



Using the HemaShock[®] Flow Diagrams

A self-learning guide

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For comments, questions or suggestions, please contact:

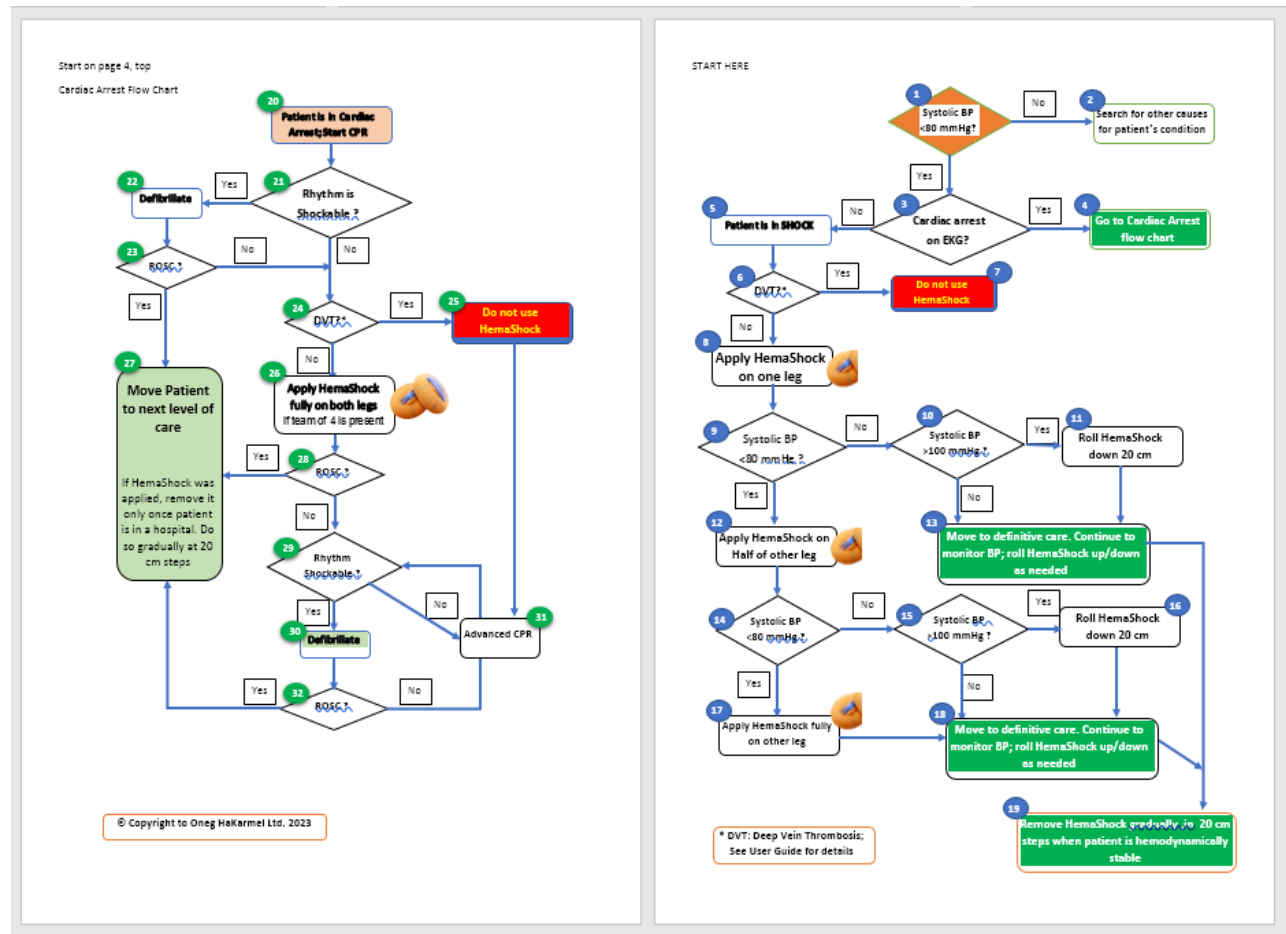
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Introduction

