Techniques for reducing metal artifact on MR Imaging

1. Should be used on all msk scans especially in the presence of metal
   a. FSE rather than conventional spin echo as less artifact with FSE
   b. XL option for FSE which shortens interecho spacing time and reduces metal artifact
   c. Do not use IDEAL unless radiologist requests it. If it is part of a protocol do not run it
   d. Depending on where pathology is and how much metal artifact there is routine sequences might be OK.
   e. Call a Staff Radiologist to ask questions. Fellows/Residents might not be able to help.

2. To minimize inhomogeneous fat suppression:
   a. For T2 FAT sequences: if minimal metal try to scan. Replace with STIR or Non-FAT T2
   b. For T2 IDEAL sequences: Replace with STIR
   c. For T1 FAT sequences: if minimal metal try to scan. Replace with Non-Fat sat T1
   d. For T1 IDEAL sequences: Replace with Non-Fat sat T1

3. Set the **TE to at least 20 for T1 and PD images**

4. Increase **echo train length to 6 on T1 and PD scans & at least 8 on STIR**
   a. Will shorten scan but also increase blurring

5. Increase receiver **bandwidth to 62 kHz**
   a. Increasing bandwidth reduces artifact but will decrease SNR

6. Increase **frequency matrix to 320**
   a. Increasing matrix will also decrease SNR

7. Place frequency encoding axis in orientation where artifact is less important
   a. Metal artifact is greatest in the frequency encoding direction
   b. Add NPW if frequency is swapped