1. INTRODUCTION

1.1. Devices are used in research to either:

- **Support a study** i.e. CE-marked medical equipment used as intended by the manufacturer:
  - as part of routine standard of care; Or
  - used above standard of care.

- Be the focus of a study i.e. **device-centred studies**, which include:
  - Evaluation of CE-marked equipment, which is used as intended by the manufacturer to gather more data on the device's performance, effectiveness etc.;
  - MHRA clinical investigations for commercialisation purposes;
  - Pre-CE marking or for proof of concept (POC) studies to assess feasibility or intent. In these studies, there is no commercialisation intent, hence no MHRA involvement.

1.2. Depending on Clinical Physics' capacity and capability, the following tasks are carried out as detailed in the Barts Health and Queen Mary University of London R&D Management Policies; (Policy No. 14):

- Provide advice on the procurement of CE-marked equipment for research studies
- Acceptance of loaned/purchased CE-marked equipment used for research which includes:
  - Visual checks & electrical safety testing of research equipment
  - Function testing (depending on capacity and capability)
  - Registration on the equipment database
  - Checking appropriate indemnity cover is in place for equipment provided on a loan or transfer basis (doesn't apply to trust-owned/purchased equipment).
- User training checks
- Maintenance (highly dependent on capacity and capability)
- Performing risk assessments of experimental non-CE marked devices, depending on capacity and capability (see RD-PRO-11).
- Provide advice on storage & disposal

1.3. All Clinical Physics activities are performed at the study set-up stage (except for maintenance). The activities performed depend on the study type.

1.4. **Note:** a fee is applied to all device studies requiring Clinical Physics support. The fees are determined using the NIHR set-up fees and the industry costing templates (**see RD-PRO-9**).

2. SCOPE

2.1. This procedure applies to all research studies using CE and non-CE marked equipment intended to have a medical function (see points 1.1 and 1.2 above and definition of a medical device in point 3.1).

2.2. The procedure does not apply to non-medical equipment such as e-diaries, standalone laptops, PCs and tablets. However, if such equipment is connected to a medical device or contains software etc. intended to have a medical function, this procedure applies.

2.3. This procedure does not apply to laboratory equipment or point-of-care testing items.

3. DEFINITIONS

3.1. Definition of a **medical device** as defined in the EU Medical Device Regulations (MDR 2017/745):

'medical device' means any instrument, apparatus, appliance, software, implant, reagent, material or other article intended by the manufacturer to be used, alone or in combination, for human beings for one or more of the following specific medical purposes:

- diagnosis, prevention, monitoring, prediction, prognosis, treatment or alleviation of disease,
- diagnosis, monitoring, treatment, alleviation of, or compensation for, an injury or disability,
- investigation, replacement or modification of the anatomy or of a physiological or pathological process or state,
- providing information by means of in vitro examination of specimens derived from the human body, including organ, blood and tissue donations,

and which does not achieve its principal intended action by pharmacological, immunological or metabolic means, in or on the human body, but which may be assisted in its function by such means.

The following products shall also be deemed to be medical devices:

- devices for the control or support of conception;
- products specifically intended for the cleaning, disinfection or sterilisation of devices as referred to in Article 1(4) and of those referred to in the first paragraph of this point.

3.2. **Intended purpose** as defined in the EU Medical Device Regulations (MDR 2017/745):
'intended purpose' means the use for which a device is intended according to the data supplied by the manufacturer on the label, in the instructions for use or in promotional or sales materials or statements and as specified by the manufacturer in the clinical evaluation;

3.3. **CE-marked equipment** as defined in the EU Medical Device Regulations (MDR 2017/745):
'CE marking of conformity' or 'CE marking' means a marking by which a manufacturer indicates that a device is in conformity with the applicable requirements set out in this Regulation (MDR) and other applicable Union harmonisation legislation providing for its affixing;

3.4. **Clinical evaluation** as defined in the EU Medical Device Regulations (MDR 2017/745):
'clinical evaluation' means a systematic and planned process to continuously generate, collect, analyse and assess the clinical data pertaining to a device in order to verify the safety and performance, including clinical benefits, of the device when used as intended by the manufacturer;

3.5. **Clinical investigation** as defined in the EU Medical Device Regulations (MDR 2017/745): 'clinical investigation' means any systematic investigation involving one or more human subjects, undertaken to assess the safety or performance of a device;

3.6. **MHRA:** Medicines and Healthcare products Regulatory Agency.