- This PPT assumes that the trainee is familiar with ACLS/ATLS and with the standard care for patients in severe shock and in cardiac arrest.
- The use of HemaShock Auto-Transfusion Tourniquet does not replace any of the currently standard measures. It only adds on them.
- The Flowchart is available laminated in A3 or A4 format (please specify) through info@HemaShock.com
- Additional training and background documents as well as clinical data are available through the training tab at www.HemaShock.com
- **HemaShock should not be left on the patient for more than 2 hours**

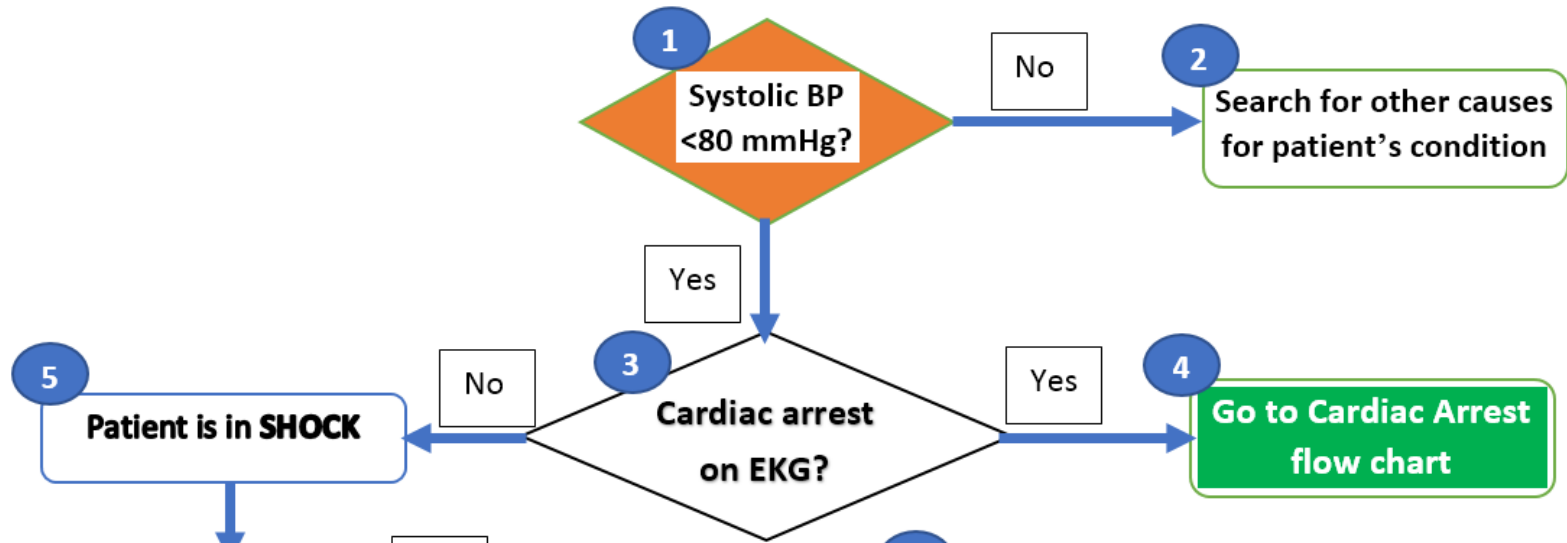
The Flow Diagrams

- The chart on the right is for use of HemaShock in severe shock and on the left is for use in cardiac arrest.
- See details below



Start Here...

- First step is to determine if the patient is a candidate for HemaShock. This is done based on **systolic blood pressure (BP) being less than 80 mm Hg (1)**. If not (and the patient looks really bad), you must search for an alternative reason (2).
- If BP < 80 mm Hg, we need to **decide if the patient is in shock or in cardiac arrest**. This is done based on the **EKG (3)**. If it shows VF or VT or a straight line or PEA, it is cardiac arrest (4), but if pulse is palpated in the carotid or the femoral artery and the EKG shows effective activity, then it is shock (5).

