Development of Cardiogenic Shock Program

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Recognize the need for a Shock Program

Shock outcomes national wide have not changed for over 20 years!

From July 2016 to February 2017, a pilot study was done assessing the data on 41 enrolled patients using the Detroit CSI protocol based on best practices and currently available devices. The initial results showed an in crease in CGS survival from 51% to 76%.

Collaboration Results and Next Steps

We had an 76% survival rate.

You have an idea- Now gather the team!

- **Providers and Specialities-**
  - Heart Failure
  - Interventional Cardiology
  - Cardiothoracic Surgery
  - Intensivist
  - Vascular Surgery
    - The Key and the Challenge- you MUST have buy in!

- **Support-**
  - Administration
    - VP/CAO/CNO/CFO
  - Coordinators
    - HF/VAD/ECMO/Research
  - Access Referral Center
  - Nursing Managers
    - ICU/CATH LAB/ ED
  - Nursing Staff
    - ICU/ CATH LAB/ED
  - Imaging
    - XRAY/ECHO/INTERVENTIONAL RADIOLOGY
  - LAB
    - Blood Bank/ STAT Lab
  - Transport Team
    - STAT Flight
    - EMS
  - Engineering
    - Biomed
  - Field Reps
    - Abiomed

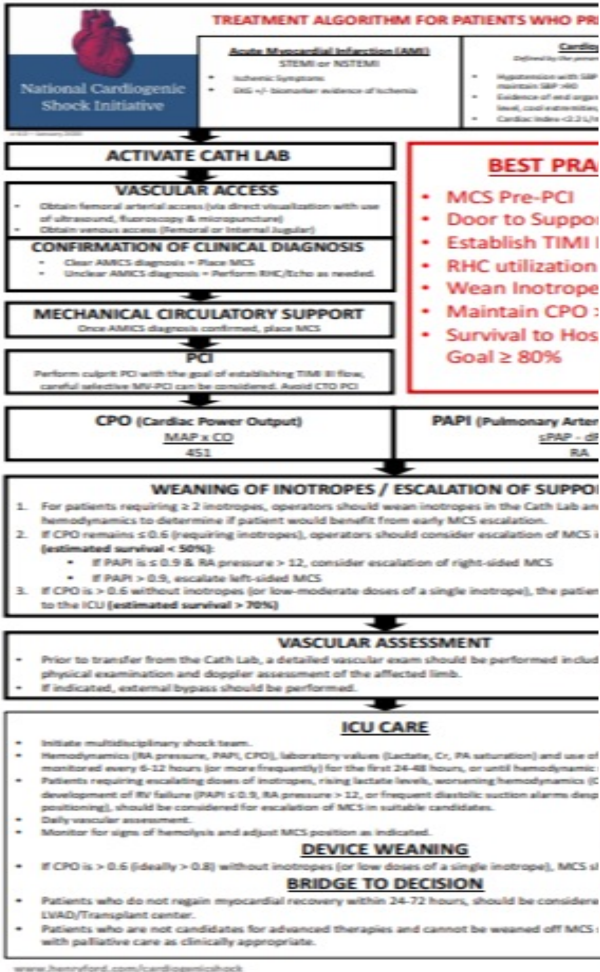
Coordination and Planning

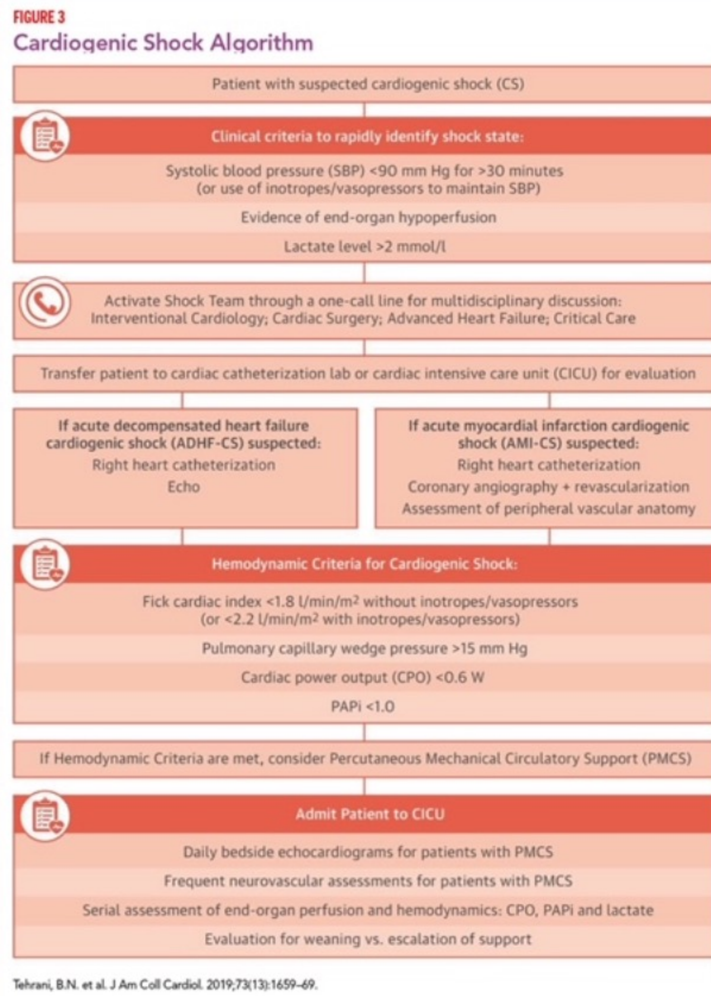
- GET A GOOD COORDINATOR!
    - "The Glue"
  - Keeps everyone informed on planning and implementation
  - Organizes meetings
  - Routes calls appropriately to each group
  - Resource for all staff
  - Organizes data collection
    - Often collects data
  - Keeps team up to date with best practice and sets the standard of care
  - Organizes simulation based training
  - The "liaison" for each group
  - Keeps a cohesive approach

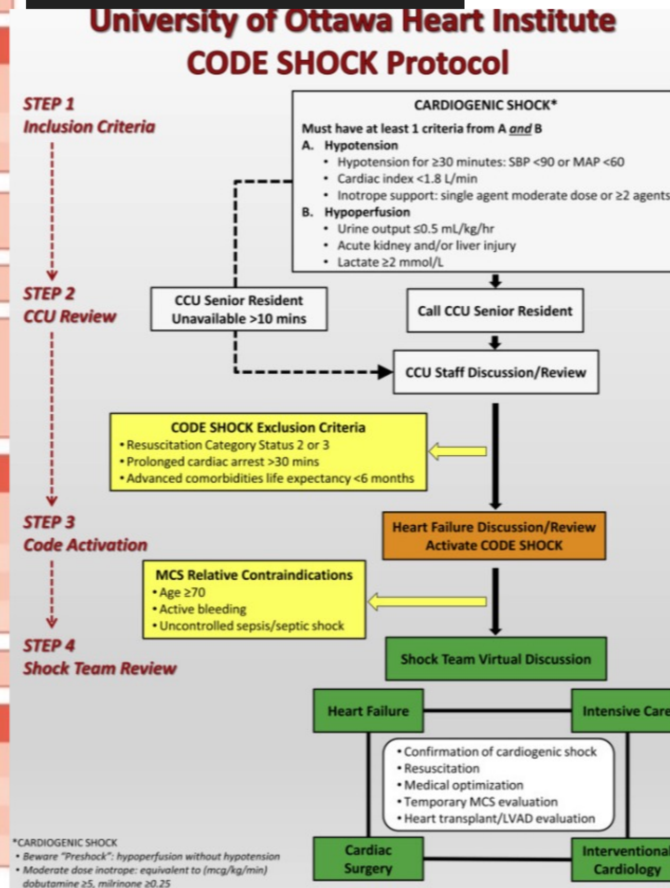
The proof is in the Numbers

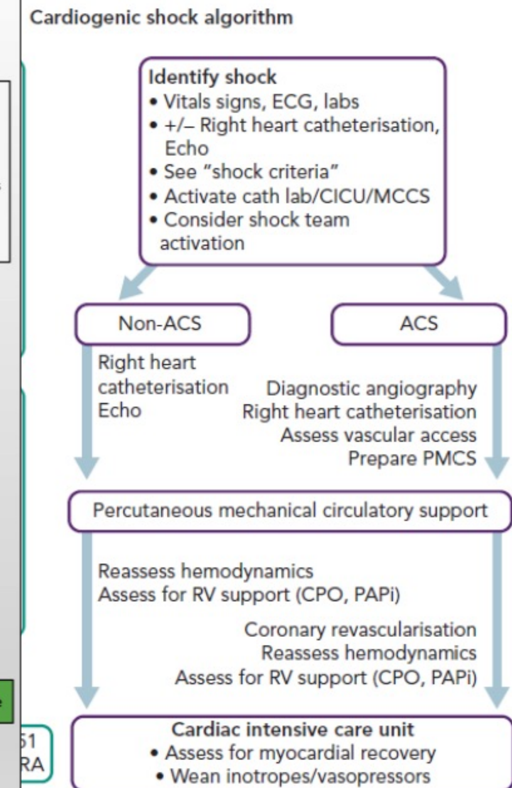
- Once the team is established- you must start the look within your own organization or facility.
  - Data Analyst and Medical Records should be able to pull data on groups of patients:
    - STEMI/ NON STEMI/ END DX of Cardiogenic Shock
    - IMPELLA Assisted PCI/ Impella insertions/ IABP
    - ** What was their survival to D/C?**
      - This gives a baseline for your program
- Assess What equipment is available-
  - IABP, IMPELLA, ECMO, ICU SPACE, ACUITY LEVEL

