

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 1 of 30 Version: 2

Congenital Cardiac Catheterisation Standard Operating Procedure UHL Cardiology & EMCHC (LocSSIPs)

Change Description <input type="checkbox"/> Change in format	Reason for Change <input checked="" type="checkbox"/> Trust requirement
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APPROVERS	POSITION	NAME
Persons Responsible for Procedure:	Lead Consultants	Dr Rizwan Rehman Dr Marinos Kantzis Dr Atul Kalantre
SOP Owner:	Consultant	Dr Rizwan Rehman
Sub-group Lead:		Dr Jaswant Sumal Deborah Smith Matthew Cookson Shirley Richardson Joseph Gilbey Deborah Ip Cini Biju Aine Noonan

<p>Appendices in this document:</p> <p>Appendix 1: NICOR Trans catheter procedures:</p> <p>Appendix 2: UHL Cardiac Catheter Pathway</p> <p>Appendix 3: Cath Lab Team Brief/Debrief</p> <p>Appendix 4: UHL Cath Lab Safer Procedure Checklist</p>
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<p>Introduction and Background:</p> <p>Local Safety Standards for Invasive Procedures (LocSSIPs) are based on the National Safety Standards for Invasive Procedures (NatSSIPs). These build on the WHO Safer Surgical Checklist to enhance the care and safety we provide to our patients. Created in response to a surgical “Never Events” review in 2014 by a Surgical Never Events Taskforce, NatSSIPs standardise operating department practise and enable NHS providers to develop and maintain their own, more detailed, standardised local procedures. All members of the team are responsible for the performance of the LocSSIPs and share accountability for its full completion.</p>
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STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester NHS NHS Trust	East Midlands Congenital Heart Centre
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Review date: October 2026
	Page 2 of 30
	Version: 2

Although finalised we encourage a culture of openness and transparency to enable this LocSSIPs to be dynamic and address new concerns regarding patient safety that may develop. Team members are encouraged to **STOP THE LINE** to ensure compliance with all aspects of the LocSSIPs. New team members would be expected to familiarise themselves with the LocSSIP. With periodic audit and governance meetings the standards within the LocSSIPs will be maintained and improved.

This LocSSIPs covers Paediatric and adult congenital cardiac (ACHD) catheter procedures undertaken at University Hospital Leicester NHS Trust (UHL). It applies to diagnostic catheters and interventional procedures and is based on the NatSSIPs ¹, Recommendations of the British congenital cardiac association for therapeutic cardiac catheterisation in paediatric heart disease – 2012 ² and indications for cardiac catheterisation and intervention in Paediatric Cardiac Disease, A scientific statement from the American Heart Association 2011.³

Procedures covered by this LocSSIP, as per NICOR: National Institute for Cardiovascular Outcomes Research can be found in Appendix 1.

Figure 1 details the generic NatSSIP principle this LocSSIPs is based on:

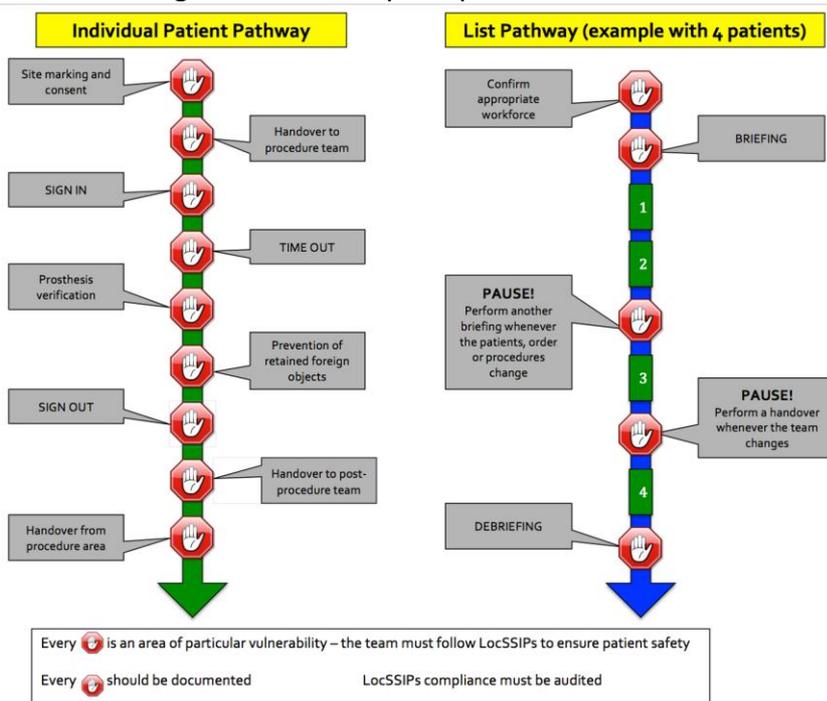


Fig 1.

Referral/List management and scheduling:

Listing

Cases are discussed at Cardiac Multidisciplinary meeting (MDT) and added to waiting list. Clinical urgency is decided at the MDT. Outcomes are communicated to patients by letter, unless inpatient.

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021	
Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester 		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 3 of 30	Version: 2

The interventional consultants liaise with the list manager regarding listing.
List order is finalised by responsible consultant and emailed by list manager on Friday.
Cases requiring back up intensive care bed are highlighted.
2-4 cases are listed per day and order of cases to be confirmed prior to listing.

The cardiac catheterisation pathway includes medical history, pre/post procedure assessment, procedure note and WHO checklist. (Appendix 2).

Admission

If suitable attend preadmission clinic and can be pre admitted. Consented by Cardiologist or experienced Specialist Registrar (SpR).
Junior doctor/Liaison nurse – takes a history and organises MRSA swabs, blood tests (FBC, U&E, Clotting profile, Group and save). Further tests including pregnancy test as directed by the consultant responsible.

Cross Site Working

In august 2021 Paediatric Congenital Services moved from Glenfield to the Kensington Building at Leicester Royal Infirmary. Paediatric catheter procedures including Electrophysiology take place on Wednesday and Thursday with Adult Congenital procedures taking place at the Glenfield site on a Tuesday.

Emergencies – Adult Congenital (Glenfield)

For emergency procedures during working hours Catheter lab space is secured following discussion with the coordinating nurse the anaesthetic team must be secured by contacting theatre floor control and the anaesthetic office. Out of hours the Cath lab team is activated via the CCU nurse in charge, extension 3774 or 3719, the anaesthetist and ODP must be contacted via switchboard in separate phone calls by the in hospital team.

Emergencies – Paediatric Cardiac (Leicester Royal Infirmary)

08:00 to 18:00 Wednesday and Thursday are scheduled catheter activity sessions.