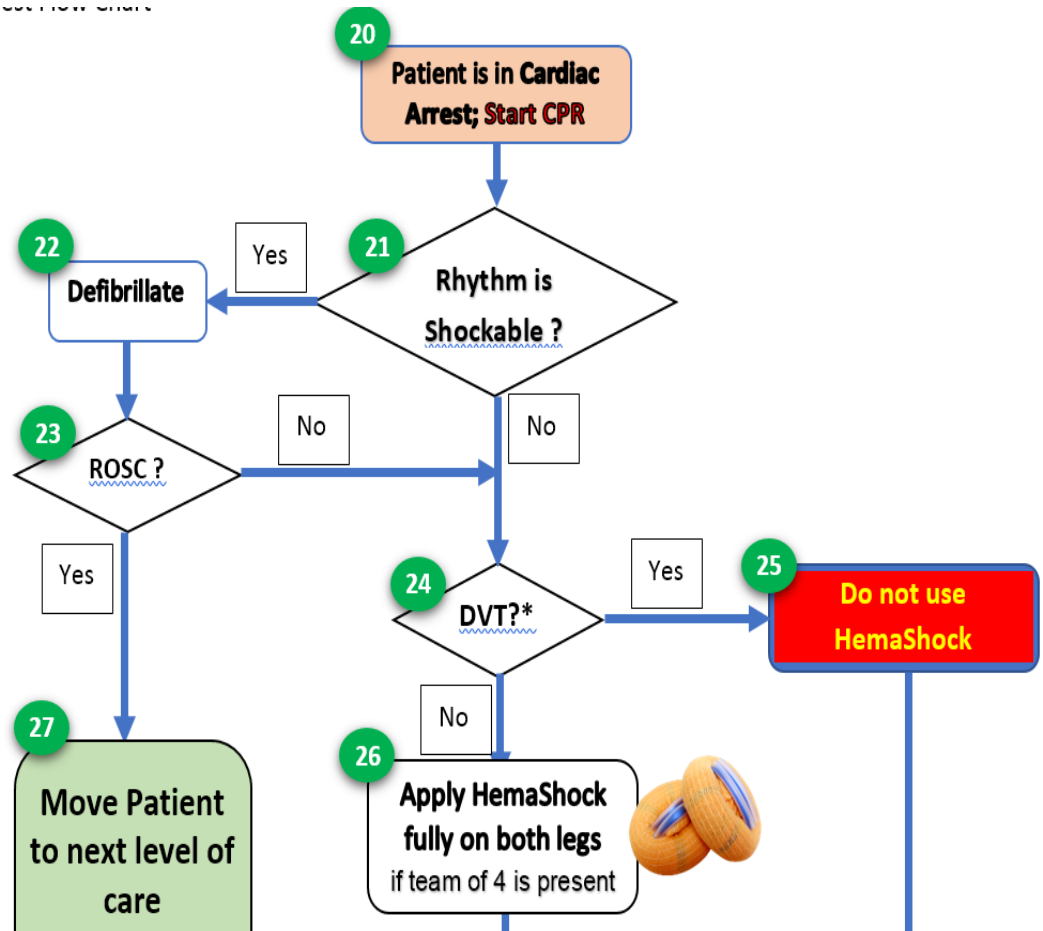


A few additional points:

- What if blood pressure monitor is not available? Use the pulse to estimate: if you palpate radial pulse, BP is usually >80 mm Hg. If you don't palpate pulse in the radial artery, but you feel carotid/femoral pulse, systolic BP is likely >40 but <80 mm Hg. If no carotid/femoral pulse, consider this to be cardiac arrest.
- What if the systolic BP is less than 80, but the patient is awake and communicative? (a), check the BP monitor and cuff placement; (b) some old (and young) people (elderly, children), always have low BP. Either way, hold HemaShock placement and continue to monitor the patient.
- What if EKG is not available? Use pulse palpation and/or heart auscultation to differentiate severe shock from cardiac arrest

Cardiac Arrest (1)

