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### MR Protocols

Exam: SOFT-TISSUE NECK

Coil: NVARRAY

Position: SUPINE

Landmark: INFRA-ORBITAL MEATAL LINE

Pulse Sequence	Options	TR	TE TI	ETL	FA	VBW	FOV	Thick/Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3 PL LOC	NPW SEQ						30	15		<u>256</u> 128	2	UNSWP	:51	13 SLICES
CALIBRATION SCAN	FAST CALIB						30	10				A/P	:12	25 SLICES AUTOSM:OFF
COR FAST STIR	NPW SEQ FAST	6000	<u>50</u> 150	6		15.63	26	5/1	S/I	<u>256</u> 192	2	S/I	6:30	AUTOSHIM 25SL PURE
COR T1	NPW	450	MIN			15.63	26	5/1	S/I	<u>256</u> 192	3	S/I	4:26	25SL PURE
COR T1 F/S	NPW	550	MIN			15.63	26	5/1	S/I F/S	<u>256</u> 192	2	S/I	7:18	25SL PURE
AX T2 FSE-XL	NPW FAST	3775	102	16		20.83	24	5/1	S/I	<u>256</u> 224	4	A/P	7:17	25SL PURE AUTOSHIM
AX T1	NPW	450	MIN			15.63	24	5/1	S/I	<u>256</u> 192	3	A/P	4:26	25SL PURE AUTOSHIM
AX T1 F/S	NPW	550	MIN			15.63	24	5/1	S/I	<u>256</u> 192	2	A/P	7:18	25SL PURE AUTOSHIM
SAG T1	NPW	450	MIN			15.63	26	5/1	S/I	<u>256</u> 192	3	S/I	4:26	25SL PURE AUTOSHIM
+C AX T1 F/S	NPW	450	MIN			15.63	24	5/1	S/I	<u>256</u> 192	2	A/P	7:18	25SL PURE AUTOHIM CONTRAST



## MR Protocols

Exam: HEAD w/o & w/ contrast (Brain Tumor)

Coil: HNS Head

Position: Head First/Supine

Landmark: Nasion

Pulse Sequence	Options	TR	TE TI	ETL	FA	VBW	FOV	Thick/Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3-Plane LOC	Seq, Fast						28	5		256x192	1		:29	
CAL Scan	Fast, Calib						30	8				R/L	:13	
AXIAL DIFFUSION/T2 EPI	EPI, DIFF, Asset	Shots 1 8000	Min				28	5/1		128 x 128	2	R/L	:40	Phase FOV .90  Diffusion direction: TETRA
AXIAL T1 BRAVO 3D	Fast, IrP, Asset ZIP512	Prep Time 450			13	22.73	24	1mm  160 locs Per slab		256x256	1	S/I	4:19	Acquire Axial projection Reformat to Sagittal
AXIAL T2 F/S propeller	FC, VBw, TRF, ZIP512	7200	90	24		50.0	22	5/0	Fat/Sat	416	1.5	A/P	3 :56	
AXIAL GRE	EDR, ZIP512	500	20	20		20.83	22	5/0		288 x 192	1	A/P	2 :40	

3D ASL (non contrast) Perfusion	EDR, Fast, Spiral					62.50	24	4.0  30 #of scan locs		512  8 arms	3			Post Label Delay 1525
AXIAL Perfusion	MPh, EPI, Asset	1700	30		90		24.0	6/0		80X80	1	R/L	1:30	Begin Scan, inject at after 4 seconds (2phases) of scanning
SAG 3D FLAIR CUBE	EDR, Fast, IrP, ZIP512, ZIP2, ARC	6000		140		22.73	24	1.4		224x 224		S/I	5:00	3D acquire in Sagittal, reformat Axial 3x3mm
AXIAL T1 BRAVO 3D	Fast, IrP, Asset ZIP512	Prep Time 450				22.73	24	1mm  160 locs Per slab		256x 256	1	S/I	4:19	Acquire Axial projection  Reformat to Sagittal/Coronal
Optional:														
AXIAL GRE	EDR, ZIP512	500	20	20		20.83	22	5/0		288 x 192	1	A/P	2 :40	