In hours emergency catheter or electrophysiology procedures outside of scheduled activity:
Notify General manager, service manager or Children’s Hospital manager of the day. They will activate emergency Anaesthetic, Nursing and Radiology team. Pacing, EP contact GH Physiology team 0116 2583829 or for catheter team contact via 0116 2583926/ 5238 at LRI and staffing discussed with lead Physiologist. If LRI physiology support is not available, then discussion with the Glenfield team 0116 2583929/0116 2583829.

If no support as per below.

Urgent EP cases may disrupt the EP cover at Glenfield due to currently no EP trained tech available at the LRI. The General manager and clinicians across both sites should discuss urgency of cases and decide on cover for EP procedures and the need to take down any elective work to support this.

For Semi Urgent cases it is recommended a discussion is had between clinicians, managers and catheter teams to decide suitable timing of case.

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 4 of 30 Version: 2

For out of hours emergency catheter or electrophysiology procedures the on call anaesthetics, ODP, Radiographer, Physiologist and 1st on call Theatre Nurse are contacted the via Switchboard.

In scenarios where a physiologist is required to cross cover both the Glenfield and LRI site please refer to the: Standard Operating Procedure: Cardiac Physiologist on call provision and escalation for Emergency Catheter Laboratory Procedures

Patient preparation:

The patient pathway is completed (Appendix 2).

- All aspects of the WHO compliant pre-procedure checklist completed
- Medical documentation
- EWS/PEWS score
- Consent
- Dentures
- Pregnancy test/LMP

All patients to have had an ECG, Echocardiogram, CXR, FBC, U&E, Clotting profile within the last 3 months.

Transfusion requirements:

Diagnostic	0-3 months: 1 paediatric pack >3 months Group and save
ASD/PDA closure	Group and save
Intervention	2 Paediatric Pack(0-4 years old) or 2 adult units
Other	Consultant decision

Further tests as directed by responsible Consultant.

Nil by mouth (NBM)

Prehydration with iv fluids or parenteral fluids in all patients with sats <85%, Tetralogy of Fallot, hepatic or renal impairment.

Diabetic patients should be listed first with appropriate pre, peri and postprocedural glycaemic management.

Current NBM times - 6 hours solids, 4 hours breast milk, 2 hours clear fluids (0 hours at anaesthetic request).

Medications

Can continue Aspirin/Clopidogrel

Warfarin doses are adjusted to maintain an INR closer to 2. If this is not possible (such as mechanical mitral valve) iv heparin or subcutaneous LMW heparin can be used.

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 5 of 30 Version: 2

Procedures can be carried out with INR around 2, platelets > 50

Consent

Patients are consented by the Consultant or Specialist Registrar assisting the list. They are informed of the relevant risks including death, stroke, rhythm disturbances and the need for emergency surgery and ECMO support. An overall procedural risk can be generated by their CRISP score.⁴

As UHL moves towards Electronic Consent we will continue to have the option of paper consent and E-Consent via Concentric. Completed consent forms will be available on the CITO hospital system.

Anaesthesia

An anaesthetic assessment takes place on the day of procedure to confirm suitability to proceed with general anaesthetic or in a pre-assessment clinic. Some procedures in adults will be undertaken using local anaesthesia or sedation only.

Workforce – staffing requirements:

All team staff members will have completed relevant role specific HELM training and any other appropriate training (e.g. revalidation/IRMER). Maintaining relevant and current training is the responsibility of the individual and is regularly checked as per the appraisal process. All new members of staff will have completed full induction training before independently working in their role. Progress and skill development is monitored and managed by the senior staff in the area with regular review. Visitors to the area are closely supervised according to UHL policy. The Supervisor of the new staff members is responsible for letting the team to know what the junior staff is skilful to do or not.

Roles and responsibilities of the clinical team

The following team (minimum) is required to be present throughout the procedure.

1 Cardiologist, 1 Anaesthetist, 1 ODP, 1 Radiographer, 1 Catheter Lab circulating nurse, 1 Cardiac Physiologist.

The department should always aim to have:

1 Cardiologist, 1 Specialist Registrar, 1 Anaesthetist, 1 ODP, 2 Scrub Nurse at LRI, 1 Radiographer, 1 Catheter Lab circulating nurse, 1 Cardiac Physiologist, 1 Imaging Consultant

- **Cardiologist** – Has the overall responsibility for the procedure and acts in the role of IRMER practitioner, leads the team brief at 08:15 then instigates safer surgery checklist for each procedure. To ensure that team aware of any non-standard steps. Documents the procedure indicating any further treatment or discharge plans, ensures appropriate prescription including all verbal orders. Completes all data capture requirements.

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021	
Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester 		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 6 of 30	Version: 2

- **Specialist Registrar** – This role will vary with experience and will enable the SpR to act as operator when being supervised by cardiologist leading safer surgery checklist and ensuring that the team are aware of nonstandard steps. When no scrub nurse is available they will be responsible for sterility of equipment and the appropriate preparation of the patient procedural site. Instigates accountable items counts and ensures safe handling of sharps on the procedural trolley. Prepares equipment for the procedure following appropriate supervised practice. Working as part of the MDT to ensure safety of patient. Documents the procedure indicating any further treatment or discharge plans, ensuring appropriate prescription including all verbal orders. Completing all data capture requirements.
- **Anaesthetist** – Has responsibility to provide general anaesthesia or sedation to patients undergoing congenital catheter lab procedures. The Anaesthetist will do pre-anaesthetic checks prior to the team briefing and identify any issues that may disrupt the management of the list. The Anaesthetist is responsible for safe transfer of the patient to the Recovery/PICU post procedure and once the airway is secure post extubation.
- **ODP** – To support the Anaesthetist with the management of the Cath lab list.
- **Radiographer** - Responsibility for IRMER compliance ensuring radiation safety of patients and staff, ensuring correct patient imaging with optimum settings. Reinforcing staff compliance with the local rules providing support and advice in order to comply. Completing the imaging process ensuring images are archived, dose information is recorded, reporting and addressing any radiation concerns. Working as part of the MDT to ensure safety of patient, ensuring the safer surgery check list is completed.
- **Catheter Lab Circulating Nurse** - Responsible for caring for the patient in the room, ensuring adequate handover to follow on team. Medicines management, through storage of medicines and the safe administration of IV medication during the procedure following catheter lab verbal order guidance. Ensuring sterility of all equipment and ensuring that all equipment and stock is available for the procedure, liaising with the stock management company for shortages. Scanning all stock used to ensure replacements can be ordered. Liaising with the catheter lab co-ordinator for any changes to the list or escalated care requirements. Working as part of the MDT to ensure safety of patient, ensuring the safer surgery check list is completed.
- **Catheter Lab Scrub Nurse** - Responsible for sterility of equipment and the appropriate preparation of the patient procedural site. Instigates accountable items counts and ensures safe handling of sharps on the procedural trolley. Prepares equipment for the procedure following company / consultant training. Working as part of the MDT to ensure safety of patient, ensuring the safer surgery check list is completed.
- **Cardiac Physiologist** – Responsible for the monitoring of paediatric patients, connecting ECG

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STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 7 of 30 Version: 2

monitoring and setting up pressure transducers for invasive blood pressure monitoring. Keeping a log throughout the case and identifying any abnormal readings. Process any blood samples for blood gas monitoring and print out pressure waveforms as required. Working as part of the MDT to ensure safety of patient, ensuring the safer surgery check list is completed.

