

# Policy for the use of Upright / Open MRI Scanning

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| Reference Number:  | COM/41                                 |
| Version:   | Version 1                              |
| Name of responsible Committee and date approved or recommended to Integrated Care Board: | Finance and Performance Committee      |
| Date approved by the Integrated Care Board (if applicable):                              | 05 July 2023                           |
| Next Review Date:  | January 2026                           |
| Expiry Date:   | July 2026                              |
| Name of author and title:  | Lucy Dyde, IFR Manager                 |
| Name of reviewer and title:  | Dr Mike Caley, Deputy Medical Director |
| Department:  | Medical Directorate                    |

## VERSION HISTORY

| Date | Version | Changes made to previous version | Consulting and Endorsing Stakeholders, Committees / Meetings / Forums etc. |
|------|---------|----------------------------------|--|
|      |         |                                  |  |

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## 1. Category: Prior Approval

Prior approval from the Integrated Care Board (ICB) will be required before any treatment proceeds in secondary care unless an alternative contract arrangement has been agreed with the ICB that does not necessitate the requirement of prior approval before treatment.

## 2. Background

Magnetic resonance imaging (MRI) is a type of scan that uses strong magnetic fields and radio waves to produce detailed images of the inside of the body. A standard MRI scanner is a large tube that contains powerful magnets. The patient lies inside the tube during the scan.

An MRI scan can be used to examine almost any part of the body, including the:

- brain and spinal cord
- bones and joints
- breasts
- heart and blood vessels
- internal organs, such as the liver, womb or prostate gland

The results of an MRI scan can be used to help diagnose conditions, plan treatments and assess how effective previous treatment has been.

### Conventional MRI

Conventional MRI is established as the most sensitive imaging test of choice of the spine in routine clinical practice. MRI imaging of the spine is performed to:

- Assess the spinal anatomy;
- Visualize anatomical variations and diseased tissue in the spine;
- Assist in planning surgeries on the spine such as decompression of a pinched nerve or spinal fusion;
- Monitor changes in the spine after an operation, such as scarring or infection;
- Guide the injection of steroids to relieve spinal pain;
- Assess the disks, (i.e. bulging, degenerated or herniated intervertebral disk, a frequent cause of severe lower back pain and sciatica);
- Evaluate compressed (or pinched) and inflamed nerves;
- Explore possible causes in patients with back pain (compression fracture for example);
- Image spinal infection or tumours that arise in, or have metastasized to, the spine;
- Assess children with daytime wetting and an inability to fully empty the bladder.

The absence of axial loading and lumbar extension results in a maximization of spinal canal dimensions, which may in some cases, result in failure to demonstrate nerve root compression. Attempts have been made to image the lumbar spine in a more physiological state, either by imaging with flexion–extension, in the erect position or by using axial loading.

### Axially Loaded MRI

A modification of conventional MRI, known as axially loaded MRI, has been developed. The axial loading refers to the application of a force on a subject's body to simulate weight-bearing. For this technique, patients put on a special harness that compresses the spine while they lie in the MRI scanner, but this procedure may not accurately reproduce the weight-bearing state.

### **Positional MRI (Upright MRI)**

Positional MRI has been developed to provide images of the spine under true weight-bearing conditions. This technique relies on a vertically open configuration MRI scanner in which the circular magnets have been turned on end. The patient sits or stands between the magnets during image collection and can adopt various positions such as flexion or extension of the neck or back, allowing imaging of the spine under conditions that occur in daily life.

Standing or sitting MRIs may be performed with patients in different positions (eg. extension, flexion, neutral) for comparison of anatomy in various positions.

Current Upright MRI (uMRI) scanners generally use medium field magnets of 0.5T or 0.6T. By comparison, the most advanced standard MRI scanners have magnet strength of at least 1.0T and up to 3.0T allowing for the greatest resolution generally in a shorter amount of time. With 0.6T magnets, uMRI requires more time to obtain images with lower resolution.

Slower imaging times with uMRI may create difficulty for the following groups of patients:

- patients who are unable to remain still while in a standing or sitting position;
- discomfort patients who experience pain or discomfort whilst in an upright position
- patients who are unstable in such upright positions.

Longer exam times may also decrease the overall patient flow and volume of patients that can be accommodated.

The proposed advantages of uMRI are based on the ability to scan the spine (or joints) in different positions (including the position where clinical symptoms are more pronounced) and assess the effects of weight bearing, position and dynamic movement.

