

Indications

- > Onset of partial seizures, at any age
- > Onset of generalised or unclassified seizures in the first year of life, or in adulthood
- > Difficulty obtaining seizure control with first-line antiepileptic drugs (AEDs)
- > Loss of seizure control, or a change in the pattern of seizures

Contraindications

- > Any electrically, magnetically or mechanically activated implant (e.g. cardiac pacemaker, implantable cardioverter defibrillator, biostimulator, neurostimulator, cochlear implant, and hearing aids)
- > Intracranial aneurysm clips (unless made of titanium)
- > Pregnancy (risk vs benefit ratio to be assessed)
- > Ferromagnetic surgical clips or staples
- > Metallic foreign body in the eye
- > Metal shrapnel or bullet

Patient preparation

- > A satisfactory written consent form must be taken from the patient before entering the scanner
- Ask the patient to remove all metal objects including keys, coins, wallet, cards with magnetic strips
- > jewellery, hearing aid and hairpins
- If possible provide a chaperone for claustrophobic patients (e.g. relative or staff)
- > Offer earplugs or headphones, possibly with music for extra comfort
- > Explain the procedure to the patient
- > Instruct the patient to keep still
- > Note the weight of the patient
- >

Positioning

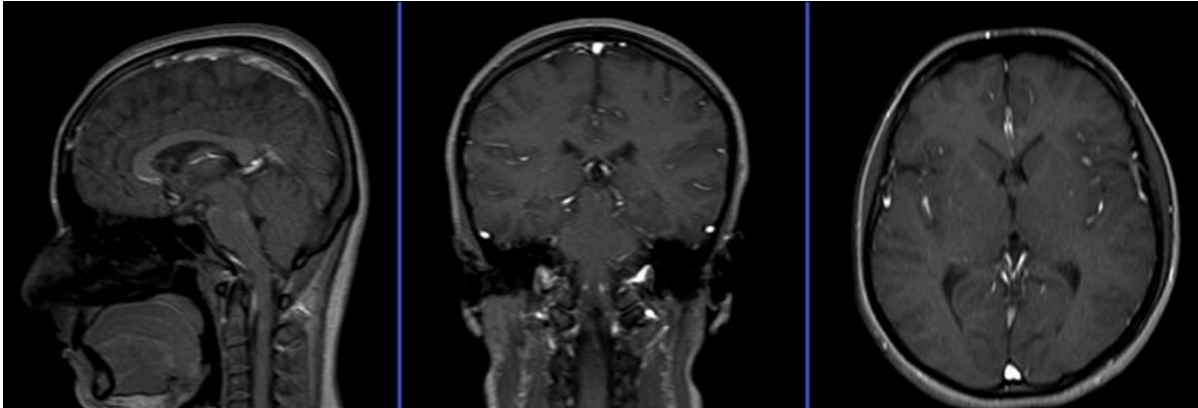
- > Head first supine
- > Position the head in the head coil and immobilize with cushions
- > Give cushions under the legs for extra comfort
- > Centre the laser beam localiser over the glabella



Suggested sequence, parameters and planning

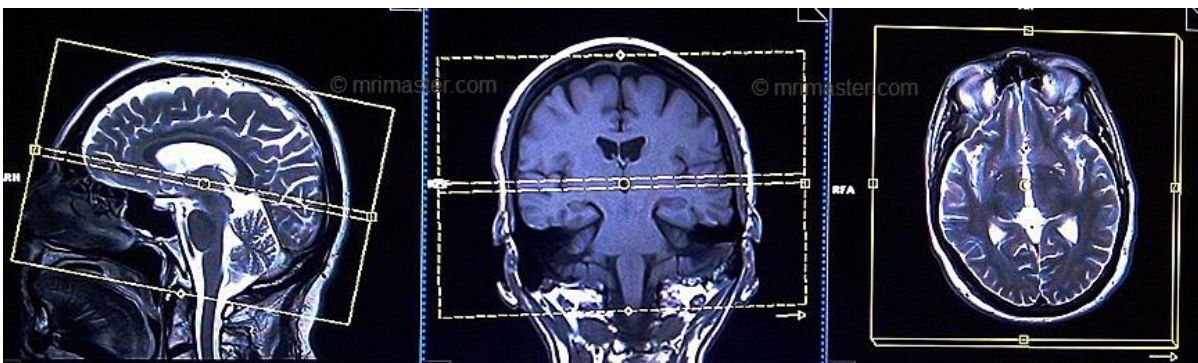
localiser

A three plane localiser must be taken in the beginning to localise and plan the sequences. Localisers are normally less than 25sec. T1 weighted low resolution scans.



