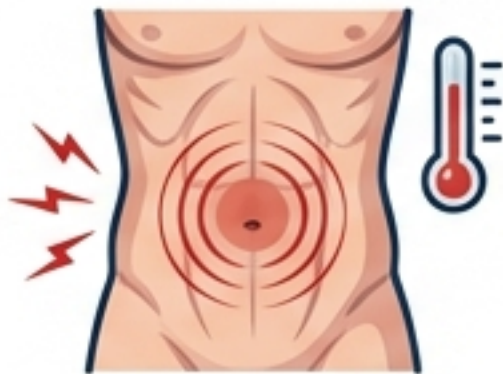
**Cause:** Virchow's triad, Hypercoagulability, Inflammation.  
**Feature:** Younger patients, history of DVT/PE or Pancreatitis.

# DIAGNOSIS: THE INDEX OF SUSPICION

Strong  
Rec 1C

“Severe pain out of proportion to physical exam findings must be assumed to be AMI until disproven.”

## The Clinical Triad



1. Severe Abdominal Pain (95%)
2. Fever
3. Hemocult-positive stool (~33%)



## The ‘Silence’ Trap



In NOMI or sedated ICU patients, pain is absent. Watch for:

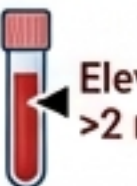
- Unexplained abdominal distension
- New organ failure
- Increasing vasopressor needs



## Lab Data Reality



- **Leukocytosis:** >90% but nonspecific.
- **Lactic Acid:** Elevated (>2 mmol/L) implies irreversible ischemia. Normal levels DO NOT rule out early AMI.
- **D-Dimer:** High sensitivity, low specificity.



# THE GOLD STANDARD: BIPHASIC CTA

Strong  
Rec  
1A

**PROTOCOL:** Perform Multidetector CT Angiography (CTA) without delay.

- No Oral Contrast (it obscures vessels).
- Biphasic Scan (Arterial & Venous phases).
- 3D Reconstruction required.

**DO NOT DO THIS**



Plain X-Rays are not recommended (Strong Rec 1B). They only show free air when it is too late.