### 3. Eligibility Criteria

Referral for open MRI scanning of at least 0.5T as an alternative to conventional MRI is subject to prior approval where the patient meets the following:

- patients who suffer from claustrophobia where an oral prescription sedative has not been effective (flexibility in the route of sedative administration may be required in paediatric patients as oral prescription may not be appropriate)

**AND/OR**

- patients who are obese and cannot fit comfortably in conventional MRI scanners as determined by a Consultant Radiologist/Radiology department policy

**AND/OR**

- patients who cannot lie properly in conventional MRI scanners because of severe pain despite adequate analgesia provision

**AND/OR**

- patients who require load bearing MRI images to be undertaken

**AND**

- There is a clear diagnostic need consistent with supported clinical pathways

**IN ADDITION,** The ICB will only fund uMRI of the specific anatomy requested.

For patients who **DO NOT** meet the eligibility criteria, the ICB will only consider funding the treatment if an Individual Funding Request (IFR) detailing the patient's clinical presentation is submitted to the ICB.

#### 4. Guidance

NHS Choices. 2022. MRI Scan.

<https://www.nhs.uk/conditions/mri-scan/>

Meléndez J Carlos and McCrank Ernest. Anxiety-related reactions associated with magnetic resonance imaging examinations. *JAMA* 1993;270(6):745-7.

Enders J, Zimmermann E, Rief M, et al. Reduction of Claustrophobia with Short-Bore versus Open Magnetic Resonance Imaging: A Randomized Controlled Trial. *PLoS One*. 2011; 6(8): e23494., 2011.

Nguyen H S, Doan N, Shabani S, et al. Upright magnetic resonance imaging of the lumbar spine: Back pain and radiculopathy. *J Craniovertebr Junction Spine*. 2016; 7(1): 31–37., 2016.

Lu J C, Nielsen J C, Morowitz L, et al. Use of a 1.0 Tesla open scanner for evaluation of pediatric and congenital heart disease: a retrospective cohort study. *J Cardiovasc Magn Reson* 2015; 17:39.

Merl T, Scholz M, Gerhardt P, et al. Results of a prospective multicenter study for evaluation of the diagnostic quality of an open whole-body low-field MRI unit. A comparison with high-field MRI measured by the applicable gold standard: *Eur J Radiol*. 1999;30(1):43-53.

Claustrophobia During Magnetic Resonance Imaging: Cohort Study in Over 55,000 Patients, Marc Dewey, MD, Tania Schink, PhD, and Charles F. Dewey, MD, PhD, *Journal of Magnetic Resonance Imaging* 26:1322–1327 (2007)

North American Spine Society: Evidence based clinical guidelines for multidisciplinary spinal care 2011

ACR practice parameter for performing and interpreting magnetic resonance imaging (MRI), Amended 2014

ACR–ASNR–SCBT-MR Practice guideline for the performance of magnetic resonance imaging (MRI) of the adult spine, Revised 2012

HSCIC Statistics on Obesity, Physical Activity and Diet. England 28 April 2016

Adult obesity, Health Survey for England (HSE) 2014

NHS Imaging and Radiodiagnostic activity 2013/14 (NHS England and National Statistics)

## Equality and Quality Impact Assessment Tool

The following assessment screening tool will require judgement against all listed areas of risk in relation to quality. Each proposal will need to be assessed whether it will impact adversely on patients / staff / organisations.

**Insert your assessment as positive (P), negative (N) or neutral (N/A) for each area.**

Record your reasons for arriving at that conclusion in the comments column. If the assessment is negative, you must also calculate the score for the impact and likelihood and multiply the two to provide the overall risk score. Insert the total in the appropriate box.

### Quality Impact Assessment

#### Quality and Equality Impact Assessment

|                                   |  |                                    |                 |
|-----------------------------------|--|------------------------------------|-----------------|
| <b>Scheme Title:</b>              | Policy for the use of Upright / Open MRI Scanning  |                                    |                 |
| <b>Project Lead:</b>              | Lucy Dyde, IFR Team Manager  | <b>Senior Responsible Officer:</b> | Dr Angela Brady |
|                                   |  | <b>Quality Sign Off:</b>           | Mary Mansfield  |
| <b>Intended impact of scheme:</b> | To provide a fair, equitable and transparent process for all patients of the NHS Coventry and Warwickshire Integrated Care Board (ICB) where a patient is suffering from a medical condition, for which the ICB has commissioning responsibility, and is unable to tolerate a conventional Magnetic Resonance Image (MRI) scanner or where the use of a conventional MRI scanner is inappropriate. |                                    |                 |
| <b>How will it be achieved:</b>   | Through the process detailed in this document.   |                                    |                 |

|  |                  |
|--|------------------|
| <b>Name of person completing assessment:</b> | Lucy Dyde        |
| <b>Position:</b>                             | IFR Team Manager |
| <b>Date of Assessment:</b>                   | 26 April 2023    |

|                           |                            |
|---------------------------|----------------------------|
| <b>Quality Review by:</b> | Mary Mansfield             |
| <b>Position:</b>          | Deputy Director of Nursing |
| <b>Date of Review:</b>    | <b>27/4/23</b>             |