3 Plane Loc  
Calibration  
Axial Diffusion

T1 3D BRAVO: scanned in Axial plane, reformat in Sagittal planes at 22 FOV 3x3 mm

T2 Axial Fat/Sat Propeller

Axial Gradient if needed

Axial 3D ASL non contrast perfusion

Axial Perfusion 20ml Multihance

FLAIR 3D CUBE: scanned in Sagittal plane, reformat in Axial plane at 22FOV 3x3mm;

T1 3D BRAVO: scanned in Axial plane, reformat in Sagittal/Coronal plane at 22 FOV 3x3mm

## PERFUSION

IV utilizing 18 Gauge angiocath and Power injector

20ml Gadolinium at 5ml injection rate/20ml saline flush 5ml rate (same as Gad)

Dynamic EPI Echo speed (Under GE file)

12 slices at 10 mm thickness

Cover area of interest

Multiphase delay minimum/interleaved/35 phases

1:07; when downloaded 1:08

Save

Prepare to Scan

Prep Scan

Scan

WHEN SCANNER IS AT 1:00 INJECT (Oshkosh and West)

**(TC and AMC) delay built into the injector; inject and scan the same time; it will start scanning immediately and inject after 8 sec.**

Complete Perfusion Sequence when:

- 1) Acute Infarct
- 2) Brain Mass
- 3) Rad Onc Tumor

## POST PROCESSING

Functool 2

MR Standard

Next (green lines will come off)

Click on red slice location in upper left corner till see MCA

Grab ellipse ROI (shrink down small) and place in the opposite hemisphere of the lesion posterior to the MCA

Hit space bar (this is the baseline)

Right click to Save view right upper quadrant

Graph should visualize low drop-high peak

Pre 2..\_ (fill in number corresponding to pre Gad on graph just before the dip)

2..12

Post \_- 34 (fill in number corresponding to wash-out of gad at the final peak of gad on graph)

Next --(Constant-Negative-(Displays Final Settings)

Next

Compute

Right lower screen (neg. Enhancement images) (annotate rcvb) most inferior image

Functional Maps → visible maps – Rt – multiple locs – Save as screensave images

Images will process I → S (1-12)

Close out completely

Reopen Functool follow same process

Click on Rt lower quadrant Right click on neg. enhancement integral to say mean time to enhance

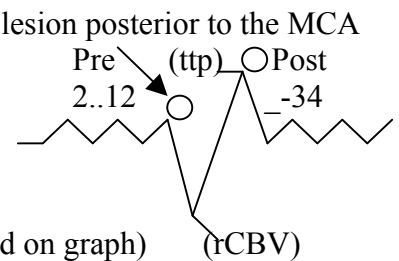
(Annotate ttp) most inferior image

Slice with pathology achieve red, yellow, blue, green color within lesion region

Images will process I → S (1-12)

Click on Lt upper quadrant each image I → S Rt click Save as

Close \_ \_ \_ \_ \_



**MR Protocols**

Exam: BRAIN(CSF-FLOW ANALYSIS)

Coil: 8 HRBRAIN

Position: supine

Landmark: orbital meatal line

Pulse Sequence	Options	TR	TE TI	E T L	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3-PL LOC HEAD	NONE	24						5/5		<u>256</u> 128	1		.23 sec	7 SLICES
	IF PRIOR BRAIN STUDY DELETE SERIES 1&2 CONTINUE WITH SERIES 3&4 SAGGITAL PLANE.													
SERIES#1														
SAG T1 HEAD	NPW	450	Min Full				24	4/1	I	<u>256</u> 192	2	S/I	3:00	12 SLICES CENTERED MIDLINE
SERIES#2														
AX PD/T2 HEAD	CLASSIC VBW/FC	2200	30/80			16/8	20	5/2.5	I	<u>256</u> 192	1	A/P	7:28	20 SLICES parallel to inferior tip corpus collosum
SERIES#3														
SAG T1 HEAD	PC/FC/SEQ	MIN			30		20	3/1		<u>256</u> 192	2		5:00	CINE/PG/1LOC/16 PHS FRECON=PH DIFF COLL/FLOW ANA=ON VENC:SER#3=10 :SER#4=20
SERIES#4 SAG T1 HEAD	REPEAT SERIES VEN=20													



