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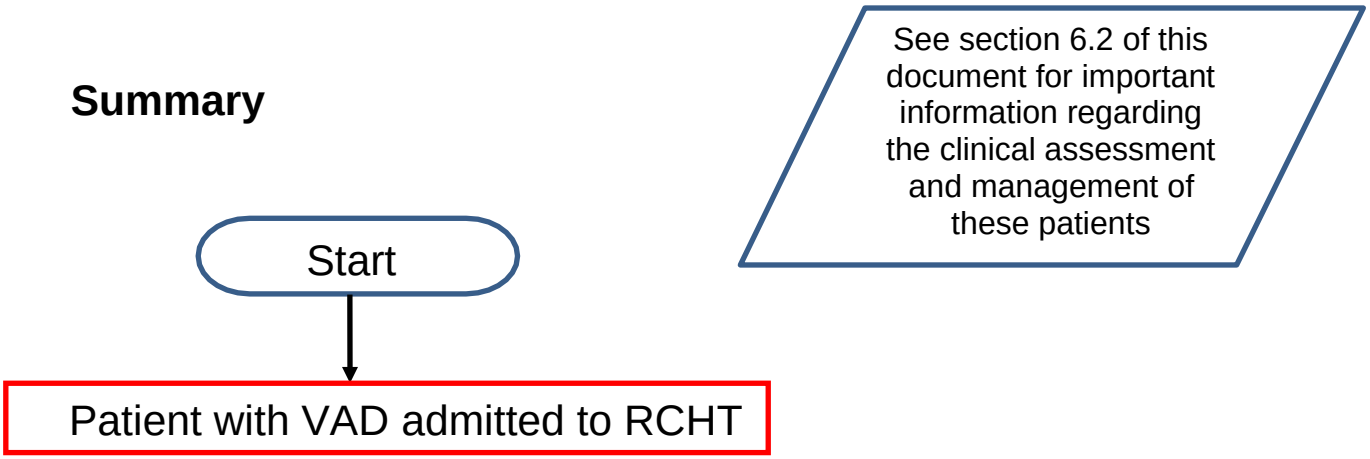
Royal Cornwall Hospitals NHS Trust

Initial Care and Management of Patients Admitted with a Ventricular Assist Device (VAD) Policy

V4.0

February 2023

Summary


See section 6.2 of this document for important information regarding the clinical assessment and management of these patients
Start
Patient with VAD admitted to RCHT
Immediately Inform the on call Cardiologist about the admission
(via RCHT switchboard '0')
Accountability lies with: Admitting physician
Inform the heart function service about the admission
in hours on bleep 3045
out of hours via MAXIMs internal referrals
Accountability lies with: Admitting physician
Ensure the VAD is attached to a mains power source
(see appendix 4)
Accountability lies with: Nurse in charge of patients' care

Arrange transfer to Coronary Care – (unless the patients presenting condition dictates management by critical care eg.

Ventilation)

- Inform the nurse in charge on Coronary care via extension 2630/2648
- site co-ordinator on bleep 3502

Accountability lies with: Nurse in charge of patients' care

1

Following transfer to Coronary Care / Critical care

- Check on call Cardiologist and heart function service are aware of admission
- Ensure VAD attached to a mains power source
- Commence VAD monitoring (see appendix 5)

Accountability lies with: Nurse in charge of patients' care

Inform implanting centre of admission episode

- List of contacts on Coronary care

Accountability lies with: Nurse in charge of patients' care

End

Table of Contents

Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation

The Trust has a duty under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team

Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

1. Introduction

1.1. Ventricular Assist Devices (VADs) are currently licenced in the UK for use as a bridge to transplant, providing mechanical support for the Left Ventricle in patients who have Left Ventricular Systolic Dysfunction. At the time of writing there are 3 patients in Cornwall who have one of these devices in situ, each of them has the Thoratec Heartmate II® in situ.