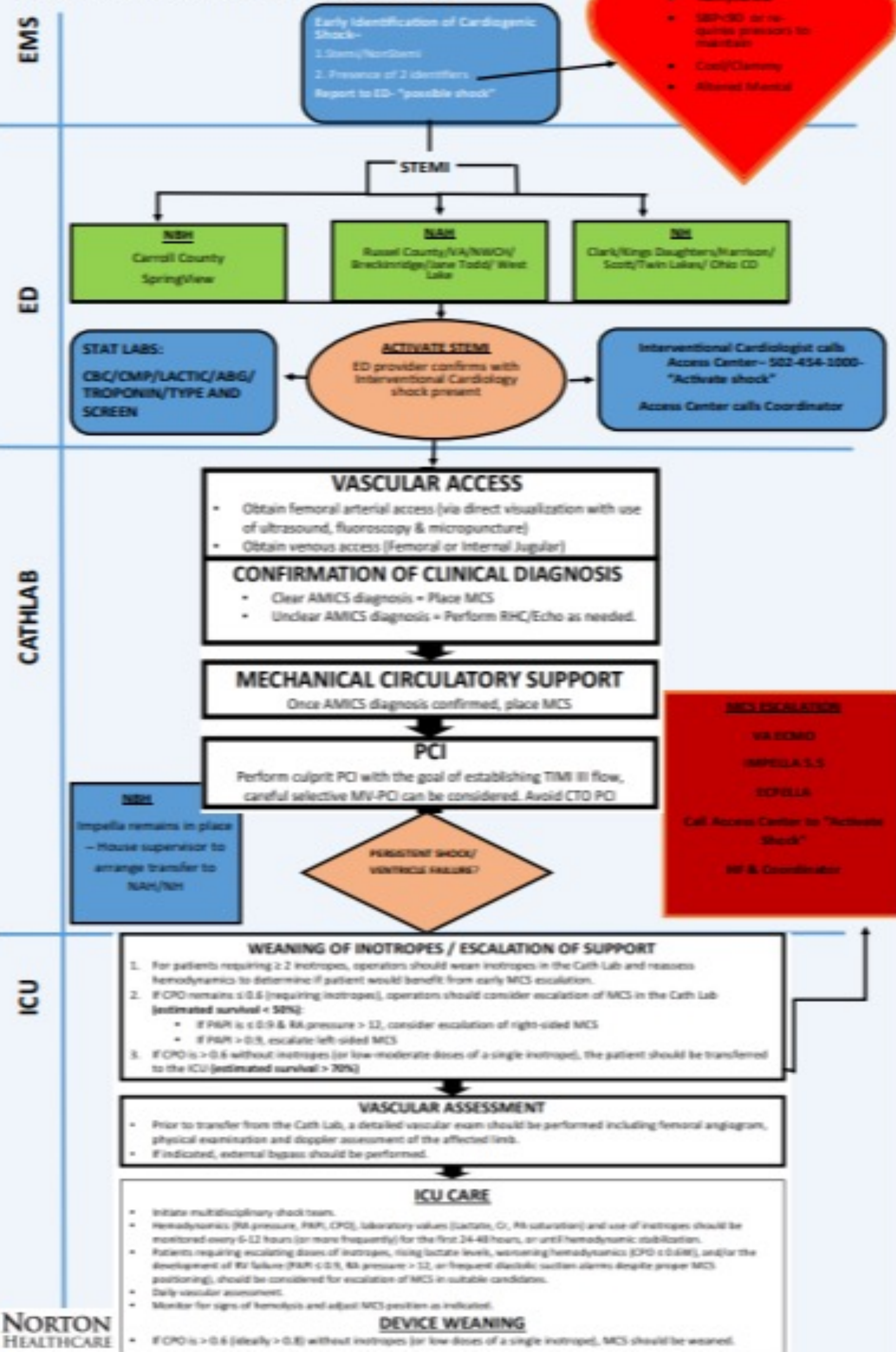
PICK AN ALGORITHM THAT FITS










Norton Healthcare Shock Pathway
EMS
ED
CATHLAB
ICU
STEMI
NBH
Carroll County
SpringView
STAT LABS:
CBC/CMP/LACTIC/ABG/ TROPONIN/TYPE AND SCREEN
ACTIVATE STEMI
ED provider confirms with Interventional Cardiology shock present
Interventional Cardiologist calls Access Center – 502-454-1000- "Activate shock"
Access Center calls Coordinator
VASCULAR ACCESS
Obtain femoral arterial access (via direct visualization with use of ultrasound, fluoroscopy & micropuncture)
Obtain venous access (Femoral or Internal Jugular)
CONFIRMATION OF CLINICAL DIAGNOSIS
Clear AMICS diagnosis = Place MCS
Unclear AMICS diagnosis = Perform RHC/Echo as needed.
MECHANICAL CIRCULATORY SUPPORT
Once AMICS diagnosis confirmed, place MCS
PCI
Perform culprit PCI with the goal of establishing TIMI III flow, careful selective MV-PCI can be considered. Avoid CTO PCI
NBH
Impella remains in place – House supervisor to arrange transfer to NAH/NH
WEANING OF INOTROPES / ESCALATION OF SUPPORT
1. For patients requiring ≥ 2 inotropes, operators should wean inotropes in the Cath Lab and reassess hemodynamics to determine if patient would benefit from early MCS escalation.
2. If CPO remains ≤ 0.6 (requiring inotropes), operators should consider escalation of MCS in the Cath Lab (estimated survival < 50%):
If PAPI is ≤ 0.9 & RA pressure > 12, consider escalation of right-sided MCS
If PAPI > 0.9, escalate left-sided MCS
3. If CPO is > 0.6 without inotropes (or low-moderate doses of a single inotrope), the patient should be transferred to the ICU (estimated survival > 70%)
VASCULAR ASSESSMENT
Prior to transfer from the Cath Lab, a detailed vascular exam should be performed including femoral angiogram, physical examination and doppler assessment of the affected limb.
If indicated, external bypass should be performed.
ICU CARE
DEVICE WEANING
If CPO is > 0.6 (ideally > 0.8) without inotropes (or low doses of a single inotrope), MCS should be weaned.
NORTON HEALTHCARE

Tachycardia
Cool/Clammy
Altered Mental

EDUCATE, PRACTICE, REPEAT!