- **Imaging Consultant** – to provide imaging support for cardiac catheterisation by performing transthoracic and transoesophageal echocardiogram.

Ward checklist, and ward to procedure room handover:

- All mandatory pre-procedural patient information will be documented within the admissions proforma and confirmed as being handed over at the required information handover points in the patient journey.
- Consent will be completed by the cardiology clinician (registrar or consultant) prior to the procedure.
- The pre-procedure checklist must be completed on the ward. Pre-procedure issues must be resolved prior to transfer to Cath lab. The cardiologist must be informed of any abnormalities.
- The patient will not be admitted to the procedural area unless the pre-procedure checklist is completed (embedded within the cardiac catheterisation pathway) and the patient consented.
- Each patient will get signed in to the department at a formal documented handover from the clinical team.

Team Safety Briefing:

Prior to commencement of any list or case a procedural list ('Safety Briefing') which involves key members of the team as a minimum (ideally all the team) must take place.

- Begins at 08:15 and led by any member of the team
- Equipment checks should have already been performed and any issues highlighted, and actions put in place to address if required.
- The area should be quiet and free from interruptions
- All staff members introduce themselves and their roles
- The cases are discussed:
Order, medical history, reason for catheter, major risks of catheter, surgical backup, crossmatch availability, adult vs paediatric mattress, arm position, injector, number of pressure lines, equipment, need for antibiotics, need for transoesophageal echocardiogram and any non-standard steps are highlighted.
- Procedures involving implantation of devices must be discussed and availability of devices verified for
- For high risk interventions the surgical and ECMO team are informed prior to commencing case.

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STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021	
Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester 		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 8 of 30	Version: 2

Sign In:

Sign In and Time Out are safety processes whereby the prompts on the checklist ensure verification of the correct patient, procedure.

- Conscious and coherent patients should actively be encouraged to participate in these processes.
- The Sign in verification process must be performed by two team members, one must be an operator, the other will also be involved in the procedure and should be from the anaesthetic team. It would also be ideal for the radiographer to be present at sign in however, if it is deemed that this number of staff would unduly stress the patient then the radiographer is not essential.
- The questions will be undertaken verbally in a clear, precise and audible tone, with the patient.
- The process must have both the two's checkers full attention to confirm sign in. No other task should be undertaken until this is completed.
- For paediatric or emergency cases where the patient is not able to communicate identification can be taken from transferring team and the wrist band.
- Pregnancy statues when required must be checked at this point prior to any anaesthesia being administered. Any concerns must be raised with the anaesthetist and the operator.

Time Out:

Time out must be undertaken with all the team present and everyone must engage and give their full attention

- The steps on the checklist must be led by a trained Healthcare professional in a clear and audible manner.
- All Team members must 'stop and pause' whilst the checklist questions are asked and responded to, hence this part of the safety process is known as 'time out'.
- If there is an interruption, the 'time out' must be suspended and recommenced.
- Every team member is valuable and should feel comfortable and at ease to raise any questions or concerns they have relating to the case at this time.
- The patient should once again be included where possible in the time out.
- Team members must not enter or leave the procedural room during this time

Sign Out:

Sign Out when the procedure is completed

All patients who have undergone an interventional procedure must undergo safety checks at the end of the procedure before leaving the procedural room.

- Team members who are present at the end of the procedure should not leave the room until this is

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Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 9 of 30 Version: 2

completed and verified as correct. (Any member of staff leaving the case before it is completed must handover to an equivalent member of staff).

- The nominated Healthcare professional leading time out will request that all the team is present and ask the team to 'stop and pause'.
- The set questions on the designated section of the Checklist are then directed to the appropriate team member/s, who will verbally respond to the questions being asked.
- Any specimen taken must be confirmed visually that it is labelled correctly.
- Implant/device insertion logs and securing of stickers must be confirmed.
- The procedure will be documented in the Procedure booklet and at a later date a formal report will be available on CRIS and in the notes.
- Finally, prior to transfer to the recovery/discharge area the team will review any key plans or concerns for the handover.
- The procedure nurse must complete adequate patient handover to the recovery/discharge area.
- The 'Sign Out' sheet is then signed by a registered healthcare professional and retained in the patient's notes as evidence.

Restricted Use of Open Systems:

The Glenfield Specification Coronary Angiogram Pack has been designed to restrict the use of open systems and to mitigate against the risk of these and will form the basis of the equipment used. Any other equipment should be assessed by the operator and must comply with these restrictions and mitigations as below.

All drugs will be drawn into syringes and labelled with syringe labels that are supplied in the Glenfield Specification Coronary Angiogram Pack.

Flush bowl is pre-labelled 'not for injection'

There is a gallipot for contrast used to inflate angioplasty balloons and stents this is labelled 'contrast'.

Contrast will be administered via the manifold supplied if possible. In paediatric patients where it is not possible to use an injector or manifold, angiograms may be performed using contrast from the gallipot in a syringe labelled 'contrast'.

Local anaesthetic syringe is labelled accordingly.

Performing the procedure:

Patients in whom a device will remain in the heart receive a preimplantation dose of iv Flucloxacillin (25 mg/kg) and Gentamycin (2 mg/kg). Patients receive a further 2 doses of iv Flucloxacillin on the ward. (Teicoplanin 7 mg/kg as a one off dose if penicillin allergic).

To reduce thromboembolic events saline is Heparinised in the wire bowl with a concentration of 5000units in 500ml. The flush bag will be Heparinised to a concentration of 5000 units in 500 ml for adults and children over 50kg, with 500 units in 500 ml for Paediatrics. Between 50-100 units/kg of heparin is

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STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 10 of 30 Version: 2

administered once vascular access is secured (max 5000-6000 units in adults). There is a prompt at 30 minute intervals by the cath lab nurse for an ACT check. If felt necessary (right heart interventions, close to finishing or prior to stent deployment) this can be omitted. The consultant responsible decides if further iv heparin is required.