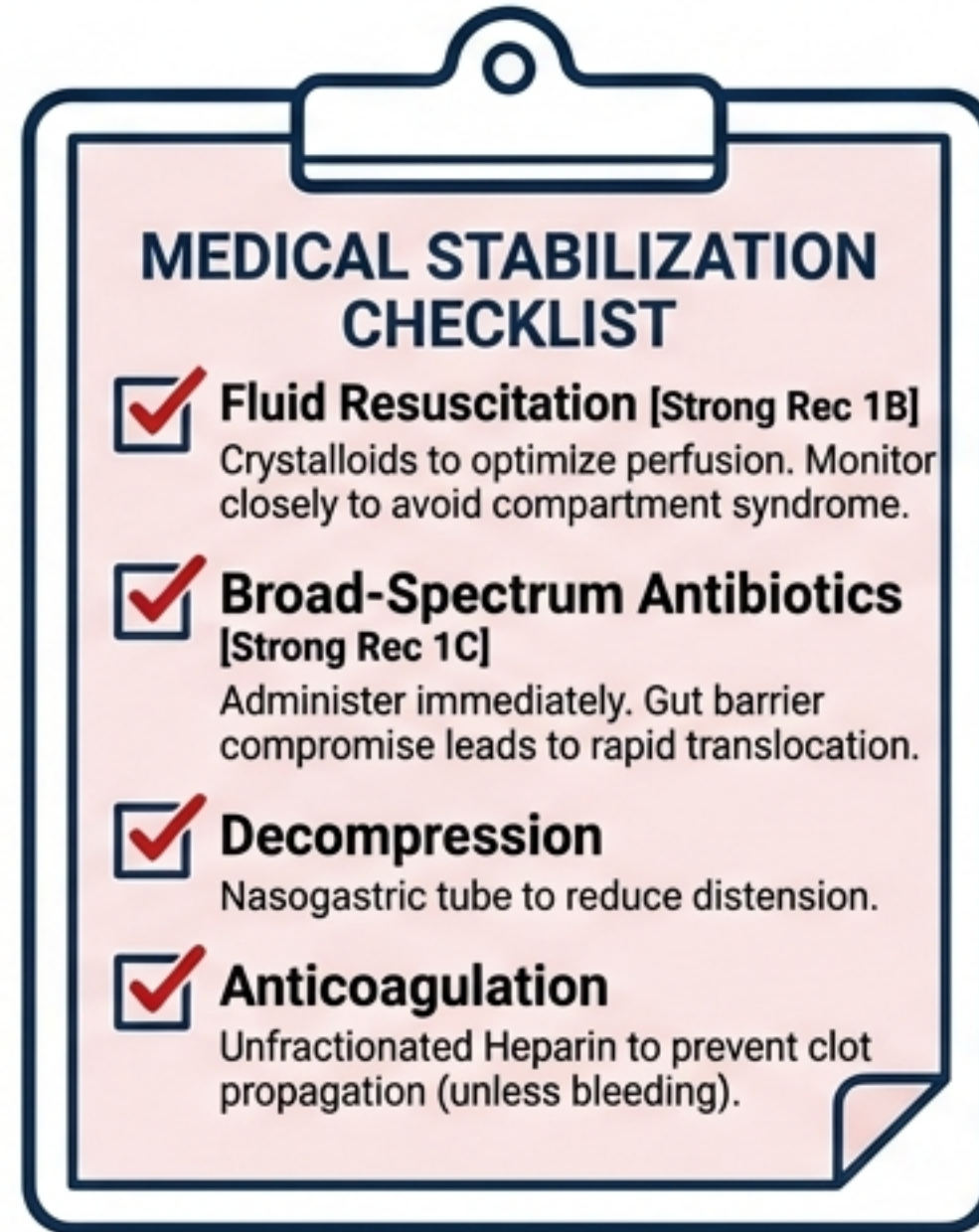
**CRITICAL DECISION**



Perform CTA regardless of Acute Kidney Injury. The risk of death from missed AMI outweighs the risk of contrast nephropathy.