## THEDACARE POLICIES AND PROCEDURES

**TITLE:** MRI Head scanning of patients with Deep Brain Stimulators

**DIVISION:** Hospital/Clinic

**DEPARTMENT:** Magnetic Resonance Imaging (MRI)

**HOSPITAL POLICY REFERENCE:** [mrisafety.com/Medtronic.com](http://mrisafety.com/Medtronic.com)

**REVIEWED DATE:** October 2009

**REVIEWED BY:** Lead Technologists

**APPROVED BY:** Supervising Radiologists

**PURPOSE:** To establish a consistent and concise protocol to ensure safety and consistency in scanning patients with Deep Brain Stimulators

**POLICY:** Guidelines for safely scanning patients with Deep Brain Stimulators

**PROCEDURE:** Scan according to guidelines established by Medtronic and [mrisafety.com](http://mrisafety.com) see below:



## TO SCAN PATIENTS WITH DEEP BRAIN STIMULATORS

- Call 800-633-8766 Medtronic Rep for this arrange prior to exam
- INS Volts to “0” and turn device OFF - - Medtronic Representative will turn off the device  
Turn back on after MRI and set volts back
- 1.5 Tesla Magnet
- Enter correct patient weight into the MRI console to ensure the head SAR is estimated correctly
- Transmit/Receive Head coil only– (4 channel head coil)
- Displayed Average SAR no greater than 0.1 W/kg for all RF pulse sequences. **IF CANNOT ACHIEVE, DO NOT SCAN**
- No open circuits (battery pack must be attached)
- Limit the gradient db/dt field to 20 Tesla per second or less – NORMAL MODE will do this and NO EPI sequences (diffusion/perfusion)

Factors to watch/affecting SAR: Slices---increasing slices will increase SAR

TR-----increasing TR will decrease SAR

Slice Thickness—by increasing thickness you can decrease number of slices (less coverage), thus decrease SAR

**DOCUMENT AVERAGE SAR ON EVERY PULSE SEQUENCE; PUT VALUE IN EPIC STUDY NOTES**

### MR Protocols

Exam: BRAIN SPECTROSCOPY

Coil: 4CH. HEAD COIL

Position: SUPINE

Landmark: ORBITALMEATAL LINE

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3- PL LOC HEAD	NPW						24	5/0		<u>256</u> 128	2	UNSWAP	:31	7 SLICES SHIM:OFF
AX T2 HEAD	FC,FR FAST ZIP512	3100	85	19		41.67	22	5/2	I	<u>384</u> 224	2	A/P	2:17	FCD:SLICE AUTOSHIM PFOV=.75 24 SLICES
AX MPGR* GRE HEAD	FC	675	20		20	15.63	22	5/2		<u>256</u> 224	2	A/P	3:48	AUTOSHIM PFOV:.75 24 SLICES
AX PROBE (I) HEAD	EDR	1500	144				24	<u>20.0</u> VOXEL		<u>1</u> 1	8	A/P	1:24	AUTOSHIM CV3=1 CV4=32 CV17=0 CV18=7
AX PROBE (O) HEAD	EDR	1500	144				24	<u>20.0</u> VOXEL		<u>1</u> 1	8	A/P	1:24	AUTOSHIM CV3=1 CV4=32 CV17=0 CV18=7
(OPT) AX T2 HEAD	FC, FAST	3800	102	16		20.83	22	<u>20.0</u> VOXEL		<u>256</u> 192	1	A/P	:53	AUTOSHIM FCD:SLICE PFOV: 1 CV7=1

(MV)AX PROBE HEAD	EDR	1500	144				24	$\frac{10.0}{\text{VOXEL}}$		$\frac{12}{12}$	1	A/P	3:42	AUTOSHIM CV3=1 CV17=1 CV18=7
PACS SYSTEM - BURN CD IF NEEDED														