### High level Quality and Equality Questions

The risk rating is only to be done for the potential negative outcomes. We are looking to assess the likelihood of the negative outcome occurring and the level of negative impact. We are also seeking detail of mitigation actions that may help reduce this likelihood and potential impact.

| AREA OF ASSESSMENT  |                                  | OUTCOME ASSESSMENT<br>(Please tick one) |          |         | Evidence/Comments for answers | Risk rating<br>(For negative outcomes) |                        |                     | Mitigating actions |
|---|----------------------------------|---|----------|---------|-------------------------------|--|------------------------|---------------------|--------------------|
|   |                                  | Positive                                | Negative | Neutral |                               | Risk impact<br>(I)                     | Risk likelihood<br>(L) | Risk Score<br>(IxL) |                    |
| <b>Duty of Quality</b><br>Could the scheme impact positively or negatively on any of the following: | Effectiveness – clinical outcome | ✓                                       |          |         |                               |  |                        |                     |                    |
|   | Patient experience               | ✓                                       |          |         |                               |  |                        |                     |                    |
|   | Patient safety                   | ✓                                       |          |         |                               |  |                        |                     |                    |
|   | Parity of esteem                 | ✓                                       |          |         |                               |  |                        |                     |                    |
|   | Safeguarding children or adults  |   |          | ✓       |                               |  |                        |                     |                    |
| <b>NHS Outcomes Framework</b>   | Enhancing quality of life        | ✓                                       |          |         |                               |  |                        |                     |                    |



|  |  |   |  |   |  |  |  |  |  |
|--|--|---|--|---|--|--|--|--|--|
| Could the scheme impact positively or negatively on the delivery of the five domains:                  | Ensuring people have a positive experience of care   | ✓ |  |   |  |  |  |  |  |
|  | Preventing people from dying prematurely   | ✓ |  |   |  |  |  |  |  |
|  | Helping people recover from episodes of ill health or following injury                                       | ✓ |  |   |  |  |  |  |  |
|  | Treating and caring for people in a safe environment and protecting them from avoidable harm                 |   |  | ✓ |  |  |  |  |  |
| <b>Patient services</b><br>Could the proposal impact positively or negatively on any of the following: | A modern model of integrated care, with key focus on multiple long-term conditions and clinical risk factors |   |  | ✓ |  |  |  |  |  |
|  | Access to the highest quality urgent and emergency care  |   |  | ✓ |  |  |  |  |  |
|  | Convenient access for everyone   |   |  | ✓ |  |  |  |  |  |
|  | Ensuring that citizens are fully included in all aspects of service design and change                        |   |  | ✓ |  |  |  |  |  |
|  | Patient Choice   | ✓ |  |   |  |  |  |  |  |

|  |  |   |  |   |  |  |  |  |  |
|--|--|---|--|---|--|--|--|--|--|
|  |  |   |  |   |  |  |  |  |  |
|  | Patients are fully empowered in their own care |   |  | ✓ |  |  |  |  |  |
|  | Wider primary care, provided at scale          |   |  | ✓ |  |  |  |  |  |
| <b>Access</b><br>Could the proposal impact positively or negatively on any of the following: | Patient choice                                 |   |  | ✓ |  |  |  |  |  |
|  | Access   |   |  | ✓ |  |  |  |  |  |
|  | Integration                                    |   |  | ✓ |  |  |  |  |  |
| <b>Compliance with NHS Constitution</b>  | Quality of care and environment                | ✓ |  |   |  |  |  |  |  |
|  | Nationally approved treatment/drugs            |   |  | ✓ |  |  |  |  |  |
|  | Respect, consent and confidentiality           | ✓ |  |   |  |  |  |  |  |
|  | Informed choice and involvement                | ✓ |  |   |  |  |  |  |  |
|  | Complain and redress                           |   |  | ✓ |  |  |  |  |  |

\*Risk score definitions are provided in the next section.

## Equality Impact Assessment

### Project / Policy Details

#### What is the aim of the project / policy?

To provide a fair, equitable and transparent process for all patients of the NHS Coventry and Warwickshire Integrated Care Board (ICB) where a patient is suffering from a medical condition, for which the ICB has commissioning responsibility, and is unable to tolerate a conventional Magnetic Resonance Image (MRI) scanner or where the use of a conventional MRI scanner is inappropriate.