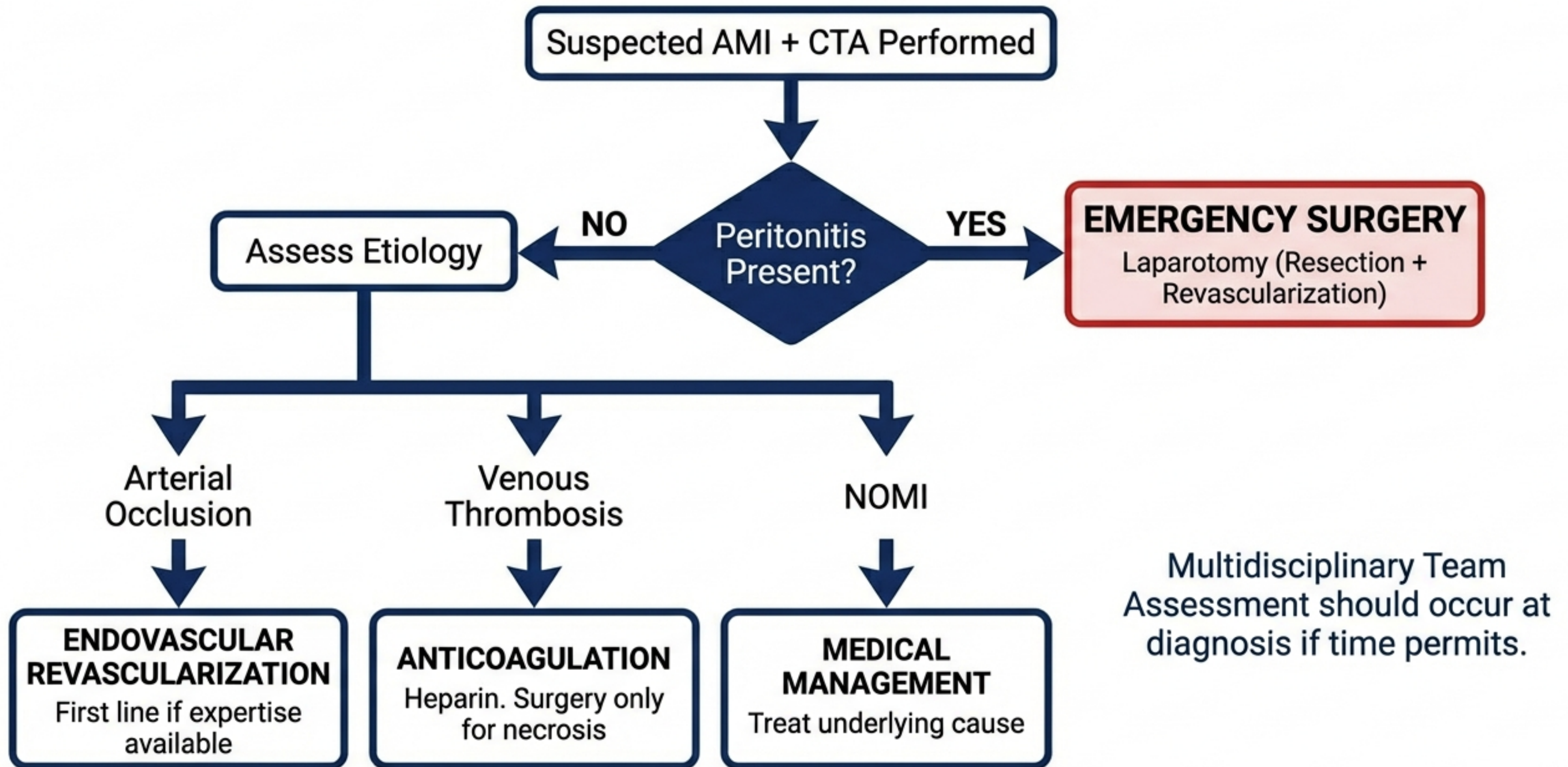
# IMMEDIATE MEDICAL STABILIZATION

Enhance visceral perfusion while preparing for intervention.



**VASOPRESSOR ALERT:** Avoid Vasopressin. Preferred agents: Dobutamine, low-dose Dopamine, or Norepinephrine.

# THE MANAGEMENT ALGORITHM



# SURGICAL INTERVENTION: LAPAROTOMY

✓ Strong Rec 1C

**Indication:** Overt peritonitis or massive hemorrhage.

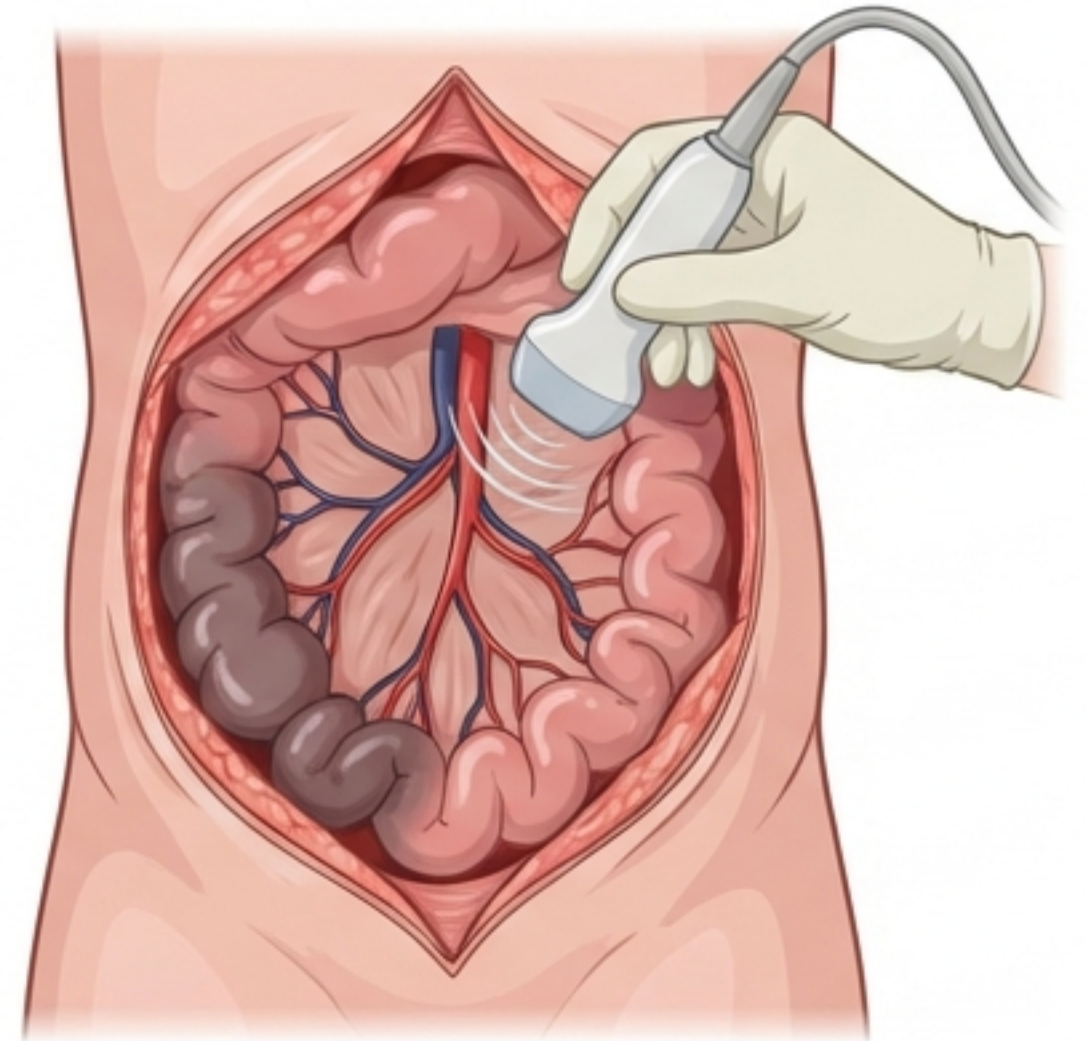
## Operative Goals:

