

Joint Injection Skills Workshop

**Dr. Christy Pacheco
And Faculty**



Joint Injections - Objectives

- Identify evidence-based resources for performing joint injections.
- Determine indications and contraindications for joint injections.
- Identify elements of informed consent for procedure.
- Demonstrate proper technique in performing knee injection using a simulation model.
- Describe post procedure management including wound care, warning signs, and follow-up instructions.



Approach to the Patient

- Indications/Contraindications
 - Diagnostic
 - Therapeutic
 - Absolute vs. relative contraindications
- Risk/Benefit
 - Benefits outweigh risks?
 - Evidence? Safety, efficacy



Joint Injections - Resources

- Indications, safety & efficacy:
 - <https://www.ncbi.nlm.nih.gov/pubmed/27542427>
- Procedure Overview:
 - <https://www.ncbi.nlm.nih.gov/pubmed/?term=24209729>
- Tendinopathy risk:
 - <https://www.ncbi.nlm.nih.gov/pubmed/24074644>



Contraindications

Absolute

- Corticosteroid or injectable substance hypersensitivity
- Infection (systemic, overlying cellulitis,
- Septic arthritis/bursitis, osteomyelitis)
- Uncontrolled bleeding disorder
- Prosthetic or unstable joint
- Intra-articular fracture

Relative

- Corrected bleeding disorder
- Anticoagulated patient
- Hemarthrosis
- Immunosuppressed patient
- Diabetes
- High risk of tendon rupture
- Psychogenic pain



Knee: Evidence Based Recommendations

- Management Overview:
<http://www.aafp.org/afp/2015/1115/p875.html>
- Cochrane review for OA:
<http://onlinelibrary.wiley.com.ezproxy4.library.arizona.edu/doi/10.1002/14651858.CD005328.pub3/full>
- Injection options:
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4095029/>
- AAOS Clinical Practice Guideline
(see summary of recommendations):
<http://www.aaos.org/CustomTemplates/Content.aspx?id=6396&ssopc=1>



Preparation - Informed Consent

- Risks:
 - Bleeding, infection, pain, tendinopathy, systemic effects
- Benefits:
 - Decreased pain, improved mobility