The patient is positioned with arms up or arms down depending on procedure with appropriate support to reduce risk of brachial plexus injury. Additional rolls under the shoulders or hips may be required to enable successful vascular access. Chloroprep sticks are used to prepare the puncture sites and patient is the draped with sterile drapes. There is provision of ultrasound to facilitate vascular access.

The radiographer and primary operator ensure all staff members are wearing appropriate radioprotective equipment and x-rays are enabled for screening. Transducers are checked and levelled at mid chest level in conjunction with the physiologist. The zero is checked at the outset of the procedure (usually in the ventricle) to ensure accurate haemodynamic measurements. There is a need for some measurements to be taken on apnoea (mechanical end expiration) and this is coordinated with the anaesthetist.

Patient Monitoring:

The patient will be monitored as below throughout the procedure:

Type of monitoring	Frequency of monitoring
BP	Continuously/invasive throughout procedure. 15 minute peripheral BP for patients having local anaesthetic procedures if no arterial access used for monitoring.
O2 saturations	Continuously throughout procedure.
Respiratory rate	5 minute intervals for anaesthetised patients, 15 minute intervals for local anaesthesia.
ECG	Continuously throughout procedure.
Temp	Nasal probe after intubation. Not done routinely for local anaesthesia.
Capillary Blood Glucose	Not routinely/As required
ACT	As directed by the operator. The team should prompt the operator at 30 minutes if not checked, a Heparin clock will be started for all to see.

Stock management / expiry dates:

All stock required for the procedure is checked prior to the start of the procedure, further stock control is

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Review date: October 2026
	Page 11 of 30 Version: 2

undertaken via the stock management system within the lab. Any shortages will be identified and alternatives provided.

Prevention of retained Foreign Objects:

Procedures will be adhered to within the Management of Surgical Swabs, Instruments, Needles and Accountable Items policy (2018)

A count of all sharps used during the procedure must be documented on the accountable items record sheet. This must be completed at the start of the case and maintained throughout, adding any further items to the count.

This count must be completed by a scrubbed practitioner and another member of the cath lab team. No waste must leave the room during the case until the final count has been made.

At the end of the case the count must be repeated and checked against the accountable items record. If there are any discrepancies the waste bags will be searched and the missing item must be found before the patient leaves the room.

The operator must sign to verify all guidewires are intact at the end of the procedure. In addition to guidewires, catheters (including stent delivery catheters/sheaths) and microcatheters. Guide wires should be routinely checked by the operator to ensure their integrity. If there is any doubt as to the integrity of a guidewire or any piece of equipment this should be raised immediately and X Ray screening implemented as appropriate.

Radiography:

All procedures are undertaken with compliance with IRR 17, IR(ME)R 17 and Local Rules.

Cardiology IRMER procedures are in place as per IRMER legislation.

IRMER training relevant to each role is undertaken at induction checked at appraisal and audited.

Handover:

Specific details for handover to the recovery and subsequently ward staff required are as follows:

- If an increased level of post procedure monitoring and / or higher dependency area other than standard ward bed is required this will be clearly documented.
- The access device (i.e. Femoral Arterial Sheath or Radial Band) removal instructions and removal time will be clearly documented.
- Dual Antiplatelet Therapy regime is communicated to the ward team either via the ICE discharge letter or patient pathway.
- Any changes to current medication will be documented and prescribed by the operator.
- All medication administered or commenced during the procedure will be handed over to the

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021	
Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester 		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 12 of 30	Version: 2

receiving nurse with an infusion chart as required.

Team Debrief:

- A team debrief should occur at the end of all procedure sessions as per WHO checklist which should include:
- The purpose of the de-brief is to discuss the sessions' list and identify what went well and what did not.
 - The area used should be quiet and free from interruptions.
 - The brief may be led by any designated member of the team.
 - Any problems with equipment identified and the plan for rectification confirmed. Any long term problem identified to the co-ordinator and the appropriate team
 - Identify areas for improvement and escalate to senior team with plan for any change required.

Post-procedural aftercare:

Post-procedural care

- Aftercare of the patient is formally documented in the Catheter Pathway with any additional specific aftercare instructions documented
- Access sites are regularly monitoring and peripheral pulses and limb perfusion assessed. Any concerns to be escalated to the responsible consultant

Discharge:

- The patient will be formally handed back to the clinical team with a documented handover back to ward team for inpatients/patients to be recovered on a ward;
- Any relevant investigations are assessed (ECG, CXR, echocardiogram) and patient medically declared fit for discharge
- A discharge letter is completed on ICE and appropriate follow up arranged
- Patients receive a discharge leaflet

Governance and Audit:

Safety incidents in this area include;

- Wrong site surgery
- Retained foreign object post-procedure
- Wrong prosthesis or implant

All incidents and near misses will be reported on Datix and appropriate actions taken.

This document will be audited periodically and will be reviewed alongside any changes to the service and

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Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 13 of 30 Version: 2

practice. The service is under regular review at the Mortality and Morbidity audit meetings. Regular IRMER compliance audits are undertaken. Periodic audit of the catheter pathway (Appendix 2) will be performed to ensure compliance with LocSSIPs.

[To submit monthly Safe Surgery Audit and WHOBARs assessment as per Safe Surgery Quality Assurance & Accreditation programme.](#)

Training:

- Angiocatheter Suite Nursing competencies
- Access and knowledge of massive haemorrhage protocol
- Scrub training protocol / procedures (when implemented)
- IRMER relevant training
- Helm mandatory training
- Equipment competency training

Documentation:

All documentation from admission to discharge should be recorded on the standard UHL related admission documents including

- Cardiac Catheter Intervention Care Pathway
- Angiocatheter Suite specific UHL Safer Surgery checklist
- Patient property disclaimer
- NHS consent form
- UHL Bed rail risk assessment (if required)
- UHL Falls risk assessment (if required)
- UHL Adult in patient medication record / EPMA available

In addition to this patient procedure details will be recorded onto the DCS Intellect data management system PATS (This is the BCIS database that operators and radiographers fill out separately)

References to other standards, alerts and procedures:

National Safety Standards for Invasive Procedures, NHS England 2015:

<https://www.england.nhs.uk/patientsafety/wp-content/uploads/sites/32/2015/09/natssips-safety-standards.pdf>

UHL Safer Surgery Policy: B40/2010

UHL Consent to Treatment or Examination Policy A16/2002

UHL Delegated Consent Policy B10/2013

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STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 14 of 30 Version: 2

Surgical Swabs, Instruments, Needles and Accountable Items UHL Policy B35/2007

Sedation UHL Policy B10/2005

UHL Cardiology Guideline C268/2016

UHL Policy on Surgical Safety Standards for Invasive Procedures B31/2016

Ionising Radiation Safety UHL Policy B26/2019

The Ionising Radiation (Medical Exposure) Regulations 2017

The Ionising Radiation Regulations 2017

Further References

Cath Lab Local Rules

Cardiology IRMER procedures

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END

Title: Congenital Cardiac Catheterisation Standard Operating Procedure UHL Cardiology & EMCHC (LocSSIPs)