T2 tse axial

Plan the axial slices on the sagittal plane; angle the position block parallel to the genu and splenium of the corpus callosum. Slices must be sufficient to cover the whole brain from the vertex to the line of the foramen magnum. Check the positioning block in the other two planes. An appropriate angle must be given in coronal plane on a tilted head (perpendicular to the line of 3rd ventricle and brain stem).



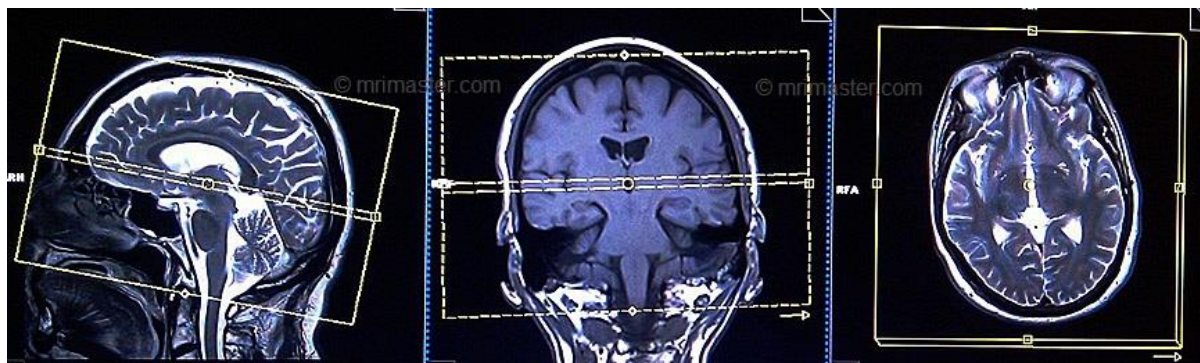
Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP	NEX(AVRAGE)
3000-4000	100-120	5MM	130-150	R>L	320X320	210-230	10%	2

T2 FLAIR axial

Plan the axial slices on the sagittal plane; angle the position block parallel to the genu and splenium of the corpus callosum. Slices must be sufficient to cover the whole brain from the vertex to the line of the foramen magnum. Check the positioning block in the

other two planes. An appropriate angle must be given in coronal plane on a tilted head (perpendicular to the line of 3rd ventricle and brain stem).



Parameters

TR	TE	FLIP	NEX	SLICE	MATRIX	FOV	PHASE	GAP	TI
7000-9000	110	130	2	5MM	320X320	210-230	R>L	10%	2500

T1 SE coronal

Plan the coronal slices on the sagittal plane; angle the position block perpendicular to the corpus callosum. Check the positioning block in the other two planes. An appropriate angle must be given in the axial plane on a tilted head (perpendicular to mid line of the brain). Slices must be sufficient to cover the whole brain from the frontal sinus up to the line of the occipital protuberance.

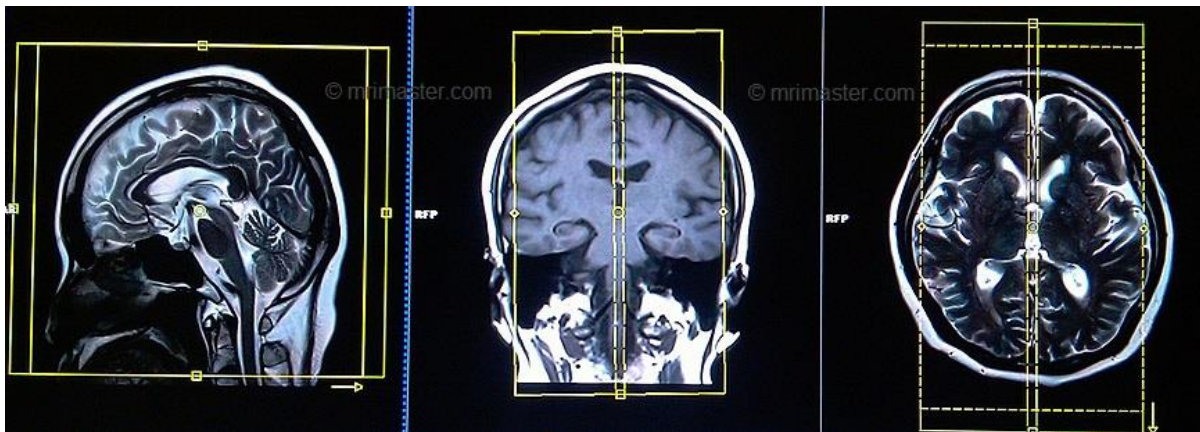


TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP	NEX(AVRAGE)
400-600	15-25	5MM	90	R>L	320X320	210-230	10%	2

Parameters

T2 tse sagittal

Plan the sagittal slices on the axial plane; angle the position block parallel to midline of the brain. Check the positioning block in the other two planes. An appropriate angle must be given in the coronal plane on a tilted head (parallel to the line along 3rd ventricle and brain stem). Slices must be sufficient to cover the whole brain from temporal lobe to temporal lobe.