1.2. This version supersedes any previous versions of this document.

2. Purpose of this Policy/Procedure

A VAD is implanted in a patient to support their Left Ventricular function. This intervention is required because the patient's intrinsic cardiac function can no longer meet their physiological needs. There are a number of important clinical idiosyncrasies for patients supported by a VAD. Incorrect management of these patients can lead to irreversible damage to the VAD and cessation of cardio-vascular support. This document provides information regarding the clinical management of these patients on admission to the Royal Cornwall Hospital NHS Trust (RCHT).

3. Scope

This procedure applies to any clinical area to which this group of patients may be admitted within RCHT

4. Definitions / Glossary

- VAD Ventricular Assist Device
- LVAD Left Ventricular Assist Device
- LVSD Left Ventricular Systolic Dysfunction
- RCHT Royal Cornwall Hospitals NHS Trust
- CPR Cardio Pulmonary Resuscitation

5. Ownership and Responsibilities

5.1. Role of the Medicine, ED and WCH Divisional Management Team

The Medicine, ED and WCH Divisional Management Team is responsible for:

- Ensuring this procedure is cascaded to relevant members of their team.

5.2. Role of the Heart Failure MDT

The Heart Failure MDT is responsible for:

- Ensuring this document is up to date.
- Monitoring compliance and effectiveness of this procedure when a VAD patient is admitted to RCHT
- Ensuring any RCHT patient with a VAD in situ is ‘flagged’ in their medical notes and on PAS
- Ensure the list of implant centres and relevant contacts is kept up to date (held on the Coronary Care Unit)

5.3. **Role of Admitting Physician**

The admitting Physician (e.g. Surgical Receiving Unit, Medical Admissions Unit and Emergency Department) is responsible for:

- Ensuring the On Call Cardiologist is immediately informed of the admission.
- Ensuring the Heart Failure Specialist Nursing Team has been informed of the admission as soon as possible
- Initiating the 10 step ‘admission pathway’ (6.1) outlined in this document.

5.4. **Role of On Call Cardiologist**

The On Call Cardiologist is responsible for:

- Providing a Clinical and Nursing management plan, where appropriate
- Facilitating the rapid transfer of the patient to the Coronary Care Unit
- Ensuring this procedure is followed when a patient with a VAD is admitted to RCHT
- If the patient is admitted ‘out of hours’ and if necessary, inform the implanting centre of the admission. A list of contacts will be kept on the Coronary Care Unit
- Liaising with the Heart Failure Specialist Nursing team.

5.5. **Role of Heart Function Specialist Nursing team**

The Heart Function Specialist Nursing Team is responsible for:

- Providing a Clinical and Nursing management plan, where appropriate
- Facilitating the rapid transfer of the patient to the Coronary Care Unit
- Ensuring this procedure is followed when a patient with a VAD is admitted to RCHT.

- Ensure the implanting centre has been informed of the patients' admission during normal working hours. A list of contacts will be kept on the Coronary Care Unit
- Liaising with the On Call Cardiologist.
- Facilitating the rapid transfer of the patient to the Coronary Care Unit

5.6. Role of Nurse in Charge of the Coronary Care Unit

The Nurse in charge of the Coronary Care Unit is responsible for:

- Facilitating the rapid transfer of the patient to the Coronary Care Unit
- Initiating the 'following transfer to CCU pathway' (6.3) outlined in this document

5.7. Role of the Duty Site Coordinator

The Duty Site Coordinator is responsible for:

- Facilitating the rapid transfer of the patient to the Coronary Care Unit

5.8. Role of the Clinical Leaders

Line managers (eg Ward Sisters/Charge Nurses and Consultant Speciality leads) are responsible for:

- Ensuring this procedure is cascaded to relevant members of their team
- Ensuring this procedure is followed when a patient with a VAD is admitted to RCHT

5.9. Role of Individual Staff

All staff members are responsible for:

- Ensuring they are up to date with this procedure.
- Ensuring this procedure is followed when a patient with a VAD is admitted to RCHT.