- Always start CPR first
- If monitor/ defibrillator/ AED is available, give shock if rhythm is shockable (21) (VF/VT). If ROSC (24), no need for HS. Transfer to hospital
- If rhythm is not shockable (flat line or PEA), or no ROSC after first shock, apply HS to both legs (26) if no obvious signs of DVT (24) (see slide on DVT screening below)

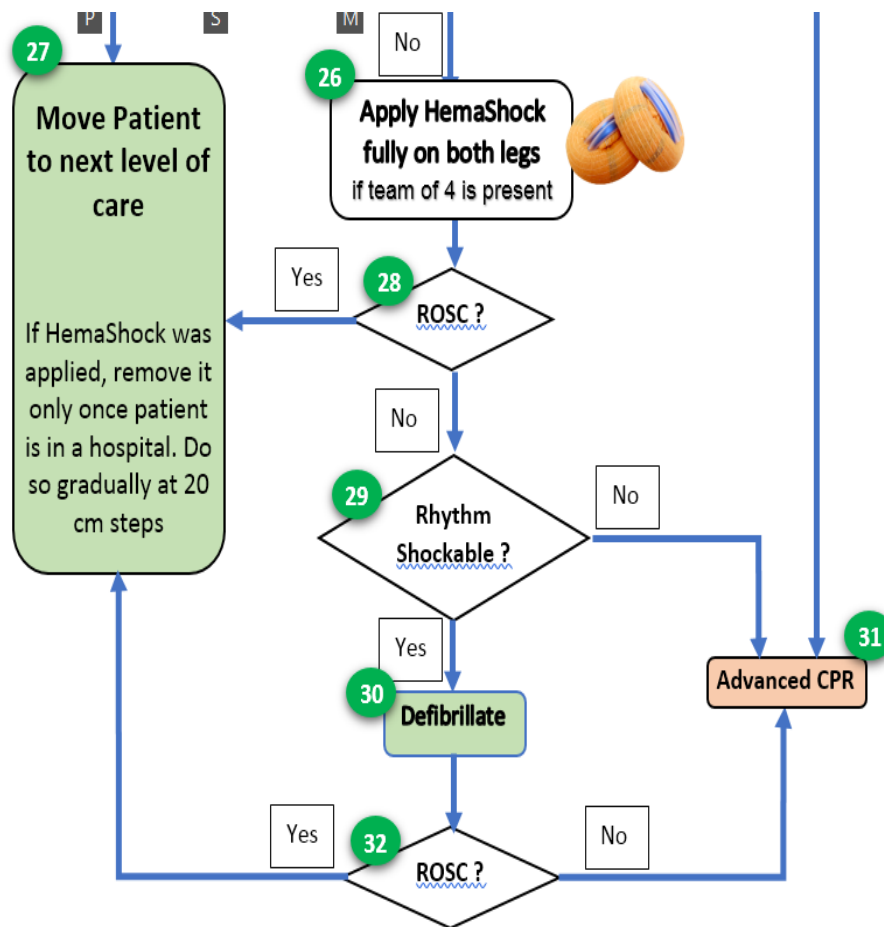


A few additional points

- DVT – Deep Vein Thrombosis is an absolute contraindication for HemaShock use. Suspect DVT if swelling of ankle and feet veins do not empty promptly upon leg lifting.
- Do not apply HemaShock on a hypothermic patient.
- In Cardiac arrest, HemaShock is applied on both legs.
- If monitor/ defibrillator/ AED is not readily available and no pulse is palpated, apply HemaShock to both legs without waiting.
- HemaShock application is safe and effective without interfering with the quality of CPR when 4 trained healthcare personnel are present.
- HemaShock can be applied at any time during CPR. If desired, HS can be applied after 3 rounds of CPR/Defib with no ROSC (i.e. refractory)

Cardiac Arrest (2)

- After HemaShock application, look for ROSC (28); it is possible in some cases (e.g. PEA) that ROSC will evolve prior to shock.
- If rhythm is shockable (29), defibrillate (30); if not, proceed to “advanced CPR” (31) as in standard algorithm and continue with CPR/defib cycles as needed.
- Do not remove HS in the field, only remove when patient is stable in hospital.
- Remove in 20 cm steps.