1. Re-establish blood supply (Embolectomy vs. Bypass).
2. Resect necrotic bowel.
3. Preserve viable bowel.

**Technique:** Inspect SMA root by palpating behind mesentery or following middle colic artery.

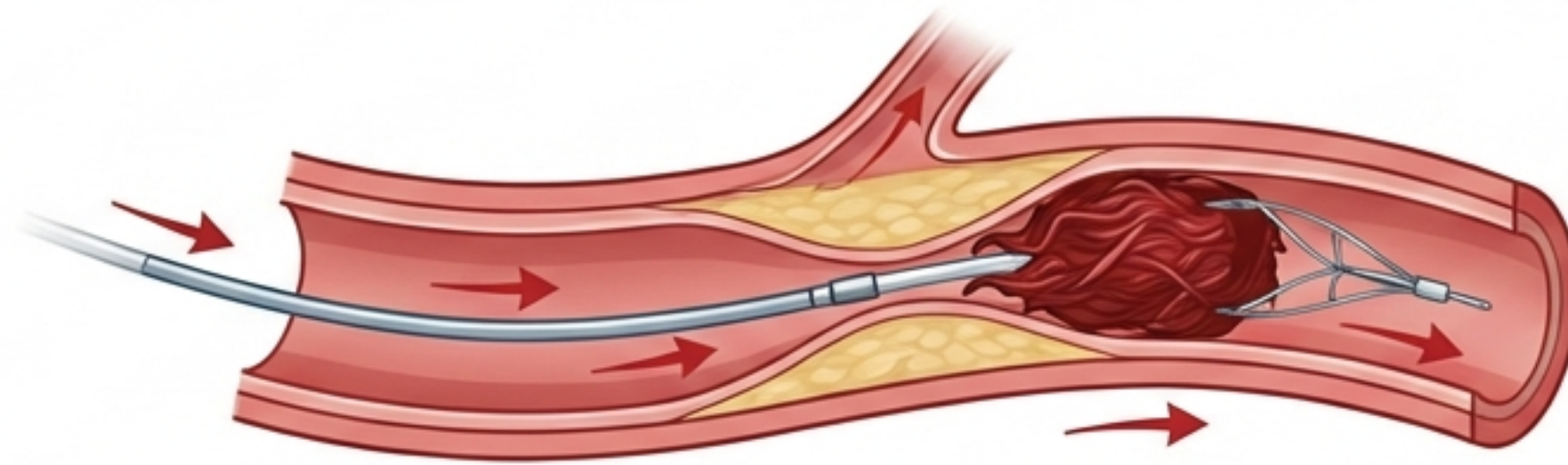
## Viability Assessment:

- Clinical: Color, pulse, peristalsis.
- Tech Adjuncts: Doppler Ultrasound, Fluorescein dye (Wood's lamp), or ICG.