6. Standards and Practice

6.1. The Heart Failure MDT is responsible for ensuring any RCHT patient with a VAD in situ is 'flagged' in their medical notes and on PAS

6.2. When a patient with a VAD is admitted to RCHT;

6.2.1. The patient may not have a palpable pulse (VAD flow is continuous not pulsatile).

6.2.2. CPR can dislodge the VAD cannulae (apical or aorta) so should only be commenced if all other possible causes of no flow are excluded (see appendix 4)

6.2.3. Obtaining a blood pressure is challenging due to the absence of pulsatile flow. Mean Arterial Pressure can be obtained using an electronic blood pressure monitor, or by utilising a manual sphygmomanometer and Doppler ultrasound.

6.2.4. The On Call Cardiologist Should be informed immediately (via RCHT switchboard)

6.2.5. DO NOT stop the patients anticoagulation unless requested by a consultant Cardiologist.

6.2.6. Ensure the VAD is attached to a mains power source (see Appendix 4)

6.2.7. The Heart Failure Specialist Nursing team should be informed as soon as possible (via RCHT switchboard)

6.2.8. The Nurse in charge of the Coronary Care Unit should be informed as soon as possible and a bed requested (Ext 2630 / 2648)

6.2.9. The Duty Site co-ordinator should be informed as soon as possible

6.2.10. The patient should be transferred to the Coronary Care Unit as a clinical priority, unless their presenting condition dictates management by critical care (for example patients requiring ventilation)

6.3. Following transfer to Coronary Care Unit;

6.3.1. Check on call Cardiologist and heart function service are aware of admission

6.3.2. Ensure VAD attached to a mains power source

6.3.3. Commence VAD monitoring (see appendix 5)

6.3.4. Inform implanting centre of admission episode

7. Dissemination and Implementation

This document will be disseminated electronically to all relevant stakeholders once published. It will also be available via the RCHT document library. There are no previous versions of this document to archive.

8. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Whether this procedure is followed when a patient with a VAD presents non-electively to RCH
Lead	The Clinical Nurse Specialist, Heart Failure
Tool	Priorities of care for VAD patients' mapping tool
Frequency	This will be monitored each time a patient with a VAD is admitted to RCHT and a report compiled.
Reporting arrangements	This report will be interrogated by the Cardiologist clinical lead for Heart Failure. This report will be reviewed at the Cardiology Speciality meeting with arising actions minuted.
Acting on recommendations and Lead(s)	The heart failure multidisciplinary team will undertake subsequent recommendations and action planning for any or all deficiencies and recommendations within reasonable timeframes.
Change in practice and lessons to be shared	Required changes to practice will be identified and action will commence within 1 week of report review. A lead member of the heart failure multidisciplinary team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders via the Cardiology speciality meeting.

9. Updating and Review

9.1. This document will be updated by the Clinical Nurse Specialist, Heart Function every 3 years.

9.2. Currently the VAD of choice across the UK is the Abbot Heartmate III®. Should this change, appendices 4 and 5 of this document will be updated earlier than 3 years to reflect differing user guides or monitoring values.

9.3. Revisions can be made ahead of the review date when the procedural document requires updating. Where the revisions are significant and the overall policy is changed, the author should ensure the revised document is taken through the standard consultation, approval and dissemination processes.

9.4. Where the revisions are minor, e.g. amended job titles or changes in the organisational structure, approval can be sought from the Executive Director responsible for signatory approval, and can be re-published accordingly without having gone through the full consultation and ratification process.

9.5. Any revision activity is to be recorded in the Version Control Table as part of the document control process.

10. Equality and Diversity

10.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Inclusion and Human Rights Policy' or the Equality and Diversity website.

