CARDIOLOGY 2023

TRANSITIONING THE PATIENT WITH MECHANICAL SUPPORT FROM THE OPERATING ROOM TO THE INTENSIVE CARE UNIT; PITFALLS AND PEARLS

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YEARS OF DEDICATION TO MCS

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CHOP PERFUSION ROLE WITH MCS

- Maintain all supplies for MCS devices
- Initiate MCS in the OR
- Transport All MCS patients (OR, CT, IR, etc.)
- Assist with PT
- Troubleshoot any issues with each device 24/7
- Terminate support with MCS patients

MCS DEVICES AT CHOP

- Impella
- Berlin Heart EXCOR / ACTIVE
- Centrimag
- Heartmate 3 (HM3)

IMPELLA

Adobe Reader

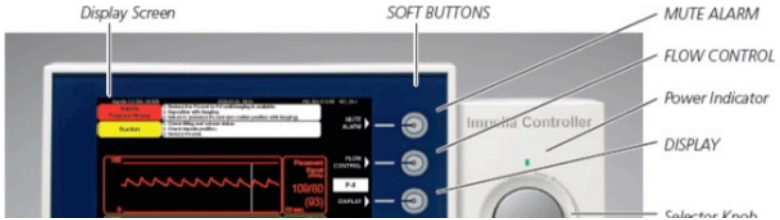
ow Help

4.2 (36 of 168) 93.7% Fill & Sign

AUTOMATED IMPELLA® CONTROLLER FEATURES

IMPORTANT NOTE: The underside of the Automated Impella® Controller has a battery switch to turn on the batteries. This switch is turned off for shipping purposes. Before operating the Automated Impella® Controller for the first time, make sure you turn this switch on. If the battery switch is not turned on, the Automated Impella® Controller will not be able to operate on battery power.

Figure 4.1 illustrates the features on the front of the Automated Impella® Controller. These features are described in Table 4.1.



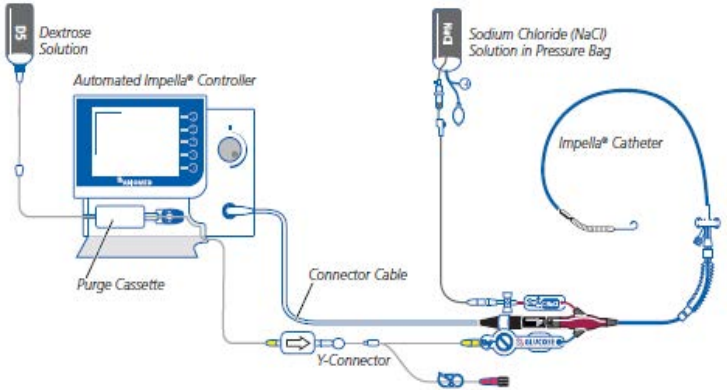


Figure 3.3 Standard Configuration of the Automated Impella® Controller, Impella® Catheter, and Accessories

IMPELLA

- Impella CP & 5.5
- Full Support with Maximum Unloading
- Peak flows up to 6 L/min
- New hemodynamic sensors to intelligently position, manage, and wean
- New advancements enable repositioning without imaging in the ICU

IMPELLA TRANSPORT

- Order ICU heparin bag during the insertion of device
- Dressing considerations for the driveline exit area (Ax vs Groin vs Chest)
- Anchoring of device to shoulder or leg before transfer
- Secure driveline to the bed with a clamp or Impella securing clip

ICU CONSIDERATIONS FOR IMPELLA

- Continuously monitor volume status and hemodynamics
- Maximizing Impella parameters
- Optimize the placement signal
- Vigilant driveline observation

BERLIN HEART EXCOR / ACTIVE

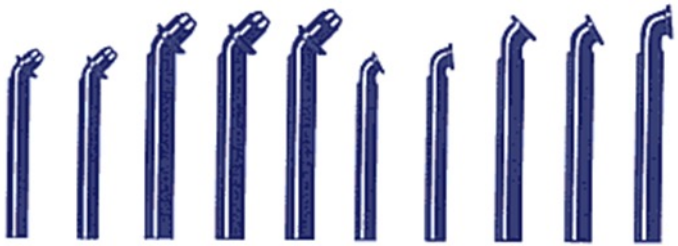
- Paracorporeal
- Pneumatic
- Pulsatile
- Single or bi-ventricular support
- Bridge to recovery or transplant
- BiVAD – Sync/Async/Separate

BERLIN HEART EXCOR / ACTIVE BLOOD PUMP

- Transparent polyurethane housing
- Sizes - 10 to 80 ml
- Carmeda® coated
- Polyurethane velum or tilting disc valves
- Provides up to 140 bpm
- Long service life

BERLIN HEART EXCOR INSERTION

- LVAD
  - LA or LV Apex
  - Ascending Aorta
- RVAD
  - RA or RV Apex
  - PA
- SVAD
  - Talk to CM/Kats!!