# THE ENDOVASCULAR SHIFT

Endovascular revascularization is the **PRIMARY OPTION** for arterial occlusion when sufficient expertise is available and no peritonitis exists.



✓ Strong Rec 1C

**Why?** Lower 30-day mortality and lower bowel resection rates compared to open surgery.

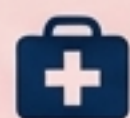
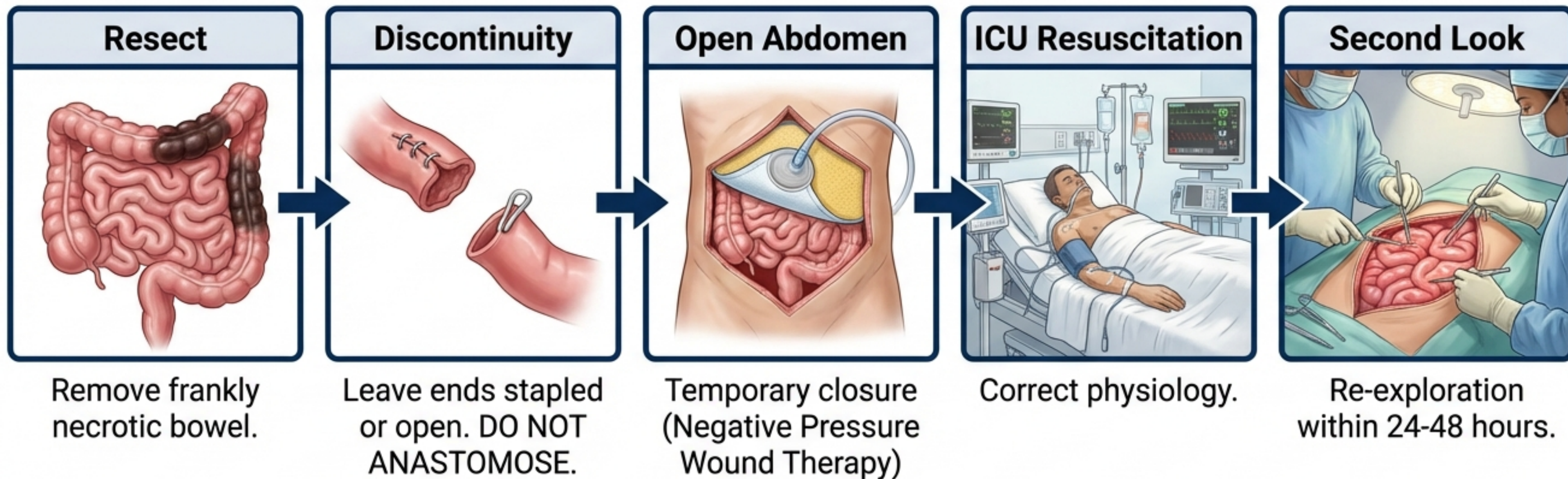
**Aspiration  
Embolectomy**  
(For emboli)

**Retrograde/Antegrade  
Stenting**  
(For thrombosis)

**Hybrid (ROMS)**  
(Laparotomy + Stenting  
for complex cases)

# DAMAGE CONTROL SURGERY (DCS)

Strategy for the unstable patient (Acidosis, Hypothermia, Coagulopathy)