3.7. **POC:** proof of concept.

3.8. **IRAS:** Integrated research application system.

3.9. **MIA:** Master Indemnity Agreement (see https://www.gov.uk/government/publications/master-indemnity-agreement-mia).

3.10. **mCTA:** model clinical trial agreement.

4. RESPONSIBILITIES

4.1. The Trust is obliged to ensure safety in the use of devices in research**. There is no legal exception for 'just research'.** It is the responsibility of Clinical Physics to assess the use of CE-marked and non-CE marked devices in research, and support the use of devices in research by providing accurate advice on compliance.

4.2. Researchers and investigators are responsible for requesting Clinical Physics approval before using any devices(s) for research activities (with a medical/clinical intent) and providing the requested information and documentation as detailed in Tables 1 and 2.

4.3. Researchers should send all research queries to: research.clinicalphysics@nhs.net . Clinical Physics will then respond **within 14 days** with the outcome of the assessment or a request for further information.

5. CLINICAL PHYSICS RESEARCH DEVICE ACTIVITIES

5.1. Commercially available medical devices must meet certain standards. That is, they must be CE-marked for their purpose. The same standards apply to any other device we use medically, for example devices modified or made in house or adapted from non-medical devices.

5.2. Clinical Physics assessment of devices is sought by the R&D office in relevant cases however, as stated in the Trust's R&D Management Policy, investigators/researchers should always seek advice, guidance and approval from Clinical Physics who will, on a case-by case basis provide risk management and safety reviews. It is strongly recommended that investigators/researchers involve Clinical Physics from the concept forming phase of research in order to minimise delays (and the risk of rejection).

5.3. Clinical Physics will only provide final approval for the use of devices in research once all applicable national and local permissions including ethical approval are in place.

5.4. Study investigators and researchers are expected to provide relevant documentation and information regarding the study and the device to enable Clinical Physics to perform risk assessments and safety reviews – see Table 1 for details on checks performed.

Type of Check	Clinical Physics Checks	Additional information
Document Review (performed by the Clinical Physics Research Governance team)	Review study protocol/IRAS/ethics	Clinical Physics review study protocols/IRAS to understand the intended use of the device, identify the necessary checks and to assess our own capacity and capability to perform the checks.
	Review MHRA no objection	Reviewing this document gives us the assurance that the clinical investigation has been registered with the MHRA. Clinical Physics also reviews the recommendations from the MHRA which are documented in this letter and verifies with researchers that they've been implemented.
	Review training requirements	Part of device management (Medical Equipment Policy)
	Review maintenance requirements	Part of device management (Medical Equipment Policy)
	Review indemnity cover	This can be Trust (if equipment is to be purchased), MIA or CTA. MIA is the only agreement that requires input from Clinical Physics – **see point 5.5**
Device Assessment (performed by the Clinical Physics Research Governance team and Clinical engineering)	Perform risk assessment to relevant standard	Only performed for device-focussed studies where required. Clinical Physics does not generally perform safety assessments of devices used in clinical investigations as these devices are highly likely to fail our tests. The responsibility of the safety of these devices lies with the manufacturer of the device. We can on request, assist with the safety assessment but this will be on a case-by-case basis.
	Visual & electrical safety test	Where applicable – see study type (**Table 2**)
	Function testing	Where applicable – see study type (**Table 2**)
	Storage and disposal	Where applicable – see study type (**Table 2**)

