

Supplementary table 1a

Key question on the value of imaging methods to guide interventional procedures

What is the efficacy / safety of [imaging technique] to guide interventional procedures (I) for outcome (O) at musculoskeletal sites of patients with RMDs (P), as compared to using [different technique] to guide interventional procedures (C)?	
Population	<p>Patients (no age restrictions) with RMDs undergoing an interventional procedure at (a) musculoskeletal site(s).</p> <p>“Patients with RMDs” are defined as patients with any rheumatic or musculoskeletal disease or discomfort (degenerative, inflammatory or autoimmune), also including for example patients with painful joints/muscles.</p> <p>Musculoskeletal sites are the following: joints, tendons, tendon sheaths, muscles, entheses, bursae, spine, soft tissue, nerves.</p>
Intervention	<p>[imaging technique]: US, CT, MRI, fluoroscopy/x-ray, fusion imaging.</p> <p>The intervention and comparator have to be different techniques (e.g. US (I) vs CT (C) or vs. palpation guidance (C)).</p>
Comparator	<p>[different technique]: no imaging guidance (e.g. clinical/palpation/anatomical orientated), or US, CT, MRI, fluoroscopy/x-ray, fusion imaging.</p> <p>The intervention and comparator have to be different techniques (e.g. US (I) vs CT (C) or vs. palpation guidance (C)).</p>
Outcome	<p>Differences in correct needle placement, patient and physician reported outcomes such as pain and function, safety/adverse events (e.g. infections, damage of surrounding tissue, hematoma, level of radiation), aspiration success (e.g. volume), yield of biopsy tissue, efficacy of treatment intention, costs, work productivity, need for repeated procedures, procedural tolerability, procedural feasibility.</p>

CT, computed tomography; MRI, magnetic resonance imaging; RMDs, rheumatic and musculoskeletal diseases; US, ultrasound

Supplementary table 2b

Key question on settings and technical standards for imaging guided interventions

What is the efficacy / safety of [setting / technical standard] for imaging guided interventional procedures (I) for outcome (O) at musculoskeletal sites of patients with RMDs (P), as compared to not using [setting / technical standard] for imaging guided interventional procedures (C)?	
Population	<p>Patients (no age restrictions) with RMDs undergoing an interventional procedure at (a) musculoskeletal site(s).</p> <p>“Patients with RMDs” are defined as patients with any rheumatic or musculoskeletal disease or discomfort (degenerative, inflammatory or autoimmune), also including for example patients with painful joints/muscles.</p> <p>Musculoskeletal sites are the following: joints, tendons, tendon sheaths, muscles, entheses, bursae, spine, soft tissue, nerves.</p>
Intervention	<p>Performing imaging guided interventions with a certain [setting / technical standard]:</p> <ol style="list-style-type: none"> 1. aseptic/antiseptic condition 2. assistance 3. monitoring vital signs 4. specific technical equipment <p>“Specific technical equipment” are for example specific US probes, needle with higher reflexion etc.</p>
Comparator	<p>Performing imaging guided interventions without the same/with a different [setting / technical standard]:</p> <ol style="list-style-type: none"> 1. aseptic/antiseptic condition 2. assistance 3. monitoring vital signs 4. specific technical equipment
Outcome	<p>Differences in correct needle placement, patient and physician reported outcomes such as pain and function, safety/adverse events (e.g. infections, damage of surrounding tissue, hematoma, level of radiation), aspiration success (e.g. volume), yield of biopsy tissue, efficacy of treatment intention, costs, work productivity, need for repeated procedures, procedural tolerability, procedural feasibility.</p>

RMDs, rheumatic and musculoskeletal diseases; US, ultrasound.

Supplementary table 3c

Key question on protocols for the conduction of imaging guided procedures

What is the efficacy / safety of [procedural protocol] for imaging guided interventional procedures (I) for outcome (O) at musculoskeletal sites of patients with RMDs (P), as compared to not using [procedural protocol] for imaging guided interventional procedures (C)?	
Population	<p>Patients (no age restrictions) with RMDs undergoing an interventional procedure at (a) musculoskeletal site(s).</p> <p>“Patients with RMDs” are defined as patients with any rheumatic or musculoskeletal disease or discomfort (degenerative, inflammatory or autoimmune), also including for example patients with painful joints/muscles.</p> <p>Musculoskeletal sites are the following: joints, tendons, tendon sheaths, muscles, entheses, bursae, spine, soft tissue, nerves.</p>
Intervention	<p>Performing imaging guided interventions with a certain [procedural protocol]:</p> <ol style="list-style-type: none"> 1. specific standard operational procedures 2. specific training for imaging guided interventions 3. imaging guided intra-target injections 4. contrast agent / air to control needle placement <p>“Specific operational procedures” are for example direct US guidance (I) vs US only to mark anatomical landmarks (C), or in plane (I) vs out of plane (C).</p> <p>“Intra target injections” means that the injection is guided to reach a specific anatomical area (e.g. intraarticular, tendon sheath, epineurium).</p>
Comparator	<p>Performing imaging guided interventions without the same/with a different [procedural protocol]:</p> <ol style="list-style-type: none"> 1. specific standard operational procedures 2. specific training for imaging guided interventions 3. imaging guided intra-target injections 4. contrast agent / air to control needle placement <p>Without “imaging guided intra-target injections” means that the injection is outside (extra-target) a specific anatomical area (e.g. extraarticular, tendon, endoneurium)</p>
Outcome	<p>Differences in correct needle placement, patient and physician reported outcomes such as pain and function, safety/adverse events (e.g. infections, damage of surrounding tissue, hematoma, level of radiation), aspiration success (e.g. volume), yield of biopsy tissue, efficacy of</p>

	treatment intention, costs, work productivity, need for repeated procedures, procedural tolerability, procedural feasibility.
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RMDs, rheumatic and musculoskeletal diseases; US, ultrasound

Supplementary table 4d**Outcome categories and respective outcome variables**

Outcome categories	Possible outcome variables
Accuracy	accurate anatomical needle placement (accuracy), tissue/fluid acquired
Safety	adverse events, intra- and post-procedural pain, symptom severity
Efficacy	function, treatment response, time to next intervention, anatomical differences, electrophysiological parameter, treatment failure, quality of life, duration of therapeutic effects, pain medication, patient satisfaction
Cost/Time	costs (cost-effectiveness), time