ACUTE MECHANICAL SUPPORT IN ACHD

WHAT CAN WE DO

DAVID BUCKLEY SSH

SUMMARY

- DEVICES
- INDICATIONS
- SINGLE VENTRICLE PATIENTS

DEVICES FOR MECHANICAL SUPPORT

- SHORT TERM
  - ECMO
  - VAD
- LONG TERM (> 30 DAYS)
  - PULSATILE
    - BERLIN EXCOR (PAEDIATRIC)
    - TAH
  - AXIAL
    - HEARTMATE
    - HEARTWARE

SHORT TERM (<30 DAYS)

- ECPR
- PERIOPERATIVELY
- BRIDGE TO DECISION
- BRIDGE TO BRIDGE

LONG TERM

- BRIDGE TO TRANSPLANT
- DESTINATION THERAPY

PRINCIPLES OF SUPPORT

- RISK VS BENEFIT
- PLAN FOR FUTURE CARE
- SURGICAL CONSIDERATION
- SELECT THE BEST MODE OF SUPPORT

PRINCIPLES OF SUPPORT

- ECMO IS NOT TREATING THE UNDERLYING CONDITION
- IT SUPPORTS THE PATIENT UNTIL THE UNDERLYING PROBLEM IS RESOLVED

ECMO VS VAD

- VA ECMO FOR CARDIAC AND RESPIRATORY SUPPORT
  - MORE COMPLEX CIRCUIT BUT RELATIVELY SIMPLE TO INITIATE
- VAD FOR MECHANICAL SUPPORT ONLY
  - SIMPLER
  - CAN CONVERT TO LONG TERM USE
  - SURGICALLY PLACED IN OR

ECMO

- MAJOR PROGRESS IN TECHNOLOGY HAS MADE THIS TREATMENT EASIER AND SAFER
- THE MAJOR USE OF ECMO IS FOR RESPIRATORY CONDITIONS USED VV
- USED AS URGENT CARDIORESPIRATORY SUPPORT IN A LIMITED NUMBER OF PATIENTS AT LIMITED SITES

ECPR

- INCREASING USE FOR BOTH IN AND OUT OF HOSPITAL CARDIAC ARRESTS
- PERIPHERAL PERCUTANEOUS CANNULATION ALLOWS RAPID INITIATION OF VA ECMO
- LABOUR AND RESOURCE INTENSIVE
- PATIENT SELECTION VITAL

ECPR

- VARIABLE STAFFING MODELS
- INCREASING USAGE
- PROBLEMS WITH LV VENTING
- GOOD ECHO SKILLS TO DETERMINE CANNULA LOCATION

ECPR

- RESUSCITATION IN THE CATH LAB AND ORS
- PATIENTS WHO ARREST WITH CAVOPULMONARY CONNECTIONS

POSTCARDIOTOMY SUPPORT

- FAILURE TO SEPARATE FROM CPB
- POST OPERATIVE CARDIAC ARREST

CANNULATION

- CENTRAL ACHIEVES THE BEST FLOWS
- ALWAYS PLACE A RETROGRADE ARTERIAL CANNULA IF CANNULATING THE FEMORAL ARTERY. DO FIRST IF POSSIBLE
- NEED GOOD ECHO SKILLS TO DELINEATE CANNULAE POSITIONS (BOTH VENOUS AND ARTERIAL)
- GOOD DRAINAGE IS VITAL ESPECIALLY IN THE SV PATIENT. OFTEN NEED MULTIPLE VENOUS CANNULAE.

COAGULATION

- POST OPERATIVELY NIL UNTIL BLEEDING CONTROLLED – LESS PROBLEMATIC IN ADULTS
- HEPARIN
- NORMALISE REST OF COAGULATION PROFILE
- DO NOT DO PROCEDURES THAT CAN CAUSE BLEEDING UNLESS ABSOLUTELY NECESSARY

CIRCUIT

- CONTROL BLOOD FLOWS AND LIMIT OXYGEN
- SIMPLIFY AS MUCH AS POSSIBLE
- OBSERVE FOR CLOT
  - VISUAL
  - PLASMA HEMOGLOBIN
  - PLATELETS/FIBRINOGEN