10.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Initial Care and Management of Patients Admitted with a Ventricular Assist Device (VAD) Policy V4.0
This document replaces (exact title of previous version):	Initial Care and Management of Patients Admitted with a Ventricular Assist Device (VAD) Policy V3.0
Date Issued/Approved:	16 February 203
Date Valid From:	February 2023
Date Valid To:	February 2026
Directorate / Department responsible (author/owner):	Joanna Davies, Clinical Nurse Specialist, Heart Function, Medical Services – Cardiology and Respiratory Directorate
Contact details:	01872 255076
Brief summary of contents:	Pathway for initial clinical management of patients admitted to RCHT with a Ventricular Assist Device in situ
Suggested Keywords:	Cardiology Heart Failure, Left Ventricular Systolic Dysfunction (LVSD), Ventricular Assist Device (VAD), Heart Transplant.
Target Audience:	RCHT: Yes CFT: No CIOS ICB: No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Cardiology Governance Meeting
General Manager confirming approval processes:	Rachel Pearce
Name of Governance Lead confirming approval by specialty and care group management meetings:	Siobhan Hunter
Links to key external standards:	None required

Information Category	Detailed Information
Related Documents:	Heartmate II user guide: operating manual can be accessed via the Internet – search for 'Heartmate ii manual'.
Training Need Identified?	No, all relevant information pertaining to the device is included within this document.
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical / Cardiology

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
10/05/2013	V1.0	Initial Issue	Joanna Davies Clinical Nurse Specialist, Heart Failure
19/10/2016	V2.0	Planned review. Update only of job titles and process for arranging a Cardiology bed during 'working hours'	Joanna Davies Clinical Nurse Specialist, Heart Function
12/11/2019	V3.0	Planned review. Update only of job titles and VAD of choice	Joanna Davies, Clinical Nurse Specialist, Heart Function Dr P Chaggar, Consultant Cardiologist, Heart Failure clinical lead
January 2023	V4.0	Full review and no changes made to content. Transposed to latest Trust template.	Joanna Davies, Clinical Nurse Specialist, Heart Function

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.
This document is only valid on the day of printing

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust

Policy for the Development and Management of Knowledge, Procedural and Web Documents (The Policy on Policies). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Initial Care and Management of Patients Admitted with a Ventricular Assist Device (VAD) Policy V4.0
Directorate and service area:	Cardiology
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Joanna Davies, Clinical Nurse Specialist, Heart Function
Contact details:	01872 255076

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To improve the initial clinical management of patients with a VAD who are acutely admitted to the Royal Cornwall Hospital, reducing the risk of adverse events for this group of patients who have complex clinical management requirements.
2. Policy Objectives	To provide a clear, speciality agreed, pathway for the initial clinical management of patients with a Ventricular Assist Device on admission to the Royal Cornwall Hospital
3. Policy Intended Outcomes	Availability of a robust, measureable, Speciality agreed pathway for the initial management of patients with a VAD.
4. How will you measure each outcome?	Outlined in section 8 of this document. Utilising Appendix 7 'Priorities of care for VAD patients' mapping tool
5. Who is intended to benefit from the policy?	Patients with a VAD, acutely admitted to RCHT and those members of the MDT caring for them.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** All Consultant Cardiologists, Ward Sister Coronary Care Unit Medical Admissions Unit Consultant Physicians and Unit Clinical Matron, Specialist Medicine Care Group
6c. What was the outcome of the consultation?	Agreed
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff or patient surveys:** No

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	

Protected Characteristic	(Yes or No)	Rationale
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