Table 1: Clinical Physics research device activities

5.5. Device indemnity cover:

Majority of equipment provided for use in research is provided on a loan or transfer basis (not purchase). For this reason, indemnity cover should be in place as the equipment is not owned by the Trust. Currently, there are two types of indemnity cover:

- **Master Indemnity Agreement (MIA)**: This has been set up by the Department of Health (DoH) to ensure that NHS Trusts in receipt of equipment from suppliers on a loan or transfer basis have

adequate indemnity cover for both public and product liability. A register of approved suppliers, known as the MIA register is maintained online by the DoH and is available here. In addition to the register, the following documents are available to help execute the MIA, where applicable:

- MIA register (list of approved suppliers), terms and conditions and guidance notes
- MIA overarching agreement – suppliers complete this document to apply to appear on the MIA register
- MIA call-off agreement – suppliers complete this document to enter into an MIA with the Trust for the provision of loan equipment
- MIA data protection protocol

For suppliers/providers of loan equipment that agree to complete the MIA, the following procedure should be followed:

- If the supplier of the equipment appears on the MIA register (available here), request the completion of the MIA Call-Off agreement (available here).
- If the supplier is not on the register, check if they are happy to apply to be on the register (using the overarching agreement available here). If they agree to this, wait for the reference number before completing the MIA Call-off agreement.
- Once completed, send a copy of the MIA form to research.clinicalphysics@nhs.net to sign.
- Researchers must complete the collection confirmation receipt, available at the end of the MIA Call-off agreement form when the study has come to an end and equipment has been returned to/collected by the supplier. A copy of this receipt should be sent to: research.clinicalphysics@nhs.net

- **Model Clinical Trial Agreement (mCTA):** If a supplier is not on the MIA register and does not want to join it but still wants to supply the Trust with loan equipment, contact the JRMO office to check if the equipment use is covered within appendix 7 of the mCTA. If this is the case, there is nothing further to do.

- If there is no indemnity cover (either via the MIA or Appendix 7 of the mCTA), forward the request to the JRMO R&D office and await their advice.

5.6. Standard Trust purchases:

- Any CE-marked devices purchased by the Trust for use in research must meet the requirements of the Medical Equipment Policy i.e. obtaining approval of the NHS Pre-Purchase Questionnaire (PPQ), also known as pre-acquisition questionnaire (PAQ) by the Clinical Engineering Section of Clinical Physics (if purchasing equipment via Procurement, you need do nothing as this should happen automatically).
- Blank PPQs can be obtained from Clinical Engineering for completion by the manufacturer, but manufacturers should already have a completed PPQ for CE marked devices.
- See the Trust Management of Medical Equipment Policy for further details.

5.7. Visual checks & electrical safety testing

- Visual checks and electrical safety testing is performed by the clinical engineering workshops (depends on study site).
- In most cases, researchers are expected to deliver portable equipment to the workshop but for larger items, engineers can be called out to the location.
- **Note:** clinical engineering workshops needs **at least 2 weeks** to carry out visual checks and electrical safety testing as clinical workload is a priority.

5.8. Risk/Safety Assessment:

- Has any party involved in the project performed a risk assessment to ensure that no safety hazard will be caused by the device(s) (or that risks are outweighed by benefits)? If this is not available, Clinical Physics will assist with performing a risk assessment prior to providing approval subject to the provision of relevant documentation, approvals and information.
- **Note:** Risk assessment of non-CE marked devices entails an in depth review of technical detail with the manufacturer/designer so it can take some time to perform and document. An appropriate member of the project team (ideally the chief/principal investigator) is expected to take responsibility of the identified risks and control measures through sign-off.