- The Shock Process starts with **EMS**
  - Where is EMS typically routed?
  - Early Identification
    - What was the vitals signs upon arrival?
      - Prior to Nitro, fluids etc.
    - How does the patient present?
    - If the patient is arresting- think level 1!

- Confirmation of Shock in ED
  - Provider Assessment followed by collaborative discussion with Interventionalist
    - POC ECHO
  - ED STAT Labs

Appreciation for Education!

- **Cath lab**
  - Shock Drills
    - Different Scenarios
    - Different Patients
    - The more your practice- the smoother the process
    - Everyone should know their role/scope!
  - Equipment availability
    - What is brought to a shock room?
    - Is the equipment stocked?

- **ICU**
  - Shock Drills
    - Receiving a shock patient
    - Invasive hemodynamics
    - MCS training
    - MCS Troubleshooting
    - Recognition of need for escalation!

NCSI 3 pillars for success:

- **Rapid *Door to Support* time (placement of the Mechanical Circulatory Support)**
- **Aggressive reduction in the use of inotropic/vasopressive medications post-procedure (as monitored through right-heart pressures and hemodynamic measurements)**
- **Medical therapy catered using RHC/invasive hemodynamics**

- Reference: https://www.henryford.com/cardiogenicshock

The Take Away:

- Find the Need
  - Cardiogenic Shock is a Nationwide issue- with an average survival of 50%
- Rally the Team
  - It truly takes a village to build a success program- a collaborative team approach is key!
  - Designate a Coordinator!
- Gather System Data
  - Medical Records department will help find your patients- and current stats
- Develop a pathway that fits!
  - Using NCSI algorithm- find what pathway works for your institution
- Education, Practice, Repeat- and don't give up!
  - There will be a learning curve- encourage your team
  - Keep lines of communication open, honest and professional- everyone is here with the same goal!
  - Outreach to other centers- build relationships- everyone has experienced the same issues!

YOU CAN DO IT

Thank you.