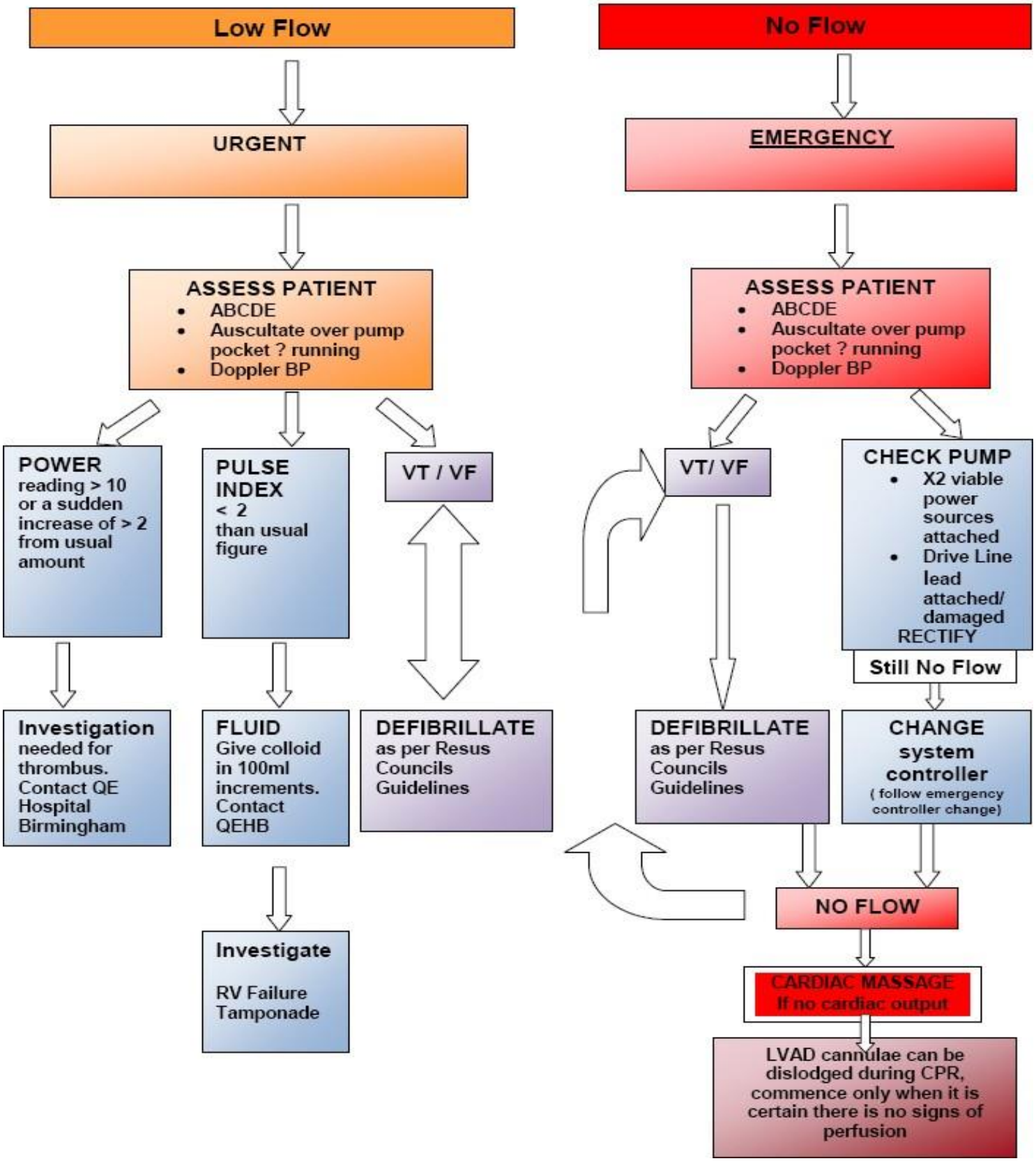
Name of person confirming result of initial impact assessment: Joanna Davies, Clinical Nurse Specialist, Heart Function

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis

Appendix 3. VAD Resuscitation guidelines

VAD PATIENTS DO NOT ALWAYS HAVE A PULSE, DO NOT IMMEDIATELY DO CARDIAC MASSAGE, FOLLOW THESE GUIDELINES:

Contact the Transplantation Emergency Line for guidance 07850 233730



Appendix 4. Attaching a VAD to a mains power supply (Heartmate II®)

The VAD is implanted in the patient. All that is visible is the driveline, which usually exits the abdomen on

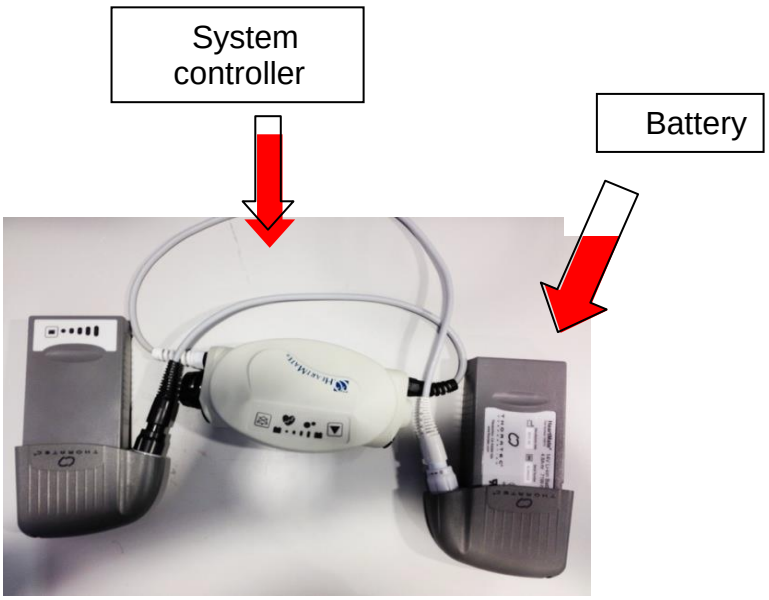
the patients' left hand side.

The system controller is connected to the VAD via the driveline.

There are 2 power source options for the VAD, either of which can be connected to the VAD via the system controller:

Batteries:

These batteries will last 8-10 hours depending on RPM setting.



Or mains power via the power module:
The power module has a built in battery which will last for 30 minutes if the mains power supply is interrupted.

Ensure the power module is plugged into the mains and connected to the patient's system controller as soon as possible

A full, up to date operating manual can be accessed via the Internet – search for 'Heatmate ii manual'.

Appendix 5. Daily checks:

Power Module Self-Test

1. Press and hold the Power Module's (PM's) Silence Alarm Button for five seconds.

2. Listen for 3 beeps to sound and watch the front of the PM to see if all the lights come on in sequence (i.e. one-at-a-time; not all at once).

3. If any of the following occurs, there may be a problem with the PM and you should **change to battery power and contact Inplanting centre/ Thoratec immediately:**

- No sound
- Anything other than 3 beeps (such as continuous beeping or a broken tone)
- All the lights come on at once
- All the lights remain off
- One of the lights does not come on

System Controller Self-Test

1. Press and hold the Test Select Button for three seconds.

After three seconds, the Red Heart , Red and Yellow Battery , Yellow Controller Cell Symbol , and Fuel Gauge lights will come on, along with a CONTINUOUS AUDIO TONE.

Note: Pressing the Test Select Button will have no effect when an alarm is active. A self-test can be performed only when there are no active alarms.

2. Look closely at the System Controller display panel. Make sure that all of the lights are on and the alarm is making a CONTINUOUS AUDIO TONE. If there is a problem with the audio alarm, it will beep once every two seconds instead of a continuous or steady tone.

3. Release the Test Select Button.

4. All the lights should remain on and the alarm should sound a CONTINUOUS AUDIO TONE for an additional five seconds.

5. If all the alarms and lights come on as described above and then turn off five seconds after releasing the button, the System Controller has passed the self-test.

If It Does Not Pass The Self Test, Contact Implanting Hospital /Thoratec Immediately