Ultrasound – Musculoskeletal (MSK) Periarticular Fluid Collection Evaluation in the Emergency Department

PURPOSE:
To evaluate for periarticular fluid in the emergency setting.

SCOPE:
Applies to all MSK ultrasound studies performed in the emergency and urgent care departments:
- UT Southwestern William P. Clements Jr. University Hospital and Clinics, Imaging Services (UTSW Radiology)
- Parkland Health (Hospital and Clinics), Department of Radiology (PHHS Radiology)

ORDERABLE:
- US UPPER EXTREMITY SOFT TISSUE RIGHT OR LEFT
- US LOWER EXTREMITY SOFT TISSUE RIGHT OR LEFT

INDICATIONS:
- Signs or symptoms of periarticular fluid collections, joint or soft tissue swelling

CONTRAINDICATIONS:
- No absolute contraindications

EQUIPMENT:
- Linear transducer with a frequency range of 9-18 MHz that allows for optimal penetration and resolution depending on patient's body habitus
- Curvilinear transducer with a frequency range of 3-9 MHz that allows for appropriate penetration and resolution depending on patient's body habitus

PATIENT PREPARATION:
- None

EXAMINATION:
GENERAL GUIDELINES:
Prior to bringing patient to ultrasound department for exam, ensure order is appropriate for targeted emergent sonographic evaluation for joint effusions and/or periarticular fluid collections. If necessary, direct ED/urgent care providers to call the radiologist for guidance.

Ensure the provider understands that complete joint ultrasound imaging is available as a routine, scheduled outpatient exam and performed by sonographers trained to perform MSK ultrasounds.

EXAM INITIATION:
- Introduce yourself to the patient/family
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms. Enter and store data page

- Place the patient in the appropriate position for the examination being performed:
  - **For lower extremity periarticular fluid:** place the patient in a supine or sitting position with the lower extremity extended or slightly flexed at the knee with a rolled towel underneath.
  - **For the upper extremity periarticular fluid:** patient may remain sitting or lay supine for optimal imaging.

TECHNICAL CONSIDERATIONS:

- Re-check laterality (right vs. Left) at the beginning of the exam.
- Ask the patient to point to the area of maximum discomfort.
- Review any relevant prior imaging.
- For periarticular fluid collections:
  - Specify probe placement: transverse, longitudinal, LAX (long axis), or SAX (short axis).
  - Specify laterality: right or left.
  - Specify location: anterior, posterior, medial, lateral, dorsal, volar, plantar.
  - Specify body part: shoulder, elbow, wrist, hip, knee, ankle (e.g. Anterior ankle joint recess, posterior elbow joint recess, anterior knee suprapatellar bursa)

DOCUMENTATION:

- Document fluid collection location
- Measure fluid collection in 3 orthogonal planes.
- Include images with and without color/power Doppler.
- Include cine clips from above to below and medial and lateral to the abnormality in longitudinal and transverse.
- Include panoramic images when appropriate, i.e. large fluid collection.
- Include a compression cine clip of the fluid collection.
- In all joints, save an image with notation of sonographic palpable abnormality or pain/tenderness site.
- Data page(s) if applicable.

PROCESSING:

- Review examination images and data.
- Export all images to PACS.
- Document relevant history, prior imaging, and any study limitations.

APPENDIX:



Longitudinal image and transverse panoramic image of a right knee suprapatellar fluid collection.

REFERENCES:

- (2023), The AIUM Practice Parameter for the Performance of the Musculoskeletal Ultrasound Examination. J Ultrasound Med, 42: E23-E35. https://doi.org/10.1002/jum.16228.
- American College of Radiology. ACR–SPR–SRU Practice Parameter for the Performance and Interpretation of Diagnostic Ultrasound Examinations. Available at: https://www.acr.org/-/media/ACR/Files/Practice-Parameters/US-Perf-Interpret.pdf. Accessed December 2, 2020.

CHANGE HISTORY:

DATE:	SUBMITTED BY: (NAME, TITLE)	APPROVED BY: (NAME, TITLE)	SUMMARY:
4/8/2022	Dr. Oganes Ashikyan, MSK radiologist	Dr. Avneesh Chhabra. MSK Medical Director	Submission
5/4/2022	Surekha Patel, MS, RDMS, RVT, RT	Dr. Oganes Ashikyan, MSK radiologist	Revisions
7/27/2026	Matthew Carrigan, RDMS, RVT, RMSKS	Dr. Avneesh Chhabra, MSK Medical Director	Revisions and A11y Updated heading styles for the protocol template