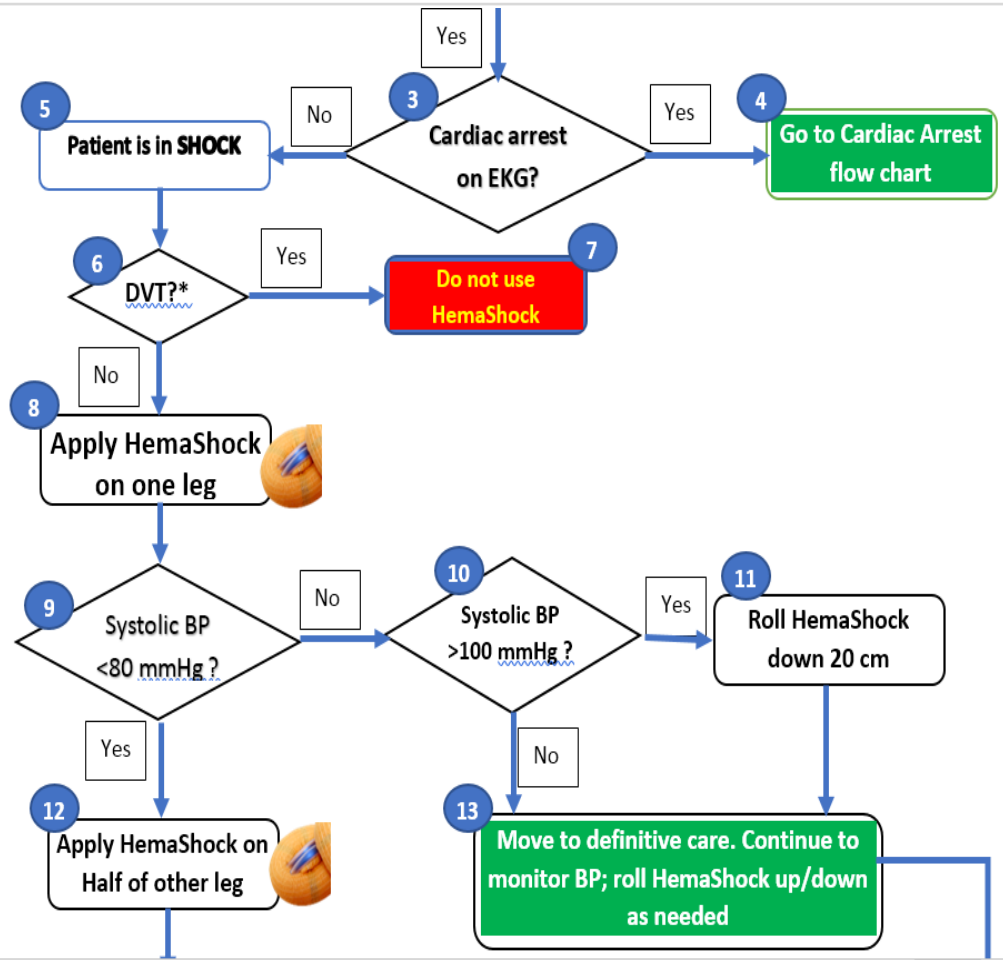


A few notes about HemaShock in shock

- While hemorrhagic shock is the classic population, other types of shock can also be considered if the use of Auto-Transfusion Tourniquet is desired.
- When using HemaShock in shock, it is important not to raise the blood pressure too much. The range of 80-100 mm Hg is believed to be optimal for hemorrhagic and other types of shock.
- Once HemaShock has been applied, it is possible to cut the sleeve to expose an injury, if needed.
- Applying HemaShock expands the volume of blood in the veins, so that IV insertion is easier. If IO needle insertion is required, the humerus head is the correct placement site, not the tibial tuberosity.
- Placing HemaShock on an alert patient may induce pain. Be aware.