#### Who will be affected by this work? e.g staff, patients, service users, partner organisations etc.

Patients

#### Is a full Equality Analysis Required for this project?

Yes

Proceed to complete this form.

No

Explain why further equality analysis is not required.

If no, explain below why further equality analysis is not required. For example, the decision concerned may not have been made by the ICB or it is very clear that it will not have any impact on patients or staff.

### Equality Analysis Form

#### 1. Evidence used

**What evidence have you identified and considered?** This can include national research, surveys, reports, NICE guidelines, focus groups, pilot activity evaluations, clinical experts or working groups, JSNA or other equality analyses.

NHS Choices. 2015. MRI Scan. <https://www.nhs.uk/conditions/mri-scan/>

Meléendez J Carlos and McCrank Ernest. Anxiety-related reactions associated with magnetic resonance imaging examinations. JAMA 1993;270(6):745-7.

Enders J, Zimmermann E, Rief M, et al. Reduction of Claustrophobia with Short-Bore versus Open Magnetic Resonance Imaging: A Randomized Controlled Trial. PLoS One. 2011; 6(8): e23494., 2011.

Nguyen H S, Doan N, Shabani S, et al. Upright magnetic resonance imaging of the lumbar spine: Back pain and radiculopathy. J Craniovertebr Junction Spine. 2016; 7(1): 31–37., 2016.

Lu J C, Nielsen J C, Morowitz L, et al. Use of a 1.0 Tesla open scanner for evaluation of pediatric and congenital heart disease: a retrospective cohort study. J Cardiovasc Magn Reson 2015; 17:39.

Merl T, Scholz M, Gerhardt P, et al. Results of a prospective multicenter study for evaluation of the diagnostic quality of an open whole-body low-field MRI unit. A comparison with high-field MRI measured by the applicable gold standard: Eur J Radiol. 1999;30(1):43-53.

Claustrophobia During Magnetic Resonance Imaging: Cohort Study in Over 55,000 Patients, Marc Dewey, MD, Tania Schink, PhD, and Charles F. Dewey, MD, PhD, Journal of Magnetic Resonance Imaging 26:1322–1327 (2007)

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HSCIC Statistics on Obesity, Physical Activity and Diet. England 28 April 2016

Adult obesity, Health Survey for England (HSE) 2014

## 2. Impact and Evidence:

In the following boxes detail the findings and impact identified (positive or negative) within the research detailed above; this should also include any identified health inequalities which exist in relation to this work.

**Age:** A person belonging to a particular age (e.g. 32 year olds) or a range of ages (e.g. 18-30 year olds)

This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.

**Disability:** A person has a disability if he/she has a physical, hearing, visual or mental impairment, which has a substantial and long-term adverse effect on that person's ability to carry out normal day-to-day activities

This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.

**Gender reassignment (including transgender):** Where a person has proposed, started or completed a process to change his or her sex.

This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.

**Marriage and civil partnership:** A person who is married or in a civil partnership.

|  |
|--|
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Pregnancy and maternity:</b> A woman is protected against discrimination on the grounds of pregnancy and maternity. With regard to employment, the woman is protected during the period of her pregnancy and any statutory maternity leave to which she is entitled. Also, it is unlawful to discriminate against women breastfeeding in a public place.</p> |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Race:</b> A group of people defined by their race, colour, and nationality (including citizenship) ethnic or national origins.</p>   |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Religion or belief:</b> A group of people defined by their religious and philosophical beliefs including lack of belief (e.g. atheism). Generally a belief should affect an individual's life choices or the way in which they live.</p>   |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Sex:</b> A man or a woman</p>  |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Sexual orientation:</b> Whether a person feels generally attracted to people of the same gender, people of a different gender, or to more than one gender (whether someone is heterosexual, lesbian, gay or bisexual).</p>   |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Carers:</b> A person who cares, unpaid, for a friend or family member who due to illness, disability, a mental health problem or an addiction cannot cope without their support</p>  |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |
| <p><b>Other disadvantaged groups:</b></p>  |
| <p>This policy does not contain any statements which may exclude clinicians of the NHS Coventry and Warwickshire Integrated Care Board from applying this policy.</p>  |

