National School of Healthcare Science

NHS England

# IACC 2023 Case-based discussion (CBD) scenario

| Specialty: | Imaging With Non-Ionising Radiation |
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## CBD Scenario

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| **CBD Scenario Title** | Modifying sequence parameters to lower Specific Absorption Rate (SAR) | | | | | | | | | |
| **CBD Scenario Aim** | To test understanding of which parameters can be adjusted to lower SAR and the subsequent effect of the appearance of clinical images. | | | | | | | | | |
| **CBD Focus**<br>(please provide the codes of the module(s) this scenario addresses) | SC110: 20 | | SPE154c5: #6<br>SPE154c5: #4 | | | | | | | |
| **GSP Domains covered**<br>(enter X to indicate all that apply) | **GSP 1** | | **GSP 2** | x | **GSP 3** | x | **GSP 4** | | **GSP 5** | |
| **CBD Scenario description** | A patient with an active implant has been referred for an MRI scan. One of the MR Conditions for the implant is a WB SAR limit of 0.4 W/Kg. Can you describe options for modifying sequence parameters to reduce SAR and the possible effects on image appearance? | | | | | | | | | |
| **CBD Scenario model answer/ assessor guidance**<br>Detailed guidance that will be available for the assessors. Include guidance on what kinds of behaviours, actions, comments should secure a pass. What should the assessor expect to see? Assessors will be asked to plan questions in advance including links to trainee's IACC submission. | The following are pass and fail indicators. Not all pass indicators need to be mentioned, but the trainee should demonstrate knowledge of the effects of changing imaging parameters on the clinical appearance of images.<br><br>**Pass indicators**<br>• Can lower SAR by:<br>○ Using Low SAR pulses<br>○ Increasing concatenations/ segments<br>○ Reducing number of slices<br>○ Increasing TR<br>○ Lowering flip angles<br>○ Using triggered acquisitions rather than breath-holds. | | | | | | | | | |

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| | • Low SAR pulses may increase echo times (but not usually significant)<br>• Increasing concatenations lengthens scan time.<br>• Reducing slices reduces coverage.<br>• Increasing TR can affect contrast for T1W scans.<br>• Can usually reduce refocussing FA for TSE without altering scan contrast significantly.<br>• Reducing FA can affect contrast for balanced GE sequences.<br><br>**Fail indicators:**<br>• Answers that indicate a general lack of understanding of the effect of imaging parameters on image appearance |
| **Trainee instructions**<br>Please include any specific information to be provided to the trainee as part of the CBD scenario | No additional instructions |

# Criteria being assessed by this CBD scenario

| Aspect | Please indicate if this criterion is being assessed |
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| 1. Understands the clinical context of the scenario, including priority setting and testing strategies | X |
| 2. Understands scientific principles of scenario | X |
| 3. Can discuss the relevant procedures involved in the scenario and associated health and safety issues | X |
| 4. Understands and applies the appropriate test validation, IQC, EQA, relevant professional/clinical guidelines | |
| 5. Understands and applies associated IT/bioinformatics and other appropriate resources | |
| 6. Is able to interpret and report patient results and provide appropriate clinical advice | |
| 7. Can discuss the significance of patient results within the clinical context of the referral | |
| 8. Understands the ethical, legal and social implications of the scenario | |
| 9. Is aware of the importance of audit and can use this tool effectively | |

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| 10. Output meets accepted laboratory/professional standards | |
| 11. Demonstrates awareness of the limits of responsibility and when to seek advice | |
| 12. Consideration of patient/professionalism | |
| 13. Overall ability to perform | |