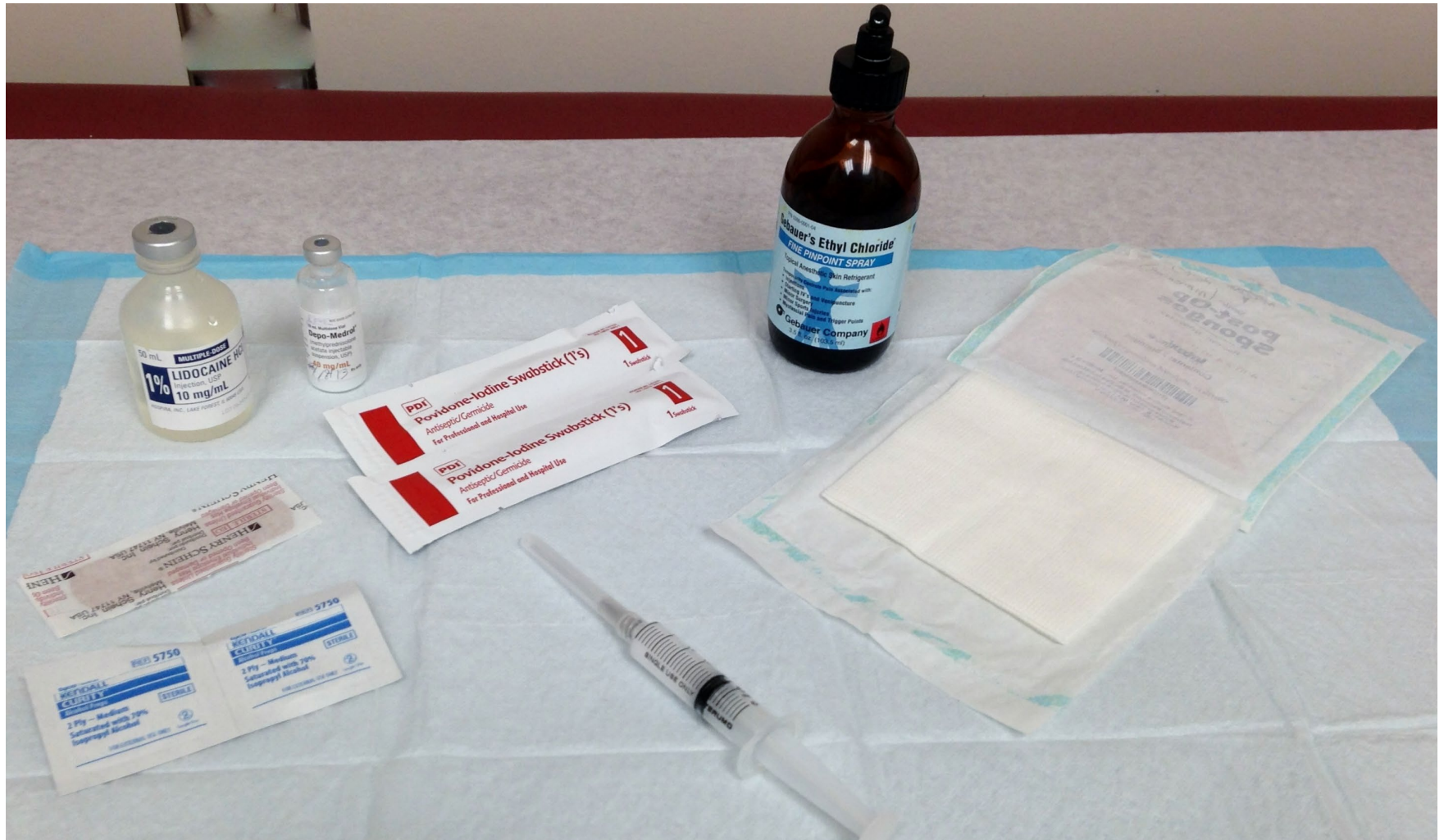
Preparation

Gather supplies

- Gloves
- Cleansers
- Needle/syringe (typically 21G 1.5in needle, 5-10 cc syringe)
- Injectables
- Gauze/Bandaid



Supplies



Injectable Medications

Corticosteroids

- Selection
- Evidence/Safety Considerations
- Dose

Local Anesthetics

- Lidocaine vs. bupivacaine?
- Dosing
- Total Volume
- Safety?

Hyaluronic Acid (specialist)

- Indications
- Efficacy?



Local Anesthetics

Lidocaine

- Typically 1 or 2%
- No epi
- Shoulder: 1-2 mL, Knee up to 5 ml; Mixed with corticosteroid
- Short acting (1 hr)

Bupivacaine

- Typically 0.25 or 0.5%
- Shoulder: 1-2 mL, Knee up to 5 ml; Mixed with corticosteroid
- Long acting (8 hr)



Steroids for Joint Injection

Table 2
Summary of commonly used steroids

	Methylprednisolone Acetate	Triamcinolone Acetonide ^a	Betamethasone Acetate and Disodium Phosphate	Dexamethasone
Potency ^b	5	5	25	25
Duration	Intermediate	Long	Long	Long
Knee joint	40.0 mg	40.0 mg	12.0 mg	6.0 mg
Subacromial bursa	40.0 mg	40.0 mg	12.0 mg	6.0 mg
Glenohumeral joint	40.0 mg	40.0 mg	12.0 mg	6.0 mg
Lateral epicondyle ^c	10.0 mg ^c	10.0 mg ^c	3.0 mg ^c	1.5 mg ^c
de Quervain tenosynovitis	10.0 mg	10.0 mg	3.0 mg	1.5 mg
Greater trochanter bursitis	20.0 mg	20.0 mg	6.0 mg	3.0 mg

^a Typically considered the best compound for intra-articular injection.

^b Hydrocortisone equivalents (per mg).

^c Recent evidence suggests that steroids can actually worsen the course of lateral epicondylalgia.



Needle Sizes for Joint Injections

Table 1
Needle sizes for common musculoskeletal injections

Injection Site or Disorder	Needle Gauge	Minimum Needle Length ^a	Typical Total Volume
Knee	20–22 G	1.5 inches (40 mm)	5–10 mL
Subacromial bursa	21–25 G	1.5–2 inches (40–50 mm)	5–8 mL
Glenohumeral joint	20–22 G	1.5–2 inches (40–50 mm)	5–8 mL
Lateral epicondyle	22–25 G	0.5 inch (16 mm)	1–2 mL
de Quervain tenosynovitis	22–25 G	0.5 inch (16 mm)	1–2 mL
Greater trochanteric bursitis	22–25 G	1.5–2 inches (40–50 mm)	4–6 mL

Site Preparation

Prepare skin

- Providine-Iodine vs. Chlorhexidine (preferred)
- Mark skin
- Sterile no-touch technique



Knee Injection

Indications

- Diagnostic (aspiration)
- Therapeutic (e.g. OA)
- Preparation
- Supine
- Knee extended
- Approach
- Superolateral