**Rationale:** "Dusky" bowel may recover after reperfusion. DCS prevents removing viable tissue.

# SPECIAL MANAGEMENT: NOMI & MVT

## Non-Occlusive (NOMI)

**Strategy:** Treat the underlying cause [Strong Rec 1C].

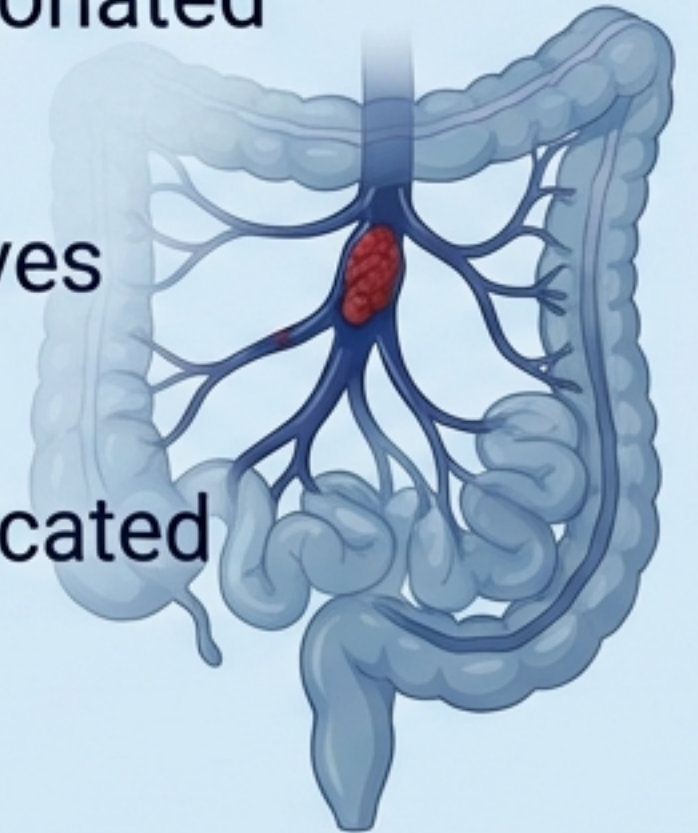
- Improve cardiac output.
- Stop vasoconstrictors.
- Catheter-directed vasodilators (Papaverine) may be used.
- Surgery only if perforation occurs.



## Venous Thrombosis (MVT)

**Strategy:** Anticoagulation is Curative [Strong Rec 1B].

- Continuous Unfractionated Heparin.
- Early heparin improves survival.
- Surgery is rarely indicated (only for infarction).



# CRITICAL CARE & REPERFUSION

Preventing Multiorgan Failure (MOF) after successful revascularization.