BERLIN HEART TRANSPORT

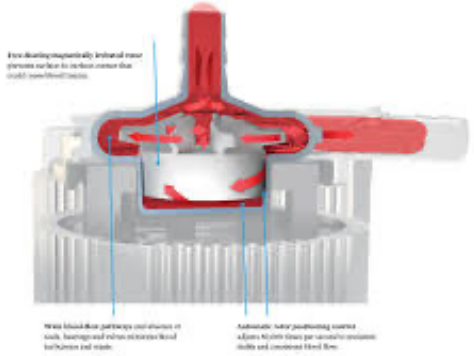
- Secure all connections (cannulas and driveline)
- Anchoring and observant of the driveline
- EXCOR vs ACTIVE
  - Two Point Turn vs Easy Pulling System
  - Battery Life - 30 min vs 6-14 hrs

ICU CONSIDERATIONS FOR BERLIN HEART

- Filling / Emptying
- Optimizing Parameters (Systolic/Diastole/Rate/%Systole)
- Goal: Find the Rate that allows 85-90% filling to maximize BH Output
- Alarms are indicative of:
  - Sensitivity of cannula size/placement
  - Arrythmias
  - Hemodynamic changes
  - System pressures
  - Volume status

ABBOTT CENTRIMAG

- Approved for “short term” support in children
- Paracorporeal
- Magnetically levitated
- Continuous flow



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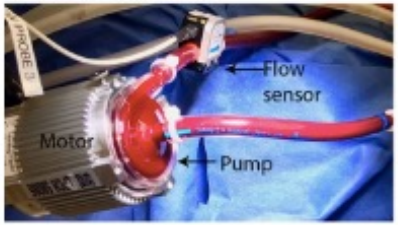
ABBOTT CENTRIMAG

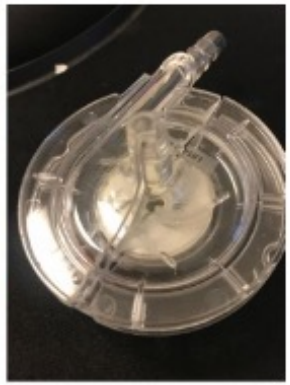
- Left, right, or biventricular support
- Single size, adaptive flows
- Ability to add an oxygenator
- Options for mobility

A: Centrimag monitor



B: Centrimag pump mounted in the motor

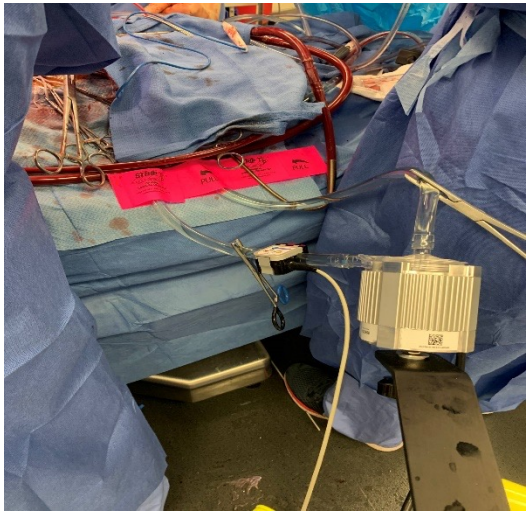
C: Centrimag pump connected to Berlin Excor cannula



D: Centrimag pump

CENTRIMAG CONFIGURATIONS

- Positioning of console and pump (anchored on console, pole or bed)
- Adaptation for Oxygenator



TRANSPORT / ICU CONSIDERATIONS FOR CENTRIMAG

- Extend Centrimag pump on pole, bed or crib
- Centrimag Wit oxygenator
  - Circuit adaptations (length of tubing, holders, positioning)
  - Oxygen tank
  - Heater cooler
  - Pressure transducers
  - ACT machine
  - Primed oxygenator bedside
- Centrimag Witout Oxygenator- Heating Blanket in CICU ASAP

HEARTMATE® III

- Fully implantable
- Magnetically suspended centrifugal pump
- Long term device
- Internal Backup Battery
- Prioritized visual alarms with actionable items
- Lightweight and compact
- Durable, shock-resistant outer case, cables and electronics

HM3 COMPONENTS

- Two HeartMate 3TM System Controllers
- One Mobile Power Unit with power cord
- Eight 14-Volt Lithium Ion Batteries
- One Set Battery Clips
- One Battery Charger with power cord
- One Set of accessories
  - Holster Vest, belt attachment, and neck strap
  - Protection Bag for backup System Controller
  - Shower Bag

HM3 TRANSPORT / ICU

- Place back up battery into primary controller
- Secure all connections with the driveline and controller
- Gather all components needed for the ICU
- Switch to battery power before bed transfer
- Hold system controller and batteries during bed transfer
- Take the extended silence off Primary controller in CICU
- Place back up battery into the secondary contoller