### MR Protocols

Exam: BRAIN ORBITS/PITUITARY/IAC

Coil: 8CH HR BRAIN HEAD COIL

Position: Supine

Landmark: OML

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
<b><u>Pituitary</u></b>					Regular Brain Study +									
SAG T1 PIT	FC NPW VBW	4.50	Min Full			15.63	16	2/1		<u>288</u> 192	2	S/I	3:00	15 slices
COR T1 PIT	FC NPW VBW	4.50	Min Full			15.63	16	2/1		<u>288</u> 192	2	S/I	3:00	15 slices
+C COR T1 PIT	FC NPW VBW	450	Min Full			15.63	16	2/1		<u>288</u> 192	2	S/I	3:00	15 slices + contrast
+C SAG T1	FC NPW VBW	450	Min Full			15.63	16	2/1		<u>288</u> 192	2	S/I	3:00	15 slices + contrast
+C COR DYN PIT	FC TRF ZIP512 FAST	400	Min Full	4		20.83	20  PREP	3/3  SCAN	  POWER	<u>256</u> 192 INJECT	2  (SCAN)	S/I  (5X)	1:50 (30s)	6 slices (5x) PFOV=.70
<b><u>IAC</u></b>					Regular Brain Study +									
COR T1 IAC	FC VBW	425	Min Full			15.63	16	3/1	I/S	<u>288</u> 192	2	A/P	2:43	12 slices PFOV=1
AX T2 IAC	FC VBW Fast	3000	102			15.63	16	3/3		<u>288</u> 192	3	A/P	1:54	12 slices PFOV=1
+C COR T1 IAC	FC VBW NPW	450	Min Full			15.63	16	3/1	I/S	<u>288</u> 192	2	A/P	3:00	12 slices + contrast

+C AX T1 IAC	FC VBW NPW	450	Min Full			15.63	16	3/1		$\frac{288}{192}$	2	A/P	3:00	12 slices + contrast
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PACS System – Burn CD if needed

**MR Protocols**

Exam: MRA CAROTIDS  
 Coil: HD NV ARRAY  
 Position: SUPINE-HEAD FIRST  
 Landmark: MANDIBULAR SYNTHESIS

Pulse Sequence	Options	TR	TE TI	ETL	FA	BdW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3PL T2* FGRE	NPW SEQ						35	5/0		<u>256</u> 128	2	UNSW	1:01	SHIM OFF 15 SLICES
CALLIBRATION SCAN	FAST CALIB						30	15/0				A/P	:12	47 SLICES
SAG 2D PC	FC	20			20	15.63	28	10/0		<u>256</u> 128	2	S/I	1:19	SHIM AUTO 10 SLICES PFOV: .75
AX 2DTOF SPGR	FAST,FC SEQ	33	MIN		60	15.63	20	5/1		<u>256</u> 192	1	A/P	4:20	PFOV: 1 40 SLICES
+C CEMRA	FAST,SP ZIP 2,512		MIN		30	41.67	28	2.4/40		<u>256</u> 224	1	S/I	:32	SHIM AUTO PFOV: 90
AX T1 F/S	NPW	450	<u>MIN</u> FULL			10.42	20	4/0		<u>256</u> 160	3	A/P	7:27	SHIM AUTO 15 SLICES
MRA TRICKS SCAN IN CORONAL PL.	FAST, ZIP2 (MODE=3D)		MIN		20	83.33	34	2.8/34		<u>288</u> 224	.75	S/I	1:09	PFOV= .65 SHIM AUTO +C=ON CD4=0 CB6=2 (OUTPUT TEMP PH=17, PAUSE ON DELAY TIME AFTER MASK=MIN)



### MR Protocols

Exam: Brain MRA

Coil: 8 Channel head coil (8 HR brain)

Position: supine OML

Landmark:

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3-PL LOC		Localizer					24	5/5		<u>256</u> 128	1		16	AX-Cor-Sag PFOV=1.5 sl
CALIB SCAN							48					A/P	:12	47 SLICES
AX 3DTOF SPGR HEAD	FC VBW Mgt zip 512 Zip 2	36	6.9		20	15.63	20	1.4/8/32		<u>256</u> 224	1	A/P	9:51	PFOV=.75 3 slabs inferior→superior
<b>Options</b>														
AX 3DTOF SPGR HEAD	Same as above → EDR (no mgt)	38	6.9		25	15.63	20	2.8/12/64	S	<u>288</u> 224	1	A/P Unswap oblique	9:08	1 slab
AX 3DTOF SPGR HEAD	VBW zip 512 zip 2				20	15.63	16	1.4/10/40	S	<u>224</u> 160	1	A/P	4:23	PFOV=1 auto shim (2 slabs)
AX 3DTOF HEAD	FC Asset Zip 512 Zip 4	24	Min		20	31.25	26	2/10/26	S	<u>320</u> 192	1	A/P	1:30	PFOV ACF=H2O (1 slab)