Authors: Dr Rizwan Rehman

Approved by: CMG 2023

Review: 17/10/2026

Trust Ref: C19/2021

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Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester 		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 15 of 30	Version: 2

Appendix 1: NICOR Trans catheter procedures:

1. NICOR: National Institute for Cardiovascular Outcomes Research. Trans catheter procedures:

- Stent placement in arterial duct (PDA)
- Transluminal pulmonary valve insertion
- Stent placement in right ventricular outflow tract (RVOT)
- Transluminal pulmonary valve perforation & dilation
- Blade atrial septostomy
- Balloon dilation and/or stenting of pulmonary vein
- Stent placement at site of aortic coarctation
- Balloon dilation of native aortic coarctation-hypoplasia
- Balloon dilation of aortic re-coarctation
- Balloon dilation of aortic valve
- Balloon dilation of pulmonary valve
- Transluminal ventricular septal defect (VSD) closure
- Transluminal patent foramen ovale (PFO) closure
- Transluminal atrial septal defect (ASD) closure
- Transluminal patent arterial duct (PDA) closure
- Stent placement in pulmonary artery
- Balloon dilation of pulmonary artery
- Transluminal systemic-to-pulmonary collateral artery (MAPCA) procedure
- Stent or balloon dilation of cardiac conduit
- Stent redilation
- Diagnostic cardiovascular catheter procedures
- Pacemaker lead procedure
- Collateral occlusion (non NICOR)

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 16 of 30 Version: 2

Appendix 2: UHL Cardiac Catheter Pathway

East Midlands Congenital Heart Centre Paediatric & Congenital Cardiac Catheterisation Pathway					
Patient (Affix Label)		Consultant			
		Next of Kin:			
		Relationship:			
		Contact numbers:			
		Planned Procedure (attach MDT sheet):			
Weight (kg):	Height (cm):	Saturations:	Allergies:		
Date of Admission:	Date of Procedure:	NBM ready for:	LMP/Pregnancy status:		
Cardiac Diagnosis:			Other Diagnosis:		
Interventions:					
Medications	Dose	Frequency	Instruction - Stop/continue	Swabs	Date
				MRSA Nose	<input type="checkbox"/>
				MRSA Perineum	<input type="checkbox"/>
				Covid swab	<input type="checkbox"/>
				Other:	
				<input type="checkbox"/>
				MRSA Status :	Positive/Negative
				Covid swab :	Positive/Negative
				Other:	Positive/Negative
INR:		Date:		G&S / X Match- Units	



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University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 17 of 30 Version: 2

History

Recent infection – Yes / No
Details:

Smoking	Current/Previous/Never		Y/N
Alcohol	Units: per week		
History of seizures	Yes/No		
NYHA Status	I – no limitation II – Slight limitation III – Marked limitation/comfortable at rest IV – Symptoms at rest		
Diabetic	Yes/No		
Dental Check	Yes/no		
Adult: Capacity to consent	Yes/No If No - Mental Capacity Assessment/Best Interest completed: Yes/No		
		Hypertension	
		Stroke/TIA	
		Asthma/COPD	
		Thyroid disease	
		Renal conditions	
		Airway/ENT issues	
		Pacemaker	
		Previous access issues (details)	

Examination:

Right foot pulse: Present/absent Left foot pulse: Present/Absent
Rash at access sites: Yes / No (if yes inform consultant)

PATIENT NAME:

HOSPITAL NUMBER:

2



STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester  NHS Trust	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 19 of 30 Version: 2

SAFER SURGERY CHECKLIST
Preparation For Surgery
CARDIAC SURGERY

Procedure: _____ Consultant: _____

Ward: _____

Like to be called: _____

Speaks: _____

Observations (or EMS Print Out)

Temp: _____ Pulse: _____ BP: _____ RR: _____ SpO2: _____ EWS: _____

Height: _____ Weight: _____ BMI: _____

Theatre Reception Check

LD Bands: Confirm identity:

Consent Valid: and as per Operation List:

Operation site marked: All details in Nursing Check are confirmed:

Nurse completing: _____ Name: _____ Signature: _____

ALLERGIES: YES NO Date: _____

INFECTION RISK: YES NO Details: _____

Last Food: Date: _____ Time: _____

Last Fluid: Date: _____ Time: _____

Diabetic: YES NO Date: _____ Time: _____

BMI: _____ Date: _____ Time: _____

LMP: Date: _____ Pos: _____ Neg: _____

Pregnancy Test: _____

Waterlow Score: _____

VTE Risk Assessment: _____

Anti-embolism Stockings supplied: If not, details: _____

	VEN	RA	RA	Notes
Pacemaker / Implanted Defib.				
Joint Replacements / Prosthesis				
Dentures				
Loose Teeth / Caps / Crowns				
Spectacles / Contact Lenses				
Hearing Aid				
Jewellery / Body Piercing				
Makeup / Nail Polish				

ACCOMPANYING DOCUMENTS:

Medical Notes Drug Chart Best Short

Nursing Chart EWS

Nursing Checks

IDENTITY BANDS x2

CONSENT Signed and confirmed against notes / operation list

If Consent Form & used, Mental Capacity Assessment completed

If G+S or XM requested, consent includes risks of blood transfusion (using transfusion risks sticker)

OPERATION SITE MARKED

BLOOD PRODUCTS (check on ICE)

N/A G+S

SMATCH Number of units: _____

Nurse completing: _____ Name: _____ Signature: _____

PATIENT NAME: _____ HOSPITAL NUMBER: _____

Page 1 UHL Cardiac Surgery 12



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UHL Cardiac Catheter Department. Safer Procedure Checklist

Date: Procedure:

SIGN IN	TIME OUT	SIGN OUT
<p>PATIENT STICKER</p> <p>Prior to any cardiac intervention the patient should verbally confirm their identity and planned procedure against wristband and consent form.</p> <p><input type="checkbox"/> Confirm patient's name, date of birth and Hospital number</p> <p><input type="checkbox"/> Confirm procedure and site with patient</p> <p><input type="checkbox"/> Confirm valid consent form matches identity and expected procedure</p> <p><input type="checkbox"/> Required implants / instruments available <input type="checkbox"/> Yes <input type="checkbox"/> N/A <input type="checkbox"/> No</p> <p><input type="checkbox"/> X-ray equipment working <input type="checkbox"/> Yes <input type="checkbox"/> N/A <input type="checkbox"/> No</p> <p><input type="checkbox"/> Blood results available <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>GENERAL ANAESTHETIC CHECKS N/A</p> <p><input type="checkbox"/> Anticipated difficulty airway or aspiration risk</p> <p><input type="checkbox"/> Equipment / assistance available</p> <p><input type="checkbox"/> Anticipated blood loss >500ml (>7ml/kg in a child)</p> <p><input type="checkbox"/> Blood products available if needed</p> <p><input type="checkbox"/> Use of cell salvage considered</p> <p>Read out by: (PRINT)</p> <p>Signed: _____</p>	<p>After positioning and before skin incision the Cardiologist, Anaesthetist and Cath Lab team members should verbally confirm with reference to the consent form, and wristband:</p> <p><input type="checkbox"/> Confirm patient name, Hospital number, date of birth</p> <p><input type="checkbox"/> Procedure, site and position</p> <p><input type="checkbox"/> Access planned</p> <p><input type="checkbox"/> DOACs / Anticoagulation <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Dual Antiplatelets <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Known allergy <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Operator</p> <p><input type="checkbox"/> Special equipment requirements <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Expected duration</p> <p><input type="checkbox"/> Concerns or potential critical events</p> <p>Nurse</p> <p><input type="checkbox"/> Sterility of instruments confirmed <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Surgical site case bundle <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Antibiotic prophylaxis given <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Patient Warming <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Glycaemic control <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Hair removal with clippers <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Essential imaging displayed or reviewed <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Heparin / VTE discussed <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Anaesthetist <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Patient's ASA status <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Patient specific concerns or serious comorbidity <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p>INTRA-PROCEDURAL PAUSES N/A</p> <p><input type="checkbox"/> Prosthesis check *Cardiologist and team member confirm correct implant and expiry date and details entered in the patient record</p> <p>Read out by: (PRINT)</p> <p>Signed: _____</p>	<p>Before any member of the team leaves the operating theatre, and not before completion of the first surgical closing count, the team should verbally confirm:</p> <p><input type="checkbox"/> What procedure have you performed and is it correctly recorded</p> <p><input type="checkbox"/> The count is correct for all instruments, swabs, throat packs, sharps and accountable items</p> <p><input type="checkbox"/> Any equipment issues identified</p> <p><input type="checkbox"/> All cannulae and extensions have been flushed / removed and / Clamped</p> <p><input type="checkbox"/> Key concerns for recovery and postoperative management, including if higher level of care required</p> <p><input type="checkbox"/> Issues for de-brief noted</p> <p><input type="checkbox"/> Implant device / stent recorded</p> <p>Read out by: (PRINT)</p> <p>Signed: _____</p>

Staff present:

<input type="checkbox"/> HCA / CLA	<input type="checkbox"/> Trainee Anaesthetist
<input type="checkbox"/> Scrub Practitioner	<input type="checkbox"/> Radiographer
<input type="checkbox"/> Scrub Practitioner 2	<input type="checkbox"/> Cardiac Physiologist
<input type="checkbox"/> ODP	<input type="checkbox"/> Nurse
<input type="checkbox"/> Trainee Cardiologist	<input type="checkbox"/> Company Support
<input type="checkbox"/> Con Cardiologist	<input type="checkbox"/> Other
<input type="checkbox"/> Con Anaesthetist	

PATIENT NAME:

HOSPITAL NUMBER:

5



STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 21 of 30 Version: 2

		ANGIOGRAM			
		Date:		Please Affix Pack Label Here	
		Time:			
		Lab:			
Angio Pack					
Description	Pre Op	Additional			
Forceps Artery Mosquito Curved					
Scissors Sharp / Blunt 13cm					
Orange Hypodermic Needle					
Green Hypodermic Needle					
Pink Kimal Needle					
Filter Needle					
Scalpel No.15					
IV Spike					
Swab Gauze 10 x 10cm (5+5)					
Red Tags (1+1)					
Guidewire					
Additional Items					
Description	Additional				
Radial Sheath Needle(s)					
Blunt Introducer Needle(s)					
Suture(s)					
Extra Swabs					
Extra Red Tag(s)					
Proglide(s)					
Guidewire(s)					
Guidewire(s)					

Pre Op		Post Op	
Checker 1			
Checker 2			

All guidewires and procedural equipment removed and intact:
Operator to sign

PATIENT NAME: _____ HOSPITAL NUMBER: _____ 6



STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 22 of 30 Version: 2

Name:
Hospital number:
DOB:



Operation Record

Procedure:				
Operators:		Sats:	Hb:	
		Weight:	Height:	
Cath in:	Cath out:	Screening time:	Screening dose:	Contrast:
Heparin:	Local: Yes/No	Antibiotics required: Yes/No	Antibiotic Prescribed: Yes/No	Home: Today/Tomorrow
Echo:	CXR:	ECG:	Pacing check:	Follow up:
Today/Tmrw/Nil	Today/Tmrw/Nil	Today/Tmrw/Nil	Today/Tmrw/Nil	

