

**PROTOCOL: MRI CERVICAL SPINE WWO-MULTIPLE SCLEROSIS**

multiple sclerosis, demyelination

**CLINICAL**

**INDICATIONS/ HISTORY** \* Study optimized to evaluate for multiple sclerosis ONLY, potentially at the expense of other competing pathology. Intended user is a neurologist with subspecialty training in multiple sclerosis. \*

-> If the study order says "rule out multiple sclerosis, disc herniation, nerve root impingement" then consider running a routine cervical spine protocol instead.

This protocol follows 2021 MAGNIMS consensus recommendation for MRI imaging of MS patients. Important features include:

**TIPS:**

no gap between slices

SAG < 3 mm

AX < 5 mm

In contrast to brain MRI, there is no evidence that scanning at higher field strengths (ie, 3 T) leads to a higher detection rate of spinal cord lesions than scanning at lower field strengths.

SCAN ORDER	PLANE	IMAGE CONTRAST/WEIGHTING	MODE	PULSE SEQ	COVERAGE	TR RANGE	TE RANGE	TI	FLIP ANGLE	THICKNESS/G AP (mm)	FOV (cm)	Max Pixel (mm) Fr x Ph	PHASE AXIS	SEND TO PACS	Max scan time (target)
1	SAG	PD / T2 DUAL ECHO	2D	FSE	THROUGH CORD ONLY 12-14 SLICES	2800-3900	17-28 + 90-120	-	>130	2/0	20-22 (COVER C1-T5)	1.0X1.0	SI	FULL SERIES	4:00
KEEP ETL/TURBO FACTOR ON PD BELOW 9- CSF SHOULD NOT BE BRIGHT															
2	SAG	STIR	2D	FSE	COVER BONY CERVICAL SPINE	3000-6000	50-70	140-160	>130	3/0	20-22 (COVER C1-T5)	1.0X1.0	SI	FULL SERIES	4:00
3	SAG	T1	2D	PSIR/IRPS	THROUGH CORD ONLY 12-14 SLICES	2800-3200	45-55	350	>130	2/0	20-22 (COVER C1-T5)	.9X.9	SI	FULL SERIES	4:00
4	AX	T2*	2D	MEDIC/ MERGE	C1 MID T1	SINGLE ACQ	20-24	-	20-25	3-4/0	14-16	1.0X1.0	PA	FULL SERIES	5:45
CONTRAST															
5+C	AX	T2	2D	FSE	BOTTOM C2 TOP T1	SINGLE ACQ	20-24	-	>130	3/0	14-16	1.0X1.0	PA	FULL SERIES	5:45
** minimum 5 MIN, 10 min PREFERRED delay between contrast injection and T1+C sequences **															
6+C	SAG	T1 DIXON/ IDEAL	2D	FSE	COVER BONY CERVICAL SPINE	<790	MIN	-	>130	3/0	22-24 (COVER C1-T5)	.9X1.0	SI	FULL SERIES	4:30
7+C	AX	T1 DIXON	2D	VIBE DIXON/ LAVA FLEX	AT LEAST MID C2 THRU MID T1	MIN	IN-PHASE	-	15-25	2-3/0	14-18	.9X.9	PA	IN-PHASE AND WATER ONLY	4:00