

The Joint Tissue Activity and Damage Exam (J.A.D.E.)

Day 4A – The Joint Tissue Activity and Damage Exam (J.A.D.E.)

Location

The course will be held at the Hemophilia & Thrombosis Treatment Center at UC San Diego Health, located near the UC San Diego campus.

UC San Diego Health Hemophilia & Thrombosis Treatment Center

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Course Description

The UC San Diego Musculoskeletal Ultrasound and Joint Injection Education Activities have been created to provide a comprehensive modular curriculum to teach point-of-care musculoskeletal ultrasound for the evaluation of ankles, knees, elbows, hips and spine, and to guide intra-articular needle placement for injections and aspirations. Small groups with a high faculty to participant ratio provide highly interactive learning environment with ample opportunity for hands-on practice with each other and patient volunteers. Course participants will learn basic ultrasound physics, how to operate ultrasound machines (including the use of small emerging small hand-held devices), sono-anatomy and sono-pathology of important arthritic conditions as well as ultrasound-guided joint injection techniques. The curriculum will also teach how to recognize joint bleeds and distinguish between simple and complex effusions, as well as the Joint Activity and Damage Exam (JADE), a validated joint ultrasound protocol for evaluation of hemophilic joints.

Learning Objectives

The Joint Tissue Activity and Damage Exam (J.A.D.E.)

- Describe the Joint Tissue Activity and Damage Exam (JADE) Hemophilia joint ultrasound protocol
- Interpret basic structural abnormalities by sono-pathological findings
- Interpret and apply sono-anatomy of ankles, knees, and elbows
- Distinguish bloody from non-bloody effusions
- Perform a diagnostic musculoskeletal ultrasound recognizing hemarthrosis, synovitis and structural abnormalities (such as meniscus, tendons, ligaments)
- Describe the diagnosis of effusions
- Quantify synovitis by Power Doppler
- Quantify cartilage health, soft tissue and synovial hypertrophy, and osteochondral lesions
- Develop skills to perform J.A.D.E. protocol with all necessary views, interpretation, and measurements

Needs Assessment with Identified Practice Gap(s)

The Joint Tissue Activity and Damage Exam (J.A.D.E.) is a quantitative and concise MSKUS protocol evaluating soft tissue proliferation (joint activity) and alterations to bone and cartilage (joint damage) in hemophilic joints.

Patients with hemophilia often experience repetitive joint bleeding episodes leading to hemophilic arthropathy, which is most commonly seen in the elbow, knee, and ankle. There is a need to detect formation and progression of hemophilic arthropathy in a fast and convenient fashion to afford targeted management of joint abnormalities.

Traditionally, radiographic (Pettersson score), magnet resonance imaging (MRI; International Prophylaxis

Study Group Score) and clinical (Hemophilia Joint Health Score) scoring algorithms are used to monitor joint health. However, radiographs are insensitive to soft tissue changes, MRIs are lengthy, often requiring contrast or sedation, and cannot be performed repeatedly for all joints, and, clinical scoring does not provide information on a tissue level. Musculoskeletal ultrasound (MSKUS) has emerged as a rapid, point-of-care (POC) imaging modality to detect bleeding episodes and to follow joint health longitudinally.

MSKUS is highly sensitive to soft tissue and osteochondral changes and can be performed frequently. The Joint Tissue Activity and Damage Exam (J.A.D.E.) is a quantitative and concise MSKUS protocol evaluating soft tissue proliferation (joint activity) and alterations to bone and cartilage (joint damage) in hemophilic joints. It has been validated by OMERACT guidelines (omeract.org), and is continuously improved in an iterative process.

The principle of J.A.D.E. is inherent to precise measurements of intraarticular soft tissue expansion, cartilage thickness and osteochondral interface irregularities in elbows, knees, and ankles. Furthermore, the J.A.D.E. protocol employs sonopalpation to differentiate between effusions and soft tissue and

permits charting of descriptive findings. Additionally, the J.A.D.E. protocol captures abnormal soft tissue microcirculation and vascularity changes by Power Doppler (PD) signals, altogether providing a versatile tool to dynamically follow the overall joint health status.

This CME course will provide hands-on training on how to conduct the J.A.D.E. protocol in its entirety including acquiring measuring, and interpreting the images.

MSKUS: Why does the Practice Gap exist?

- *Lack of Knowledge:* There is an increasing demand to diagnose and manage arthritic conditions with point-of-care ultrasound, supplementing the physical exam. This is because ultrasound is an imaging technology, which is rapid and convenient, and permits to answer easily specific questions due to high tissue resolution and sensitivity. With the advent of new coagulation products the hemophilia population is aging and hemophilic arthropathy, requiring pain management, is coming rapidly into focus, similar to other arthritic conditions. These factors trigger the need for point-of-care MSKUS to adequately address joint disease in a variety of musculoskeletal disciplines, and also in hemophilia. In addition, objectivity in interpretation and measurements of MSKUS findings is of the utmost importance for reasons including but not limited to tracking tissue healing, longitudinal monitoring of tissue health, and precise data collection for research studies. For these reasons, training participants in the J.A.D.E. protocol is imperative
- *Lack of Competence:* Physicians and providers treating arthritic conditions, including hemophilia, and/or participating in research studies are not sufficiently trained in the J.A.D.E. protocol

Target Audience

This educational program is designed for any health care provider, but in particular for physicians, physician assistants, nurse practitioners, nurses, and physical therapists involved and/or interested in MSKUS as point-of care imaging tool to assist with diagnosis and treatment of joint and muscle pains in patients or people with and without hemophilia. Athletic trainers may also benefit from this course. Pediatric practitioners are welcomed. While ultrasound techniques for adults and children are similar, readings mainly apply to adolescents and adults with a mature skeleton. To complete pediatric training, we refer to the online module **Pediatric Considerations for the Use of Musculoskeletal Ultrasound in Hemophilia** <https://www.cme-california.com/Activity/5641213/Detail.aspx#lnk5641213>