Knee Anatomy & Assessment

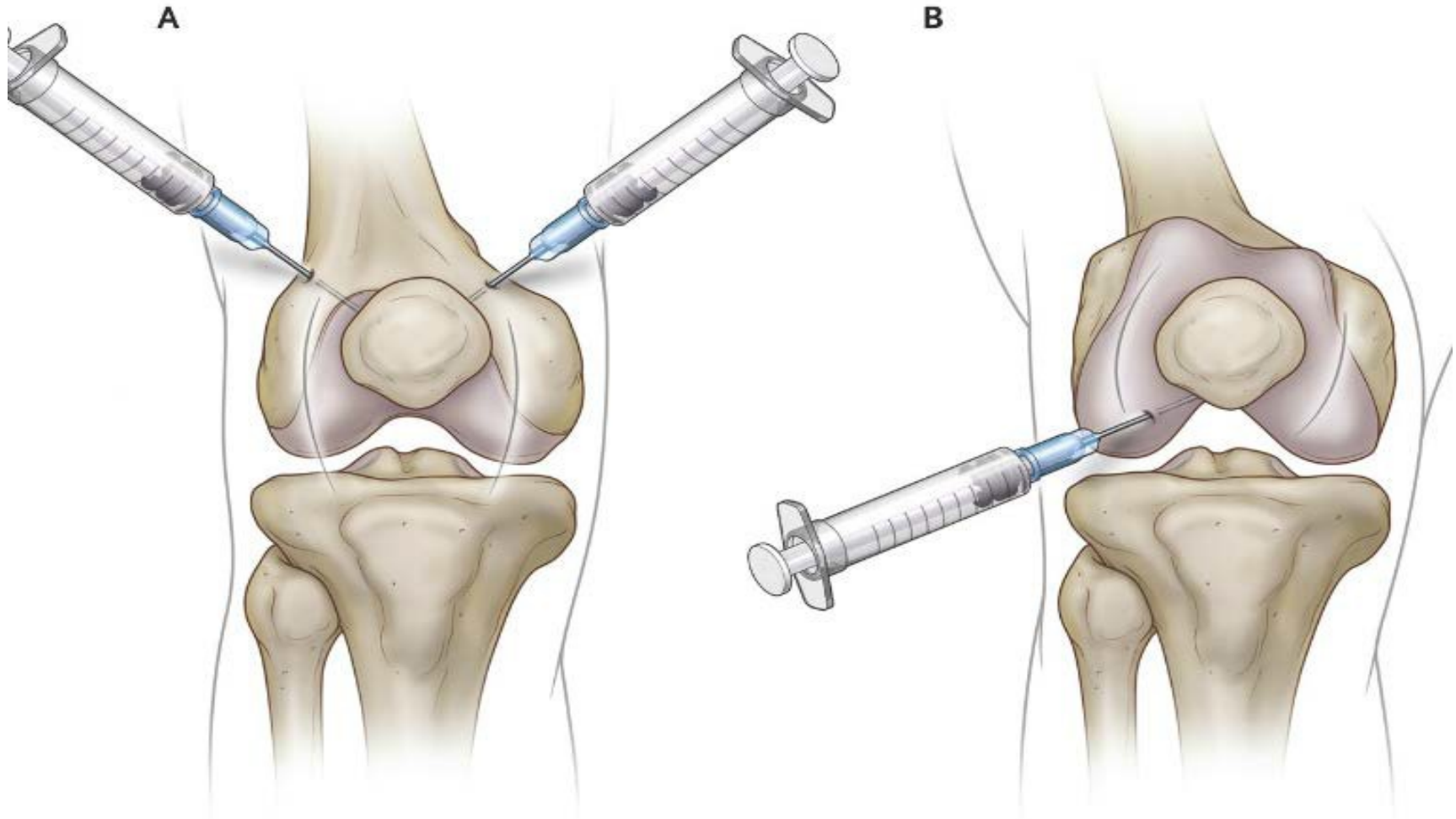
<https://www-nejm-org.ezproxy4.library.arizona.edu/doi/10.1056/NEJMvcm0803821>

<https://www.rheumtutor.com/msk-examination/videos/>
(select knee exam) or <https://vimeo.com/36295185>

Note: You may need to log in to the AHSL first (<http://ahsl.arizona.edu/>).



Knee Injection Sites



Injection Technique: Knee

- Review Approach Considerations (Douglas, 2014):
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3953519/>

- Technique

Lateral and Anterior Approaches (Rheum Tutor):

- <https://www.rheumtutor.com/injection-techniques/msk-injection-techniques-teaching-demonstration-series/>
- or <https://vimeo.com/89955918> and <https://vimeo.com/89955917>

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Patient Education & Follow-up

Wound care

- Apply dressing
- Rest

Warning signs

- Bleeding
- Infection

Return f/u



References & Resources

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