PACS System Burn CD if necessary

### MR Protocols

Exam: C-spine

Coil: 8 CTL123

Position: Supine

Landmark: mandibular pt

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3-PL LOC CSP	NPW						26	4/1		<u>256</u> 128	2		:32	A50
CALIB SCAN							48					A/P	:47	12 SLICES
SAG T2 FRSE CSP	NPW, TRF, FR, EDR, FC, FAST	3000	120	23		35.00	24	3/8	S/I A/P	<u>384</u> 256	4	A/P	2:41	L 26 A40 I10.7 R 18 oblique
SAG T1 CSP	VBW, FAST, NPW,EDR, TRF	650	Min Full	3		25.00	24	3/8	S/I A/P	<u>320</u> 224	4	A/P	3:20	PFOV=1 oblique
SAG STIR FRFSE CSP	NPW Seq VBW TRF Fast, EDR ARC	2500	<u>68</u> 150	13		31.25	24	3/8	S/I A/P	<u>288</u> 224	4	A/P	4:12	Auto Shim – PC oblique
AX T2 FRSE CSP	FC NPW FR TRF EDR, FAST	2500	120	25		25.00	20	3/8		<u>320</u> 224	3	A/P	2 :44	Oblique auto shim (FC direction slice)
AX 2D MERGE	FC,NPW, EDR, TRF, FAST	619	5.8			31.25	18	3/8	A	<u>288</u> 160	2	A/P	3:23	Oblique auto shim PFOV=1.00 ANGLE W/DISK
AX T1 CSP	NPW, EDR,TRF, FAST	600	Min Full	3		25.00	20	3/8	R/L	<u>320</u> 224	3	A/P	4:19	Oblique auto shim
+C SAG	VBW	650	Min	3		25.00	24	3/8	F/S	<u>320</u>	4	A/P	3 :20	Oblique

T1 F/S			Full						SI/AP	<u>256</u>				MULTIHANCE
+C AX T1	NPW, EDR,TRF, FAST	600	Min Full	3		31.80	20	3/.8		<u>320</u> <u>224</u>	3	A/P	4 :19	Oblique MULTIHANCE
+C Cor T1	Fast NPW TRF	550	10.2	2		15.63	28	3/1	S/I	<u>256</u> <u>160</u>	3	Unswap	2:14	Oblique auto shim

### MR Protocols

Exam: T SPINE  
 Coil: 8 CTL MID  
 Position: SUPINE  
 Landmark: AXILLA

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3PI T2 * FGRES	NPW	-	-	-	-	-	48	4/2	-	<u>256</u> 128	2	Auto Center H2O	1:22	13 Slices
Calibration Scan						48						A/P	:12	47 SLICES
SAG LOC T1 FSE	VBW FAST	400	Min Full	2		31.25	48	3/1	-	<u>320</u> 224	2	S/I	1:10	PFOV .75, Sagittal, L20 R20 11 Slices Auto Shim on
SAG T2 FR FSE	FR NPW TRF FAST	3500	110	27		41.67	32	3/1	-	<u>288</u> 190	4	A/P	1:59	Auto Center Freq H2O Auto Shim on, Phase Correct on Oblique L20 R20
SAG T1 FS	FC NPW VBW FAST	550	17	3		31.25	32	3/1	-	<u>288</u> 192	3	S/I	1:48	Auto Center Freq H2O Auto Shim on, Phase Correct on Oblique L20 R20
SAG STIR IR FSE	SEQ VBW TRF FAST	2900	50 TE 150 TI	6		15.63	32	3/1	-	<u>288</u> 192	2	S/I	3:12	PFOV 1.00 Auto Center Freq H2O Auto Shim on Phase Correct on Oblique I47 S48
AX T2 FR FSE	FC NPW TRF FAST FR	3500	110	29		15.63	20	4/1	I, S	<u>288</u> 192	4	A/P	3:30	Auto Center Freq H2O Flow Comp Dir Slice Auto Shim on
AX T1 SE S	FC NPW VBW	625	Min Full	-		15.63	20	4/1	-	<u>288</u> 192	2	A/P	4:05	Auto Center Freq H2O Auto Shim on Oblique I50-S50
COR T1 FSE	NPW TRF FAST	575	10.2	2		15.63	28	3/1	I, S	<u>288</u> 160	3	Un- swap	2:18	Auto Center Freq H2O Auto Shim on