| <b>3. Human Rights</b>  |   |  |
|---|---|--|
| <b>FREDA Principles / Human Rights</b>  | <b>Question</b>   | <b>Response</b>  |
| <b>Fairness</b> – Fair and equal access to services   | How will this respect a person's entitlement to access this service?  | This policy is applied to all patients of the NHS Coventry and Warwickshire Integrated Care Board where the clinician has identified that the patient is unable to tolerate a conventional Magnetic Resonance Image (MRI) scanner or where the use of a conventional MRI scanner is inappropriate. |
| <b>Respect</b> – right to have private and family life respected  | How will the person's right to respect for private and family life, confidentiality and consent be upheld?        | The patient will not be contacted by the ICB. If the patient contacts the ICB of their own accord then all communication, written or verbal, will be provided in a confidential, clear, understandable, format.  |
| <b>Equality</b> – right not to be discriminated against based on your protected characteristics                 | How will this process ensure that people are not discriminated against and have their needs met and identified?   | This policy is applied to all patients of the NHS Coventry and Warwickshire Integrated Care Board where the clinician has identified that the patient is unable to tolerate a conventional Magnetic Resonance Image (MRI) scanner or where the use of a conventional MRI scanner is inappropriate. |
| <b>Dignity</b> – the right not to be treated in a degrading way   | How will you ensure that individuals are not being treated in an inhuman or degrading way?                        | All communication, written or verbal, will be provided in a confidential, clear, understandable, format.   |
| <b>Autonomy</b> – right to respect for private & family life; being able to make informed decisions and choices | How will individuals have the opportunity to be involved in discussions and decisions about their own healthcare? | Individuals will have the opportunity to discuss their healthcare with the requesting clinician.   |

|                         |  |   |
|-------------------------|--|---|
|                         |  | If the patient contacts the ICB of their own accord then all communication, written or verbal, will be provided in a confidential, clear, understandable, format. |
| Right to <b>Life</b>    | Will or could it affect someone's right to life? How?    | No  |
| Right to <b>Liberty</b> | Will or could someone be deprived of their liberty? How? | No  |

#### 4. Engagement, Involvement and Consultation

If relevant, please state what engagement activity has been undertaken and the date and with which protected groups:

| Engagement Activity | Protected Characteristic/<br>Group/ Community | Date |
|---------------------|---|------|
| N/A                 | N/A   | N/A  |
|                     |   |      |
|                     |   |      |

For each engagement activity, please state the key feedback and how this will shape policy / service decisions (E.g. patient told us .... So we will .....):

N/A

#### 5. Mitigations and Changes

Please give an outline of what you are going to do, based on the gaps, challenges and opportunities you have identified in the summary of analysis section. This might include action(s) to mitigate against any actual or potential adverse impacts, reduce health inequalities, or promote social value. Identify the **recommendations** and any **changes** to the proposal arising from the equality analysis.

N/A

#### 6. How will you measure how the proposal impacts health inequalities?

e.g Patients with a learning disability were accessing cancer screening in substantially lower numbers than other patients. By revising the pathway the ICB is able to show increased take up

from this group, this is a positive impact on health inequalities.

You can also detail how and when the service will be monitored and what key equality performance indicators or reporting requirements will be included within the contract.

By introducing this policy we are ensuring that there is now a fair, equitable and transparent process for all patients of the NHS Coventry and Warwickshire Integrated Care Board (ICB) where a patient is suffering from a medical condition, for which the ICB has commissioning responsibility, and is unable to tolerate a conventional Magnetic Resonance Image (MRI) scanner or where the use of a conventional MRI scanner is inappropriate.

Historically the IFR service would receive ad-hoc requests from clinicians (primary and secondary), however without a clear process of how to request this intervention, in appropriate circumstances, not all clinicians are aware of this option.

Requests will be managed on a prior approval basis by the IFR team and activity is monitored through Acute Contracting/Business Intelligence who will monitor the activity and review as appropriate.

#### 7. Is further work required to complete this assessment?

Please state what work is required and to what section. e.g additional consultation or engagement is required to fully understand the impact on a particular protected group (e.g disability).

| Work needed | Section | When | Dare completed |
|-------------|---------|------|----------------|
| N/A         | N/A     | N/A  | N/A            |
|             |         |      |                |

#### 8. Sign off

The Equality Analysis will need to go through a process of **quality assurance** by a Senior Manager within the department responsible for the service concerned before being submitted to the Policy, Procedure and Strategy Assurance Group for approval. Committee approval of the policy / project can only be sought once approval has been received from the Policy, Procedure and Strategy Assurance Group.

| Requirement  | Name                      | Date     |
|--|---------------------------|----------|
| Senior Manager Signoff   | Michael Caley, Deputy CMO | 26.04.23 |
| Which committee will be considering the findings and signing off the EA? | F&P                       | 05.07.23 |
| Approved by the Policy Procedure and Strategy Assurance Group.           |                           |          |

Once complete, please send to the ICB's Governance Team