**Hemodynamics:**  
Maintain pressure.  
Use Noradrenaline  
or Dobutamine.



**Anticoagulation:**  
Systemic heparin  
(aPTT 40-60) post-  
post-op to prevent  
re-thrombosis.

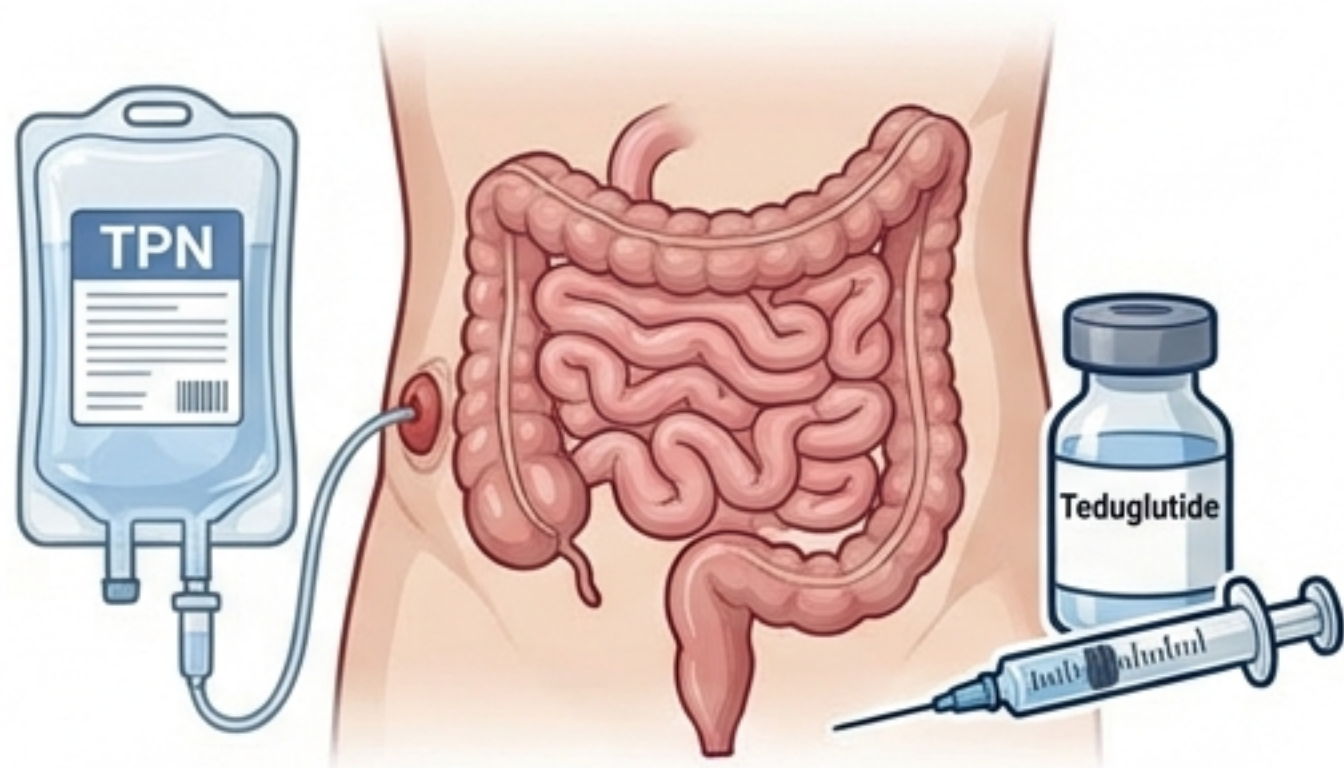


**Nutrition:**  
Enteral feeding  
preferred (unless  
short bowel  
prevents it).



**Surveillance:**  
Monitor for  
restenosis or  
extending  
necrosis.

# LONG-TERM OUTCOMES & ETHICS



## Short Bowel Syndrome (SBS)

**Definition:** Extensive resection leading to intestinal failure.

- **Management:** Nutritional autonomy is the goal. GLP-2 analogs (Teduglutide) reduce TPN dependence.