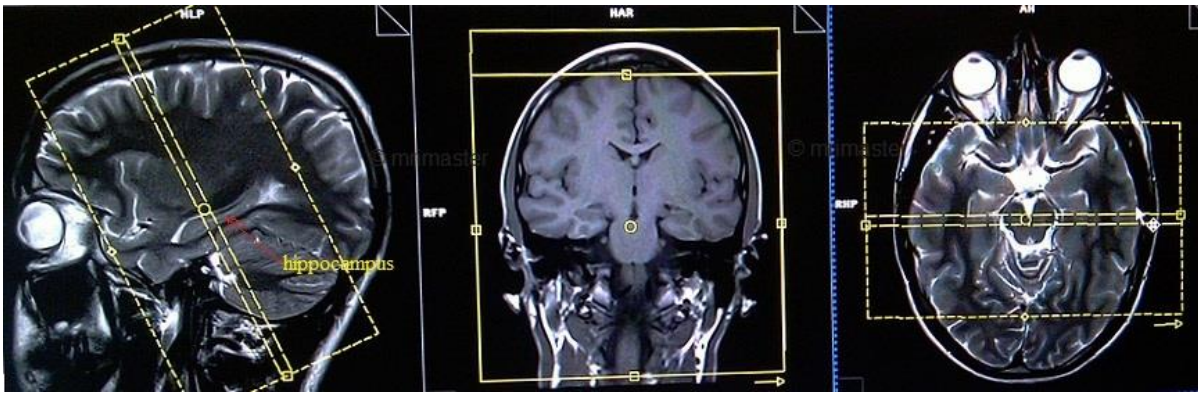


Parameters

TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP	NEX(AVRAGE)
100-120	5MM	130-150	A>P	320X320	210-230	10%	2

T2 tse coronal oblique 2mm (epilepsy protocol)

Plan the coronal high-resolution slices on the sagittal plane; angle the position block plane perpendicular to the long axis of the hippocampus. Check the positioning block in the other two planes. An appropriate angle must be given in the axial plane (perpendicular to mid line of the brain). Slices must be sufficient to cover the whole temporal lobe.

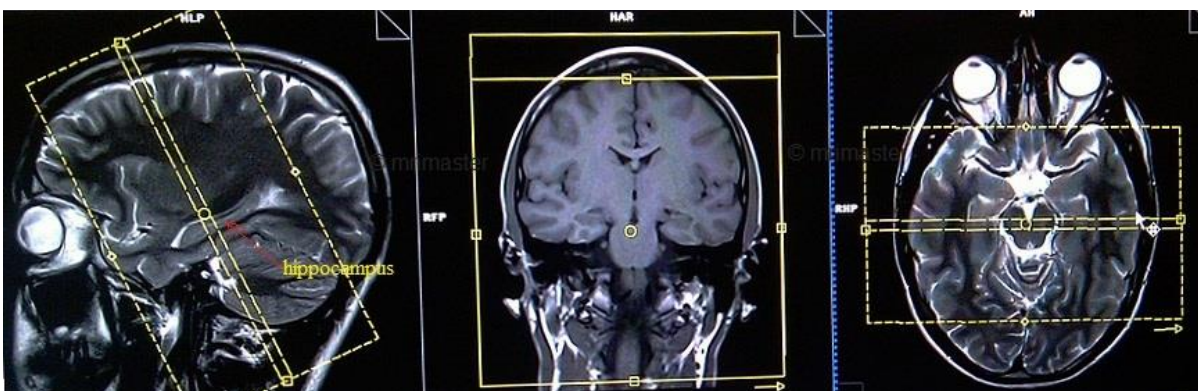


Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP	NEX(AVRAGE)
3000-4000	100-120	2 MM	130-150	A>P	320X320	180-200	10%	4

T1 tse coronal oblique 2mm (epilepsy protocol)

Plan the coronal high-resolution slices on the sagittal plane; angle the position block plane perpendicular to the long axis of the hippocampus. Check the positioning block in the other two planes. An appropriate angle must be given in the axial plane (perpendicular to mid line of the brain). Slices must be sufficient to cover the whole temporal lobe.



Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP	NEX(AVRAGE)
400-600	15-25	2 MM	140	R>L	320X320	180-200	10%	4

In children it is strongly recommended to undertake 3-dimensional (3D) T1-weighted MPRAC images with 1mm slices in the coronal oblique plane (perpendicular to hippocampus). include from nasion to inion.