Checklist items	Site A		Site B		Site C		Committee Discussion	Resolution	Status
Page 1 of 2	Conform	Comments	Conform	Comments	Conform	Comments		1	TBD
								1	OK
								1	Discuss
								1	TODO
Physicist Checklist								26	Done
Measurements of liver stiffness (magnitude of the complex shear modulus) obtained with MRE depends on the spatial fidelity of the acquired phase images. Therefore, the validity of the field of view and in linearity shall be assessed and confirmed on an ongoing basis, using manufacturer-recommended procedures.	Y		Y		Y	Yes, but more details on how identify non-conforming data would be helpful	To discuss	No updates to the text needed.	Done
While other instrumental causes of drift in stiffness measurements have not been documented in the literature, technical failures such as faulty synchronization of the driver system or incorrect driver frequency settings can cause incorrect measurements. The physicist shall confirm correct driver frequency settings as outlined in Appendix D.	Y		Y	particularly important for sites with ongoing MRE research as the system doesn't always get brought back to a clinical state	Y				Done
Shall confirm correct user set-up and proper functioning of the MRE system can be confirm using a phantom with previously-measured stiffness properties. These usually consist of a uniform, tissue-simulating material with known stability over time and storage conditions. An MRE phantom can be to confirm proper functioning of the MRE system after initial installation and as a periodic test of correct functioning. There is as of yet, no consensus on recommendations for the frequency of phantom testing. Optional QA testing with a phantom should employ a protocol recommended by the phantom manufacturer. Appendix 2 describes a sample protocol for a currently available phantom.	Y		Y	Sites don't always have access to QA phantom via vendor	Y	Yes, very helpful to do this			Done
As outlined in Section 3.2, installation and initial functional validation shall be performed according to manufacturer-defined procedures and specifications. This includes specific guidelines on the MRI scanner and MRE driver system. The scanner must be under quality assurance and quality control processes as outlined by local institution and vendor requirements. The scanner software version should be identified and tracked across time.	Y		Y		Y	Yes, very helpful to do this			Done
Radiologist Checklist									
At the time of image review, the suitability of the data shall be checked again by confirming the presence of signal loss in subcutaneous fat under the driver in the magnitude images, and the presence of visible waves in the liver in the phase and wave images (Figure 3).	Y		Y	Yes	Y	This works well for GRE image This is not very evident on SE EPI images			Done
Mean shear stiffness of the liver shall be calculated using manually specified regions of interest (ROIs). The ROIs are drawn manually in the largest possible area of liver parenchyma in which coherent shear waves are visible, while excluding major blood vessels seen on the MRE magnitude images.	Y		Y	Yes	Y				Done
To avoid areas of incoherent waves, the radiologist shall avoid regions immediately under the passive driver and stay ~1 cm inside the liver boundary and contain a minimum of 500 pixels for an acquisition with a 420 mm FOV and reconstruction matrix of 256x256 total, corresponding to approximately 12.3 cm^3 [17,3].	Y		Y	Yes but suggest deleting - "contain a minimum of 500 pixels for an acquisition with a 420 mm FOV and reconstruction matrix of 256x256 total, corresponding to approximately 12.8 cm^3 "	Y		Kay will add references to text providing rational for requirement. Requirement will not be changed.	Reference to Dr. Middleton's 2019 RSNA abstract added. See section 3.10 Image Analysis	Done
ROIs shall be placed in individual slices and in the right lobe whenever possible. MRE magnitude and phase/wave images should be used to guide the placement of the ROIs. (Figure 9)	Y		Y	Yes, suggest adding "also" in the right lobe whenever possible	Y		Will not update text as this is already addressed.		Done
Image shall be rejected if the acquisition failed due to hepatic iron overload. (Figure 7)	Y		Y	No (should be obvious)	Y				Done
Image shall be rejected if colonic interposition between the passive driver and liver is present. (Figure 5)	Y	May be, depending the on the waves and images with confidence map	Y	No (should be obvious)	Y		Suggest revising: "If colonic interposition is present and causing inadequate waves in the liver the passive driver shall be repositionand and the scan repeated." Site agreed with changes.	Text updated, see section 3.10 Image Analysis.	Done
Overall mean stiffness of liver shall be reported by calculating the mean stiffness value of each ROI and then reporting the mean value across all slices.	Y		Y	Yes	Y				Done

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								1	OK
								1	Discuss
								1	TODO
Technologist Checklist									
Shall confirm that the subject is fasting for at least 4 hours before the scheduled time of imaging [12	Y		Y	Yes	Y				Done
For follow-up exams, the technologist shall confirm that the subject will be scanned on the same MRI scanner and passive driver hardware as the baseline liver MRE in order to satisfy the specific requirements for the claim.	Y		Y	Yes, could be logistic issue at some sites with both 1.5 and 3T MRE	Y				Done
Shall scan the subject in supine position.	Y		Y	Yes	Y				Done
Shall place the passive driver over the right lower chest wall at the level of xiphisternum in midclavicular line. (Can be placed in the right mid-axillary line if colon is present between the anterior body wall a liver) (16, 17).	Y		Y	Yes	Y				Done
Shall ensure the passive driver is held in firm contact with the body wall using an elastic band.	Y		Y	Yes	Y				Done
Shall ensure connection of the plastic tube between the passive & active driver, which is located outside the scan room.	Y		Y	Yes	Y				Done
Shall acquire image data during suspended expiration in a natural end-expiratory position.	Y		Y		Y				Done
Shall acquire sections for MRE positioned at the level of the widest transverse extent of the liver, avoiding the lungs, liver dome and inferior tip of the right lobe, prescribed in a coronal image in relaxed end-expiration. (Figure 2)	Y		Y	Yes	Y				Done
Shall use an EPI-MRE sequence at 3T if available due to the higher technical success rate. Note, GRE MRE sequences are susceptible to T2* effects resulting in poor SNR or failures in tissue with short T2* relaxation times, particularly at 3T.[16]	Y		Y	Yes	Y				Done
For follow-up exams, technologist shall confirm that subjects are scanned with the same parameters and software as the baseline liver MRE.	Y		Y	Yes, very important	Y				Done
Shall review the raw magnitude and phase images obtained from the MRE acquisition on the scanner console at the time of the exam.	Y		Y	Yes	Y	We also review the hash marked stiffness maps	Conside revising text: "Shall review the raw magnitude and phase images and post-processed masked elastograms if available on the scanner console at the time of the exam."	Text updated, see section 3.6.2 Technical success	Done
The technologist shall confirm that the magnitude images should show signal loss in the subcutaneous fat just below the passive driver placement, confirming that mechanical waves are being applied. The phase images (also known as wave images) should demonstrate shear waves in the liver. (Figure 3)	Y		Y	Yes	Y	This works well for GRE image This is not very evident on SE-EPI images. We use SE-EPI images.			Done
If no waves are imaged in the liver, then the technologist shall check driver system.	Y		Y	Yes and ask radiologist to review if driver system is OK	Y				Done
The technologist shall confirm that the scanner computer automatically processes the information to generate the following images on the scanner console: quantitative stiffness maps, confidence maps, and unwrapped phase images. (Figure 8)	Y		Y	Yes	Y				Done
Currently, there is not a standard imaging phantom for standardized image acquisition and processing procedures. The technologist shall follow Appendix E for phantom imaging protocols.	Y		Y	Dependent on access to vendor provided phantom	Y				Done