5.9. Clinical investigation/special device status: for clinical investigations/proof of concept studies, researchers should consider the following:

a) *Does this research constitute a Clinical Investigation of a non-CE-marked medical device i.e. research with the objective of investigating the 'fitness for purpose' of the device for commercialisation purposes?*

b) *Does this research involve a use of a commercial (CE-marked and on the market) medical device for a purpose not included in the manufacturer's original intent, OR an expansion in the use of the device beyond its original testing by the manufacturer (i.e. change of indications)?*

If the answer to (a) or (b) above is 'Yes', this is a Clinical Investigation. Medical device clinical investigations / clinical trials require prior approval by the Medicines and Healthcare products Regulatory Agency (MHRA). If uncertainty exists as to 4.1. & 4.2., Clinical Physics will need to know the following as a starting point to assist in ensuring regulatory compliance:

- Who designed/manufactured the Clinical device(s) and what is its purpose?
- Is this a non-medical device being used for medical research?
- Does this research involve individual devices being made for individual patient characteristics? If 'Yes', this device is 'Custom Made'.
- Who owns the device and is there any technical information available?

5.10. **Table 2** provides further detail on various research governance activities performed by Clinical Physics depending on study type and device use.

5.11. Example research scenarios with equipment management steps to consider are provided in **Table 3**.

		Device supporting studies		Device centred studies		
		CE-marked equipment purchased/already owned by the Trust, used within its intended purpose (research of standard of care)	**New CE-marked equipment provided on loan/free transfer/purchased for the purposes of: Research of standard or care or supporting a study**	**New CE-marked equipment provided on loan or free transfer for the purposes of: Device clinical evaluation studies**	**MHRA registered Clinical investigation of a non-CE marked device**	**Pre-CE marking proof of concept device study (in-house or external). No commercialisation intended**
	Procurement Route	Owned by/Purchased the Trust	Loaned/free transfer/purchase	Loaned/free transfer/purchased	Usually free of charge	Usually free of charge
Document Review	Review study protocol/IRAS/ethics	Nothing required from Clinical Physics with regards to checks, the research agreement or fees	Yes	Yes	Yes	Yes
	Review MHRA no objection		N/A	N/A	Yes	N/A
	Review training requirements		Yes	Yes	Yes	Yes
	Review maintenance requirements		Yes	Yes	Yes	Yes
	Review indemnity cover		Yes	Yes	Yes – usually mCTA	Yes – usually mCTA
Device Assessment	Perform risk assessment to relevant standard		N/A	N/A	N/A*	Yes*
	Visual & electrical safety test		Yes	Yes	N/A*	Yes*
	Function testing (depends on our capacity and capability)		Where possible	Where possible	N/A*	Where possible but usually N/A
	Storage and disposal		Advice only	Advice only	N/A*	N/A
Fee	Fees for Clinical Physics to be covered in mCTA	None	Yes - minimal	Yes - minimal	Assessed on a case-by-case basis	Yes - enhanced

Table 2: Clinical Physics activities based on study type and device use (*performed on request and if Clinical Physics has the capacity and capability to do so)

	Research Equipment/Device status	Equipment Management process steps to be actioned/planned for					
		MHRA authorisation	Manufacturer or Trust Indemnity	Risk/safety assessment/ testing before use	Training before use	Maintenance during use	Statement on use or disposal at end of project
1	The project does not involve medical equipment or any devices	N/A	N/A	N/A	N/A	N/A	N/A
2	The equipment/device is CE-marked, and its use is established in the Trust i.e. Trust-owned and it will be used as intended. User(s) have been assessed to be competent with all of the functions to be used.	N/A	N/A	N/A	N/A if evidence of training competence available	Required	Required
3	The equipment/device is CE marked, use is established in the Trust i.e. Trust-owned, and used as intended but user(s) have not been assessed as competent.	N/A	N/A	N/A	Required	Required	Required
4	The equipment/device is CE marked and commercially available, but is new to the Trust but will be used as intended.	N/A	Required - see sections 5.5 and 5.6	Required - see section 5.7	Required	Required	Required
5	The equipment /device incorporates a modification approved by the manufacturer and remains CE compliant and will be used as intended.	N/A	Required - see sections 5.5 and 5.6	Required - see section 5.7	Required	Required	Required
6	The use of the equipment/device is established in the Trust, but it is interconnected with other devices (medical or non-medical) to create a system (may or may not be used as intended)	To be reviewed on a case-by-case basis – see sections 5.8 and 5.9	Required - see sections 5.5 and 5.6	Required - see sections 5.7 and 5.8	Required	Required	Required
7	The equipment/device is non-CE marked, incorporates non-approved modification or is specially made or is being used for purposes not intended (and/or tested) by the original manufacturer.	To be reviewed on a case-by-case basis – see sections 5.8 and 5.9	Required - see sections 5.5 and 5.6	Required - see section 5.7 and 5.8	Required	Required	Required
8	The equipment / device is new to the Trust and is undergoing a clinical trial/investigation.	MHRA approval required – see section 5.9	Required - see sections 5.5 and 5.6	Required - see section 5.9	Required	Required	Required