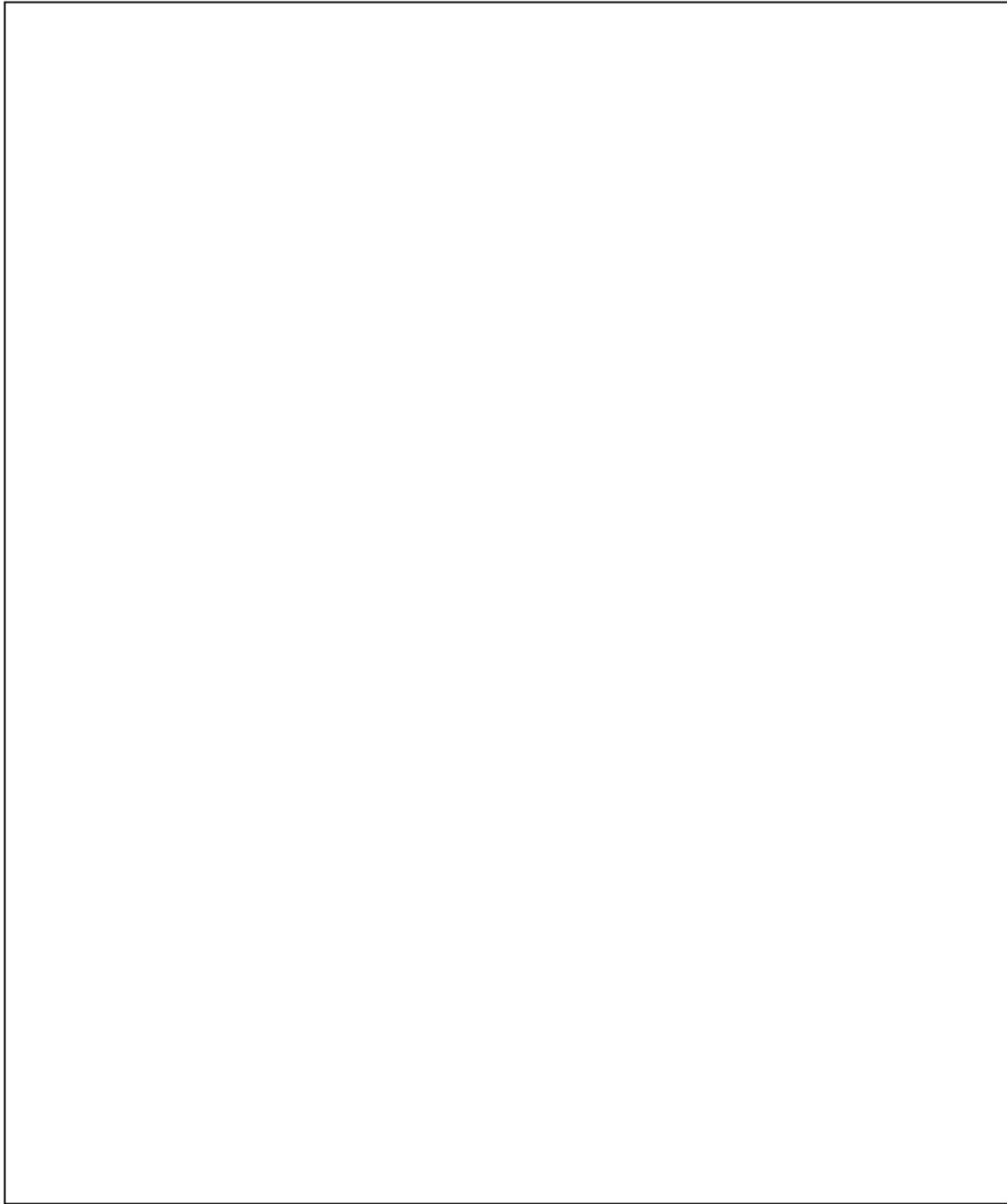
Date:

Report: Below / Heartsuite only

Access:



STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021	
Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester 		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 23 of 30	Version: 2



PATIENT NAME:

HOSPITAL NUMBER:

8



Title: Congenital Cardiac Catheterisation Standard Operating Procedure UHL Cardiology & EMCHC (LocSSIPs)

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Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 24 of 30 Version: 2

Cardiac Catheter Theatre Nursing notes

Cardiac Catheter – Recovery

Time								
Temperature								
Respiratory rate								
Saturations								
Heart rate								
Blood pressure								
FiO2								
Access Sites								
R Foot Pulse								
L Foot Pulse								
Pain Score								

PATIENT NAME:

HOSPITAL NUMBER:

9



STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester  NHS Trust	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 25 of 30 Version: 2

Post Catheter Review

Nursing	Date:	Time:
	Y/N	Comments
Bed Rest Completed		
Wound/Puncture sites		
Passed Urine		
Pedal pulses present		
Aspirin/Clopidogrel Prescribed		
Antibiotics Prescribed		
Discharge Planning		
Signed		

Medical	Date:	Time:
Eating/Drinking	Yes / No	Passed urine: Yes / No
Observations:		
Groin/Neck:	Haematoma: Yes / No _____ Bruit: Yes / No _____	
Pulses:		
Investigations:		
Plan		
Nurse led discharge: Yes / No		
Signed		

PATIENT NAME: _____ HOSPITAL NUMBER: _____ 10



STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021	
Trust Reference Number:C19/2021	Revision date: October 2023	
University Hospitals of Leicester  NHS Trust		Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 26 of 30	Version: 2

Continuation Sheet

PATIENT NAME:

HOSPITAL NUMBER:

11



Title: Congenital Cardiac Catheterisation Standard Operating Procedure UHL Cardiology & EMCHC (LocSSIPs)

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Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 27 of 30 Version: 2

Pre discharge review:

Medical	Date:	Time:	
Eating/Drinking	Yes / No	Passed urine:	Yes / No
Observations:			
Groin:	Haematoma: Yes / No _____	Bruit: Yes / No _____	
Pulses:			
Investigations:	ECG		
	Echo		
	CXR		
Plan			
Suitable for Discharge: Yes / No			
Signed			

Nursing Discharge checklist	Date:	Time
	Yes / No	Comments
Wound/puncture sites reviewed		
Chest Xray reviewed		
ECHO reviewed		
Copy of discharge letter to patient		
IV cannula removed		
Copy of discharge letter to GP		
Discharge advice leaflet		
TTO's given to patient		
Outpatient appointment arranged		
Signed		

PATIENT NAME:

HOSPITAL NUMBER:

12



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Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 28 of 30 Version: 2

Catheter Lab Team Brief Checklist

This checklist must be filed in the Cath lab Brief / Debrief folder

1. Team brief:

At the beginning of the list to discuss all cases, led by the theatre team leader.

In emergency theatre –full handover to be given by transferring registrar on patient arrival.

- All team members have introduced themselves by name & role.
- Issues resolved from last debrief.
- Anaesthetic machine & drugs checked and ready.
- Any latex allergies or infection risk.
- Confirm list order.
- Dosimetry for all staff.


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NHS Trust

Cath Lab:

Consultant:

Date:

Time Started:



Patient name, Number and Procedure	Team Input									Anaesthetic Input
	Correct Ward	Equipment Available	Essential Imaging checked & available	Outstanding tests /VTE	Procedure concerns / requirements	Implants / prostheses checked & available	Antibiotics required	Blood Products required	Post procedure care	Anaesthetic plan: Patient specific concerns
1.										
2.										
3.										
4.										
5.										

Staff present:

- | | |
|---|---|
| <input type="checkbox"/> Nurse | <input type="checkbox"/> Con Cardiologist |
| <input type="checkbox"/> HCA / CLA | <input type="checkbox"/> Con Anaesthetist |
| <input type="checkbox"/> Scrub Practitioner | <input type="checkbox"/> Trainee Anaesthetist |
| <input type="checkbox"/> ODP | <input type="checkbox"/> Rep |
| <input type="checkbox"/> Student | <input type="checkbox"/> Radiographer |
| <input type="checkbox"/> Trainee Cardiologist | <input type="checkbox"/> Cardiac Physiologist |

Team Signature:

Print Name:

Designation:

Date:

Time:

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Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	 Review date: October 2026
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Page 29 of 30 Version: 2

Catheter Lab Team De-Brief Checklist

This checklist must be filed in the Cath Lab Brief / Debrief folder

- Post op debrief performed Yes No
- Any issues arising that need to be addressed Yes No
- If 'Yes', is Debrief Action Log complete (below)
- All 'Stop the Line' issues recorded and Datixed



Caring at its best



Cath Lab:
 Consultant:
 Date:
 Time Started:

Issue	Action Required	Responsible Person	Due Date	Completed?