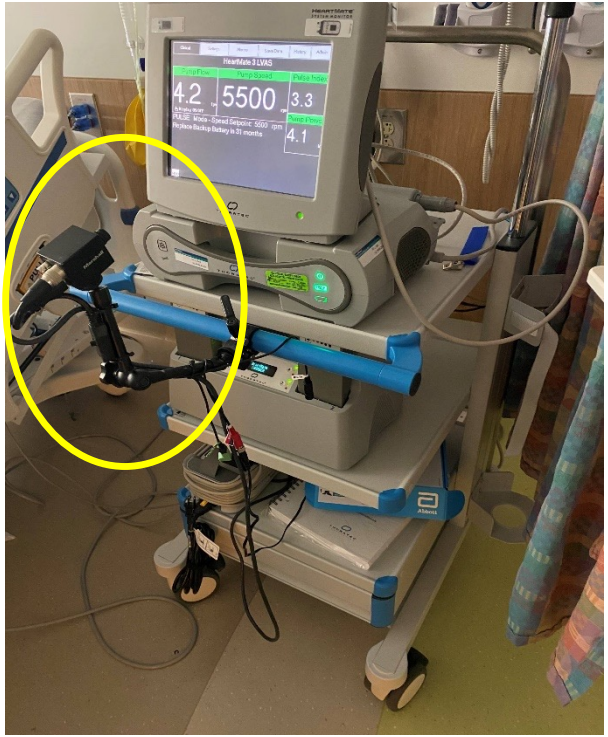
ICU WITH BIVAD HM3

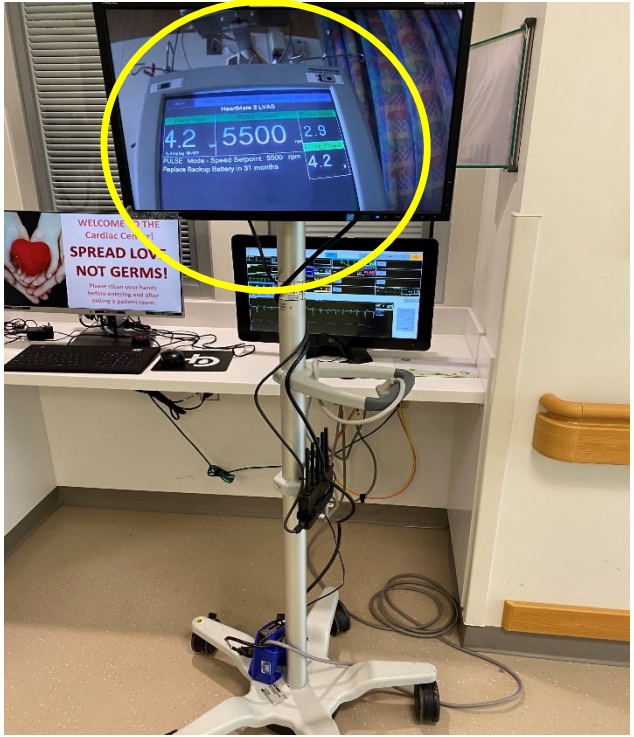
- Label each device monitor with LVAD & RVAD
- Keep all backup controllers separate and labeled accordingly
- Provide enough batteries (10-12)
- Specialized pack to hold both systems controllers, battery clips and batteries

COMBINATION OF DEVICES

- Impella & ECMO
- BH & Centrimag (Wit/Witout Oxygenator)
- HM3 & Centrimag (Wit/Witout Oxygenator)

MAGICAL PERFUSION CAMERA





POTENTIAL PITFALLS

- Dislodging of the Impella catheter position
- Berlin Heart driveline getting too tight when transporting
- Clots in the Berlin Heart pump in first 24hrs
- SVR increases and not keeping up with required drive pressure
- Hemodynamic changes with right heart failure
- Compromised lung function

PEARLS OF WISDOM WITH TRANSPORTING

- Safety is Numero Uno!!!
- Perfusion is lead communicator
  - Transfer onto bed, out of the OR, transport to CICU & into patient room
- It's Not the Daytona 500 in the hallways…..
- Slow on the turns!

PEARLS OF WISDOM WITH TRANSPORTING

- Lead with the Impella, BH and Centrimag (witout Oxy)
- HM3 have all controllers on the bed and trail behind the group
- Be careful of drive lines and wires when going through hallways & doorways
- Plug into power, air/oxy supply and MPC ASAP

PEARLS OF WISDOM FOR ICU

- Volume Status with Hemostasis is Imperative!
- Proper Handoff to the ICU Team
- Monitoring hemodynamics and VAD parameters constantly to optimize patient care
- Just in Time Training to all staff
- Make sure all backup consoles for all devices are placed in CICU ASAP

Thank You!