Table 2: Example research scenarios with relevant equipment management steps to consider

6. COMMON MISCONCEPTIONS (FREQUENTLY ASKED QUESTIONS):

NB: The following is intended as general guidance and should not be regarded as an authoritative statement of the law, nor as having legal consequence.

6.1. "Devices that are being used 'just in research' or 'just inside our organisation' are unaffected by legal or safety requirements."

Not true and irresponsible. The Trust has adopted a general policy (as have other NHS Trusts) that in-house manufactured products do not require CE-marking as commercial products would. However, the Trust is still expected to ensure an equivalent degree of safety in all circumstances to that which would be obtained by using commercially available products. For example, if an in-house device were to be the cause of an adverse incident, product regulations (those used for CE-marking) and standards would be the standards our in-house manufacture was judged against in determining liability (because they would be the most applicable safety standards/legislation). What this means is that the same safety considerations must be made in the conduct of in-house manufacture or research as would be applied commercially – regardless of the destination/purpose of the product being made.

6.2. "My Devices are commercially available and CE-Marked. I am therefore unaffected by any device-related regulations or safety issues."

This may not be the case. Medical Devices are CE-marked for a particular purpose based upon testing and investigation carried out by the manufacturer. If you use a commercially available device for a purpose even subtly different from that intended by the manufacturer, you may be taking the device 'off-label'. If this is the case, a risk assessment of some proportion will be needed, even in cases where the change of use may appear trivial.

6.3. "I think that my device is a Custom Device, or is part of a Clinical Investigation. This means it is exempt from legal/safety requirements."

This is not true, and is based upon misinterpretation of the Medical Devices Directive (and derived UK Medical Devices Regulations). The distinct special statuses recognised by the Directive have their own implications – both of which have requirements of their own, and are not pure 'exemptions' as such. 'Custom made devices' applies only in the case of devices that are made individually for an individual patient, in which a prescribing decision for each and every patient must be made by a qualified professional. 'Devices for clinical investigation' ('clinical investigation' is also commonly referred to as 'clinical trial') is strictly defined as a research investigation aimed at establishing the fitness for purpose of the device for commercialisation purposes. In both these cases, some form of registration with the MHRA is required.

6.4. "My device is not a Medical Device therefore I don't have to take any legal or safety precautions."

This is an error; the assessment that must to be done to ensure device safety is not greatly affected by this simple difference in classification. Similar standards apply to all manner of products that are

'placed on the market', even if something is 'not a Medical Device', it would still be covered by the scope of other product legislation. No technical matter of classification, nor exemption from specific legislation can negate the Trusts' basic obligation to provide a high degree of safety to both patients and research subjects.

7. REFERENCES

7.1. COR/POL/028/2016-001 Trust Corporate Policy R&D Management Policies (Policy No. 14: Use of Medical Devices in research)

7.2. COR/POL/294/2020-001 Trust Medical Equipment Management Policy

7.3. ISO 9001:2015 Quality management systems requirements

7.4. Council Directive 93/42/EEC. Official Journal of the European Communities No. L 169/1, 12/7/93.

7.5. Regulation (EU) MDR 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC

7.6. RD-PRO-9: Research Device Assessment Costs for Commercial Studies

7.7. RD-PR0-11: Assessing Medical Equipment Used for Research