Achievements and what went well?	Could we have made this list more productive?

Staff present: <input type="checkbox"/> Nurse <input type="checkbox"/> Con Cardiologist <input type="checkbox"/> HCA / CLA <input type="checkbox"/> Con Anaesthetist <input type="checkbox"/> Scrub Practitioner <input type="checkbox"/> Trainee Anaesthetist <input type="checkbox"/> ODP <input type="checkbox"/> Rep <input type="checkbox"/> Student <input type="checkbox"/> Radiographer <input type="checkbox"/> Trainee Cardiologist <input type="checkbox"/> Cardiac Physiologist	Team Signature: _____ Print Name: _____ Designation: _____ Date: / / Time: _____
--	--

STANDARD OPERATING PROCEDURE (SOP)	Issue date:30/04/2021
Trust Reference Number:C19/2021	Revision date: October 2023
University Hospitals of Leicester 	
Glenfield Hospital (GH), Leicester General Hospital (LGH), Leicester Royal Infirmary (LRI)	Review date: October 2026
	Page 30 of 30
	Version: 2

Appendix 4: UHL Cath Lab Safer Procedure Checklist

PATIENT
STICKER

**UHL Cardiac Catheter Department.
Safer Procedure Checklist**



NHS
University Hospitals
of Leicester
NHS Trust

Caring at its best

Date: Procedure:

SIGN IN	TIME OUT	SIGN OUT														
<p>Prior to any cardiac intervention the patient should verbally confirm their identity and planned procedure against wristband and consent form.</p> <p><input type="checkbox"/> Confirm patient's name, date of birth and Hospital number</p> <p><input type="checkbox"/> Confirm procedure and site with patient</p> <p><input type="checkbox"/> Confirm valid consent form matches identity and expected procedure</p> <p><input type="checkbox"/> Required implants / instruments available <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> X-ray equipment working <input type="checkbox"/> Yes <input type="checkbox"/> N/A</p> <p><input type="checkbox"/> Blood results available <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>After positioning and before skin incision the Cardiologist, Anaesthetist and Cath Lab team members should verbally confirm with reference to the consent form, and wristband;</p> <p><input type="checkbox"/> Confirm patient name, Hospital number, date of birth</p> <p><input type="checkbox"/> Procedure, site and position</p> <p><input type="checkbox"/> Access planned</p> <p><input type="checkbox"/> DOACs / Anticoagulation <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Dual Antiplatelets <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Known allergy <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Operator</p> <p><input type="checkbox"/> Special equipment requirements <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Expected duration</p> <p><input type="checkbox"/> Concerns or potential critical events</p> <p>Nurse</p> <p><input type="checkbox"/> Sterility of instruments confirmed <input type="checkbox"/> Yes</p> <p>Surgical site care bundle</p> <p><input type="checkbox"/> Antibiotic prophylaxis given <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Patient Warming <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Glycaemic control <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Hair removal with clippers <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Essential imaging displayed or reviewed <input type="checkbox"/> N/A <input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Heparin / VTE discussed</p> <p>Anaesthetist</p> <p><input type="checkbox"/> Patient's ASA status <input type="checkbox"/> N/A</p> <p><input type="checkbox"/> Patient specific concerns or serious comorbidity</p>	<p>Before any member of the team leaves the operating theatre, and not before completion of the first surgical closing count, the team should verbally confirm:</p> <p><input type="checkbox"/> What procedure have you performed and is it correctly recorded</p> <p><input type="checkbox"/> The count is correct for all instruments, swabs, throat packs, sharps and accountable items</p> <p><input type="checkbox"/> Any equipment issues identified</p> <p><input type="checkbox"/> All cannulae and extensions have been flushed / removed and / Clamped</p> <p><input type="checkbox"/> Key concerns for recovery and postoperative management, including if higher level of care required</p> <p><input type="checkbox"/> Issues for de-brief noted</p> <p><input type="checkbox"/> Implant device / stent recorded</p>														
<p style="background-color: purple; color: white; padding: 2px;">GENERAL ANAESTHETIC CHECKS N/A ■</p> <p><input type="checkbox"/> Anticipated difficulty airway or aspiration risk</p> <p><input type="checkbox"/> Equipment / assistance available</p> <p><input type="checkbox"/> Anticipated blood loss >500ml (>7ml/kg in a child)</p> <p><input type="checkbox"/> Blood products available if needed</p> <p><input type="checkbox"/> Use of cell salvage considered</p> <p>Read out by: (PRINT)</p> <p>Signed:</p>	<p style="background-color: purple; color: white; padding: 2px;">INTRA-PROCEDURAL PAUSES N/A ■</p> <p style="text-align: center; font-size: 8px;">Not for intervention</p> <p><input type="checkbox"/> Prosthetic check ■ Cardiologist and team member confirm correct implant and expiry date and details entered in the patient record</p> <p>Read out by: (PRINT)</p> <p>Signed:</p>	<p>Read out by: (PRINT)</p> <p>Signed:</p>														
<p style="background-color: purple; color: white; padding: 2px;">Staff present:</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> HCA / CLA</td> <td><input type="checkbox"/> Trainee Anaesthetist</td> </tr> <tr> <td><input type="checkbox"/> Scrub Practitioner</td> <td><input type="checkbox"/> Radiographer</td> </tr> <tr> <td><input type="checkbox"/> Scrub Practitioner 2</td> <td><input type="checkbox"/> Cardiac Physiologist</td> </tr> <tr> <td><input type="checkbox"/> ODP</td> <td><input type="checkbox"/> Nurse</td> </tr> <tr> <td><input type="checkbox"/> Trainee Cardiologist</td> <td><input type="checkbox"/> Company Support</td> </tr> <tr> <td><input type="checkbox"/> Con Cardiologist</td> <td><input type="checkbox"/> Other</td> </tr> <tr> <td><input type="checkbox"/> Con Anaesthetist</td> <td></td> </tr> </table>	<input type="checkbox"/> HCA / CLA	<input type="checkbox"/> Trainee Anaesthetist	<input type="checkbox"/> Scrub Practitioner	<input type="checkbox"/> Radiographer	<input type="checkbox"/> Scrub Practitioner 2	<input type="checkbox"/> Cardiac Physiologist	<input type="checkbox"/> ODP	<input type="checkbox"/> Nurse	<input type="checkbox"/> Trainee Cardiologist	<input type="checkbox"/> Company Support	<input type="checkbox"/> Con Cardiologist	<input type="checkbox"/> Other	<input type="checkbox"/> Con Anaesthetist			
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