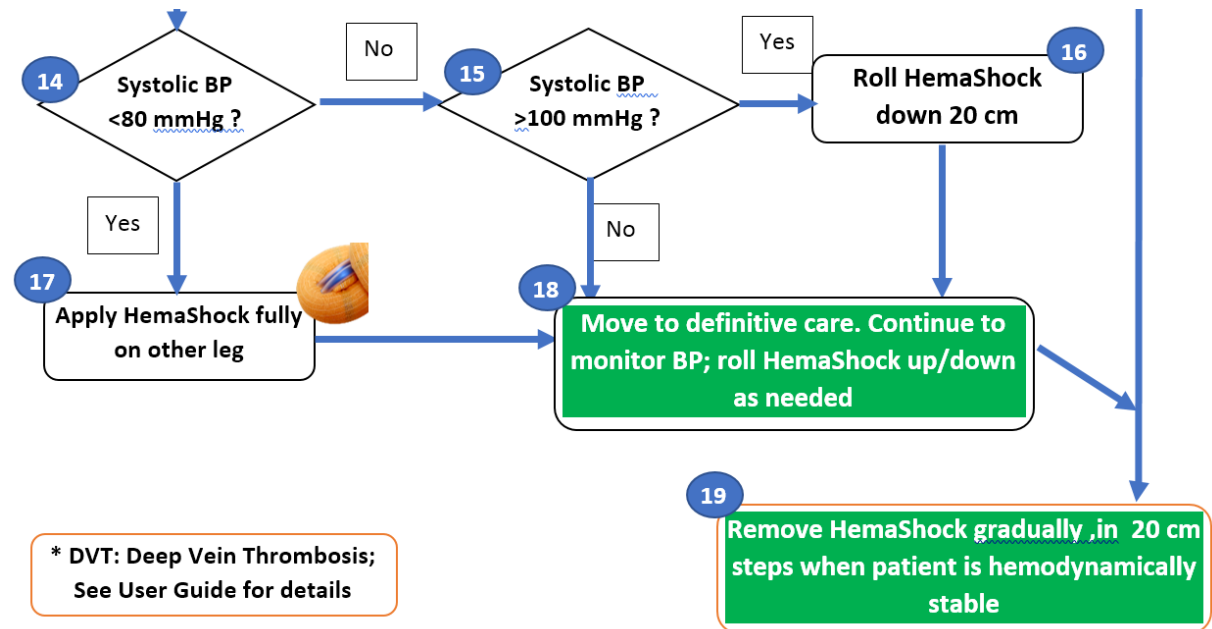
Severe Shock (1)

- First, assess if patient has signs of DVT(6) (slide 7).
- If not, apply HS on one leg (8); check BP.
- If systolic BP is still less than 80 (9), apply HS half way on other leg (12).
- If Systolic BP is more than 100 (10), roll HS down by 20 cm (11) and continue to monitor (13).



Severe Shock (2)

- After HemaShock was placed half way on the second leg (12), assess BP.
- Again, if systolic BP is less than 80 (14), bring HS all the way up on the second leg (17).
- If systolic BP is high – more than 100 mm Hg (15), roll HS down by 20 cm on one of the legs (16).



- Continue to monitor BP (18) and if needed, roll HS down or up the limb to maintain BP between 80 and 100 mm Hg.
- HS is only removed when patient's condition has been stabilized and the patient is in a competent hospital (19).

DVT Screening

- Placing HemaShock on a leg with DVT may dislodge the thrombus and cause massive pulmonary embolus (PE). As such, it is important to quickly, yet thoroughly assess patients in cardiac arrest or severe shock for presence of DVT before applying HemaShock. These are signs of DVT that should be looked for, despite the pressure of the circumstances:
 - Swelling of calf or ankle (use measuring tape if available to compare legs).
 - Skin warmer on one lower leg than the other. (use an infrared thermometer or an IR camera, if available).
 - Skin redness and or pitting edema in one lower leg, but not the other.
 - In addition, ask family members who are present if they know about DVT. Also check if anticoagulants (blood thinners) are used by the patient.