OTHER ORGAN SUPPORT

- CVVH EARLY
- ENTERAL FEEDING – BEWARE ISCHAEMIC GUT
- LIVER DERANGEMENT
- NEUROPROTECTION

INVESTIGATIONS

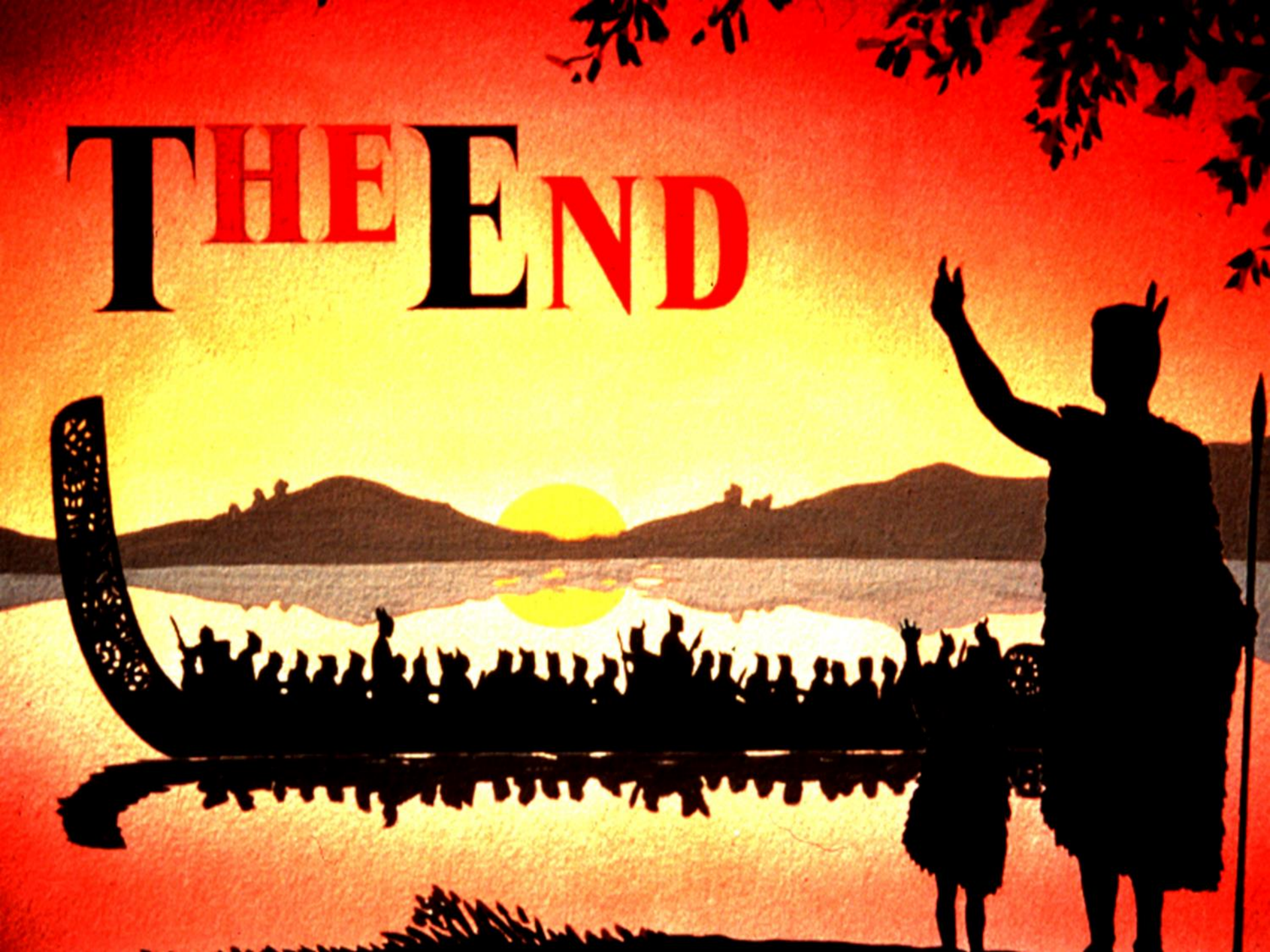
- ECHO FOR STRUCTURE AND FUNCTION
- CARDIAC CATH
- CT HEAD
- NEUROLOGICAL MONITORING/ASSESSMENT
- PLAN FOR ONGOING SUPPORT OR NOT

OUTCOME

- OFTEN DETERMINED BY DEGREE OF NEUROLOGICAL DAMAGE
- MOST SERIES HAVE AROUND 20-40% GOOD SURVIVORS

ACHD SPECIFIC CONSIDERATIONS

- USE IT EARLY IN SV ARRESTS
- RENAL SUPPORT IS COMMONLY REQUIRED
- DIAGNOSE CAUSE
  - ECHO/CATH STUDY/EP
- HAVE A STRATEGY FOR STOPPING/BRIDGING
- CIRCUIT
  - DRAINAGE
  - FLOWS


THE END