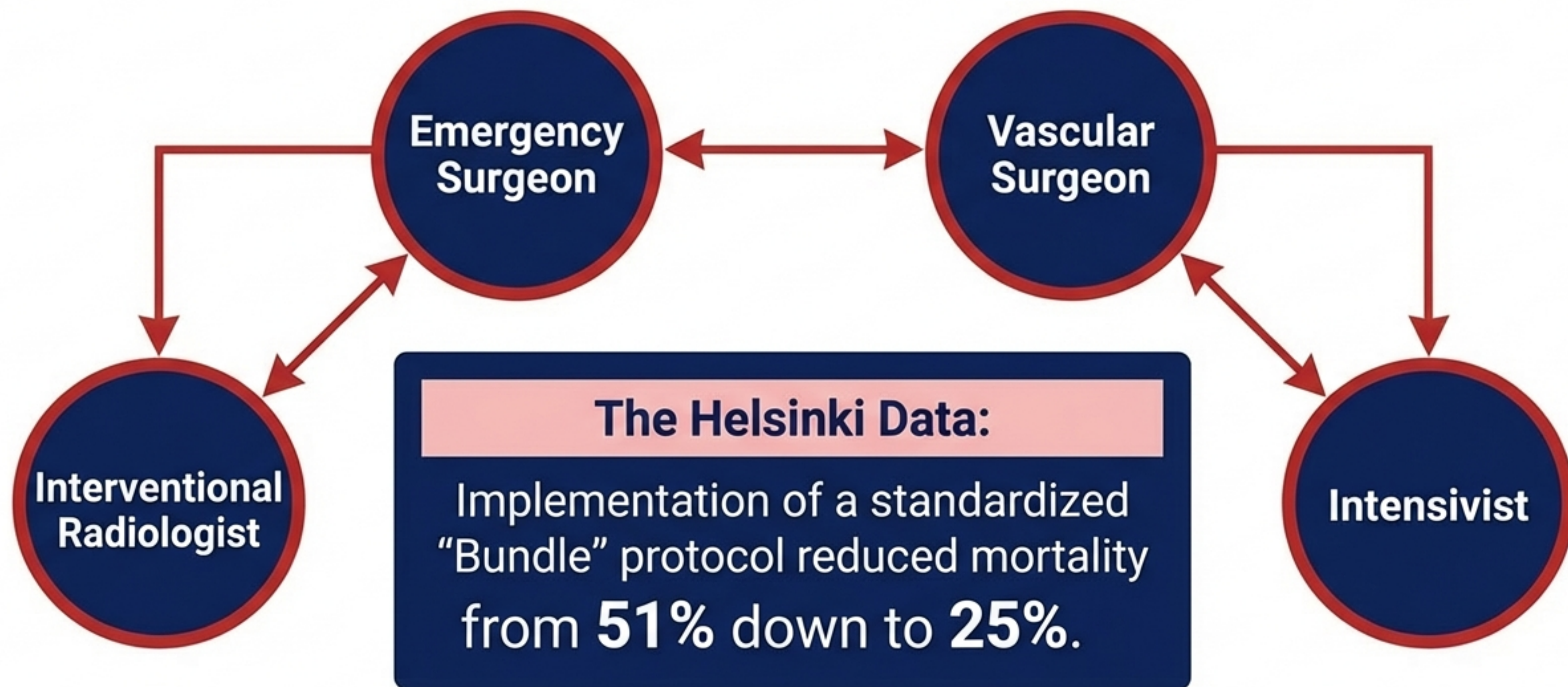
## Ethical Decision Making

**Scenario:** Massive gut necrosis in frail/elderly patients.

- **Guidance:** "Comfort Measures Only" / Palliation is a valid, ethical strategy when quality of life cannot be preserved. Preoperative discussion with family is essential.

# THE 'INTESTINAL STROKE CENTER' MODEL

Treatment in dedicated centers with multidisciplinary teams improves survival.



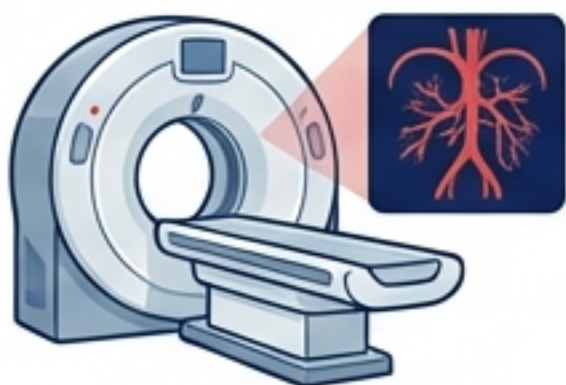
# SUMMARY: THE RULES OF ENGAGEMENT

## Top 5 Strong Recommendations

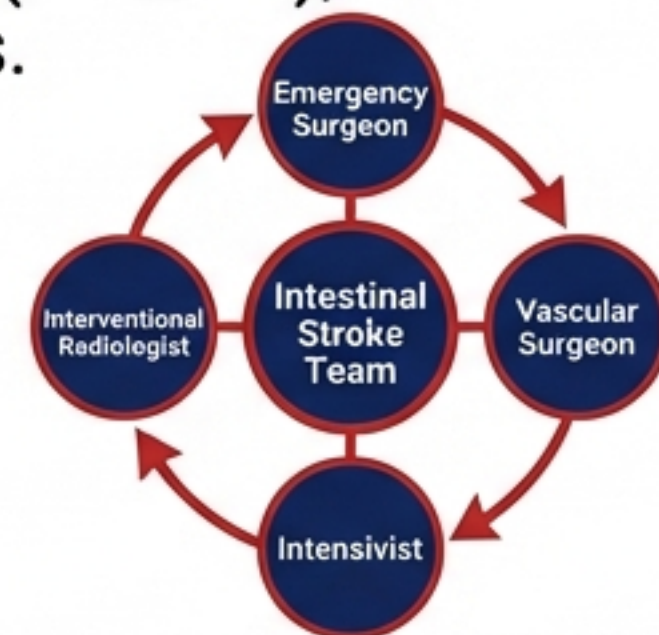


**1 SUSPECT IT:**  
Pain out of proportion  
= AMI until disproven.

**4 REVASCULARIZE:** Endovascular first  
for arterial occlusion (if stable);  
Surgery for peritonitis.



**2 SCAN IT:**  
Biphasic CTA is the  
mandatory gold  
standard. No X-rays.



**3 RESUSCITATE:**  
Fluids + Antibiotics +  
Heparin immediately.

**5 REVASCULARIZE:**  
Endovascular first for  
arterial occlusion (if stable);  
Surgery for peritonitis.

**ORGANIZE:**  
Multidisciplinary  
'Intestinal Stroke'  
reduce mortality.

# TIME IS TISSUE.