OPTIONAL SERIES														
Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
+C SAG T1 FS	FC NPW VBW FAST	550	17	3		31.25	32	3/1	F/S SI/AP	<u>288</u> 192	3	S/I	3:17	Auto Center Freq H2O Auto Shim on Phase Correct on Oblique Contrast -Y
+C AX T1 SE S	FC NPW VBW	625	Min Full	-		15.63	20	4/1		<u>288</u> 192	2	A/P	4:05	Auto Center Freq H2O Auto Shim on Oblique Contrast -Y I50 - S50
SAG PD FSE S	FC NPW VBW FAST	2000	Min Full	6		31.25	32	3/1	I, S, P, A	<u>288</u> 192	3	S/I	3:16	Auto Center Freq H2O Auto Shim on Oblique L20 – R20
AX T2 * GRE S	FC NPW VBW	575	17		20°	8.93	20	4/1		<u>288</u> 192	3	A/P	5:30	Auto Center Freq H2O Auto Shim on Oblique I50 – S50

Formatting

PACS SYSTEM – BURN CD IF NEEDED

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Comments:

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**MR Protocols**

Exam: L Spine  
 Coil: 8 CTL 456  
 Position: Supine  
 Landmark: Crest

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3PL T2 FRGES	NPW	-	-	-	-	-	38	5/2	S,F, A,P	<u>256</u> 128	2	Auto	56 sec	9 Slices
Calibration Scan						48						A/P	:12	47 SLICES
SAG T2 FRFSE	NPW VBW TRF FAST FR	2800	110	27	-	41.67	28	4/1	SI AP	<u>288</u> 192	3	S/I	1:13	Auto Shim on
SAG T1	VBW	525	Min Full	-	-	15.63	28	4/1	SI AP	<u>288</u> 192	2	S/I	2:32	Auto Freq H2O Phase FOV - .75 Auto Shim on
SAG STIR	SEQ VBW TRF FAST	3000	<u>52</u> 150	6	-	15.63	28	4/1	I, S	<u>288</u> 160	3	S/I	4:18	Phase FOV – 1.00 Auto Freq H2O Auto Shim on Phase Correct on
AX T2 FRFSE	FC NPW VBW TRF FR FAST	3000	110	15	-	20.83	18	4/1	I, S	<u>288</u> 192	3	A/P	4:06	Auto Shim on Flow Comp – Slice Auto Freq H2O
AX PD	NPW TRF FAST	2000	Min Full	6	-	20.83	18	4/1	I, S	<u>288</u> 192	3	A/P	3:16	Auto Shim on Auto Freq H2O
COR T1	NPW TRF FAST	575	10.2	2	-	15.63	28	4/1	I, S	<u>288</u> 160	3	Un- swap	2:18	Auto Shim on Auto Freq H2O

OPTIONAL SERIES – SEE PAGE 2

OPTIONAL SERIES														
Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
AX T1	NPW VBW	600	Min	-	-	15.63	18	4/1	I, S	<u>288</u> 192	2	R/L	3:59	Auto Freq H2O Auto Shim on
+C SAG T1 F/S	VBW	525	Min Full	-	-	15.63	28	4/1	F/S S/I A/P	<u>288</u> 192	2	S/I	4:59	Phase FOV - .75 Auto Shim on Auto Freq H2O
+C AX T1 SE	NPW VBW	600	Min	-	-	15.63	18	4/1	I, S	<u>288</u> 192	2	R/L	3:59	Auto Shim on Auto Freq H2O

