Royal Brompton and Harefield hospitals

NHS

Harefield Impella Emergency Algorithm

Impella CP/5.0 patient unresponsive +/- not breathing normally

Dial: State: Location: Wait:	**2222** **"VAD CARDIAC ARREST"** WARD/AREA For switchboard to repeat the information

MAP <30mmHg +/- ETT ETCO2 <2 kPa reduce to P2 and start CPR

IMPELLA TEAM

C What is the Impella controller screen displaying?

PATIENT TEAM

A Ensure patent airway
B Assess and treat problems with breathing (eg hypoxia, pneumothorax, wheeze)
Increase FiO2 to 100% +/- start BVM ventilation
C Attach ECG leads / Defibrillator

GO TO BOX WITH RELEVANT SCREEN DISPLAY

SUCTION ALARM

Reduce P setting by 1-2 levels
Give fluid bolus (eg 2.5ml/kg)
Aim MAP: >60 and <90 mmHg
Inotropes if right ventricular failure
Echo to check position
Consider bleeding (eg access site) or pump thrombus (occlusion alarm)

ECG SHOWS VT/VF

Unresponsive patient:
Defibrillation - Attempt 3 stacked shocks

Responsive patient:
Consider amiodarone or lignocaine
DC Cardioversion with sedation

IMPELLA STOPPED – CONTROLLER FAILURE

Switch to backup controller

IMPELLA STOPPED – RESTART IMPELLA

Restart at previous P level
If fails x2, wait 1 min and restart at P2

POSITION UNKNOWN/WARNING ALARM

TRAINED STAFF ONLY
CP Motor Current: Flat, Placement signal: LV trace
  Action: Reduce to P2. Under echo pull back till placement signal shows aortic trace then further 4cm. Return to previous P setting.
CP Motor Current: Flat, Placement signal: Aortic trace
  Action: Reduce to P2. Echo to advance if pigtail still within LV. Otherwise impella will need replacement.
CP/5.0 Motor Current: Flat, Placement signal: Flat
  Action: Use echo to determine position before adjusting

↓ Normal controller display/interventions above performed/awaiting echo

IS THERE ADEQUATE CIRCULATION?

Patient responsive
No cyanosis/pallor
Cap refill < 3 seconds
MAP 60-90 mmHg
Impella humming
Normal controller display
Impella flow rate > 2 L/min
ETCO2 >2 kPa

ECHO IN ALL CASES

Check Impella position: optimal 3.5cm from aortic valve to inlet (not tip) & free of obstruction

Look for: RV Failure, Suction, Tamponade, Thrombus

Yes

Complete A to E Assessment

Exclude Stroke, Bleeding, Sepsis

No

Reduce flow to P2 and Start CPR & standard ALS, consider:
Impella repositioning under echo or replacing impella
CALS if <10d postop
VA ECMO insertion

ON RETURN OF CIRCULATION ENSURE POSITION OF IMPELLA RECONFIRMED ON ECHO