Formatting

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Comments:

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## AMC MRI PROTOCOLS

Exam: **Lumbar Plexus**

Coil: **HD Body Full (12 channel Torso body coil)**

Position: Supine, Feet first

Landmark: 2 inches above Iliac Crest

Pulse Sequence	Options	TR	TE TI	ET	FA	VBW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3 Plane loc	Seq, Fast SS	Min	80			83.33	48	7		256 x 192				15 slices
T1 Cor	NPW, TRF Fast, Zip512	600	Min Full	3		25.00	42	5/1		320x224	3	S/I	4:00	SCIC: Filter A
T1 Cor Fat/Sat	NPW TRF Fast, Zip512	500	Min Full	3		25.00	42	5/1	Classic Fat / Sat	320x224	2	S/I	6:00	Classic Fat/Sat SCIC: Filter A
STIR Cor	NPW SEQ Fast, Zip512	4000	<u>68</u> 150	12		31.25	42	5/1		288 x 192	3	S/I	6:00	SCIC: Filter A
T1 Ax	NPW, TRF Fast, Zip512	600	Min Full	3		25.00	30	6/1		384 x 224	2	A/P	4:00	SCIC: Filter A
STIR Ax	NPW Seq, TRF Fast, Zip512	4000	<u>68</u> 150	12		31.25	30	6/1		288 x 192	2	A/P	5:00	SCIC: Filter A
+C T1 AX FAT/SAT	NPW,TRF, Fast Zip512	500	Min Full	3		25.00	30	6/1	Classic Fat / Sat	384 x 192	2	A/P	5:00	Classic Fat/Sat SCIC: Filter A
+C T1 COR FAT/SAT	NPW, TRF Fast, Zip512	500	Min Full	3		25.00	42	5/1	Classic Fat / Sat	320 x 192	2	S/I	5:00	Classic Fat/Sat SCIC: Filter A

- Coverage L1 to Lesser trochanters
- Scan/Prescribe S→I P→A
- Prescribe Coronal off of Axial



### MR Protocols

Exam: Unilateral/Bilateral Brachial Plexus

Coil: NV Array

Position: Supine

Landmark: Sternal Notch

Pulse Sequence	Options	TR	TE TI	ETL	FA	BW	FOV	Thick/ Gap	Sat	Matrix	NEX	Freq Dir	Time	Instructions
3PL LOC							46	5/0		<u>256</u> 128	2	UNSWAP	:53	
CALIBRATION SCAN							48					A/P	:12	47 SLICES
Bilater. Cor Stir	FC, NPW, Seq, Fast, Zip512	3450	<u>50</u> 150	10		25.00	36	4/1		<u>288</u> 192	2	UNSWAP	2:25	Auto Shim On
Unilat. AxT2	NPW, Fast	6625	102	16		20.83	22	4/1		<u>288</u> 192	4	UNSWAP	5:24	Auto Shim On Phase Correct On
Unilat CorT1	NPW	525	Min			15.63	22	4/1		<u>288</u> 192	3	UNSWAP	5:09	Auto Shim On
Unilat. Cor T2 Fat Sat	NPW, FAST	425	102	16		20.83	22	4/0	Classic On	<u>288</u> 192	4	UNSWAP	3:28	Auto Shim On Phase Correct On
Unilat. Sag T1	NPW	425	Min			15.63	20	4/1		<u>288</u> 192	4	UNSWAP	5:23	Auto Shim On
Unilat. Sag T2	NPW, FAST	3950	102	16		20.83	20	4/1		<u>288</u> 192	4	UNSWAP	3:18	Auto Shim On Phase Correct On
Post + Unilat. CorT1 Fat Sat	RC, FC, NPW	500	<u>Min</u> Full			15.63	22	4/1	F/S	<u>288</u> 192	2	UNSWAP	3:43	Auto Shim On

Post + Unilat. AxT1 Fat Sat	RC, FC, NPW	500	<u>Min</u> Full			15.63	22	4/1		<u>288</u> 192	2	UNSWAP	3:43	Auto Shim On

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Comments:

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