

INJECTION THERAPY OF THE UPPER AND LOWER EXTREMITIES OF THE MUSCULOSKELETAL SYSTEM

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Disclosures: None

Objectives:

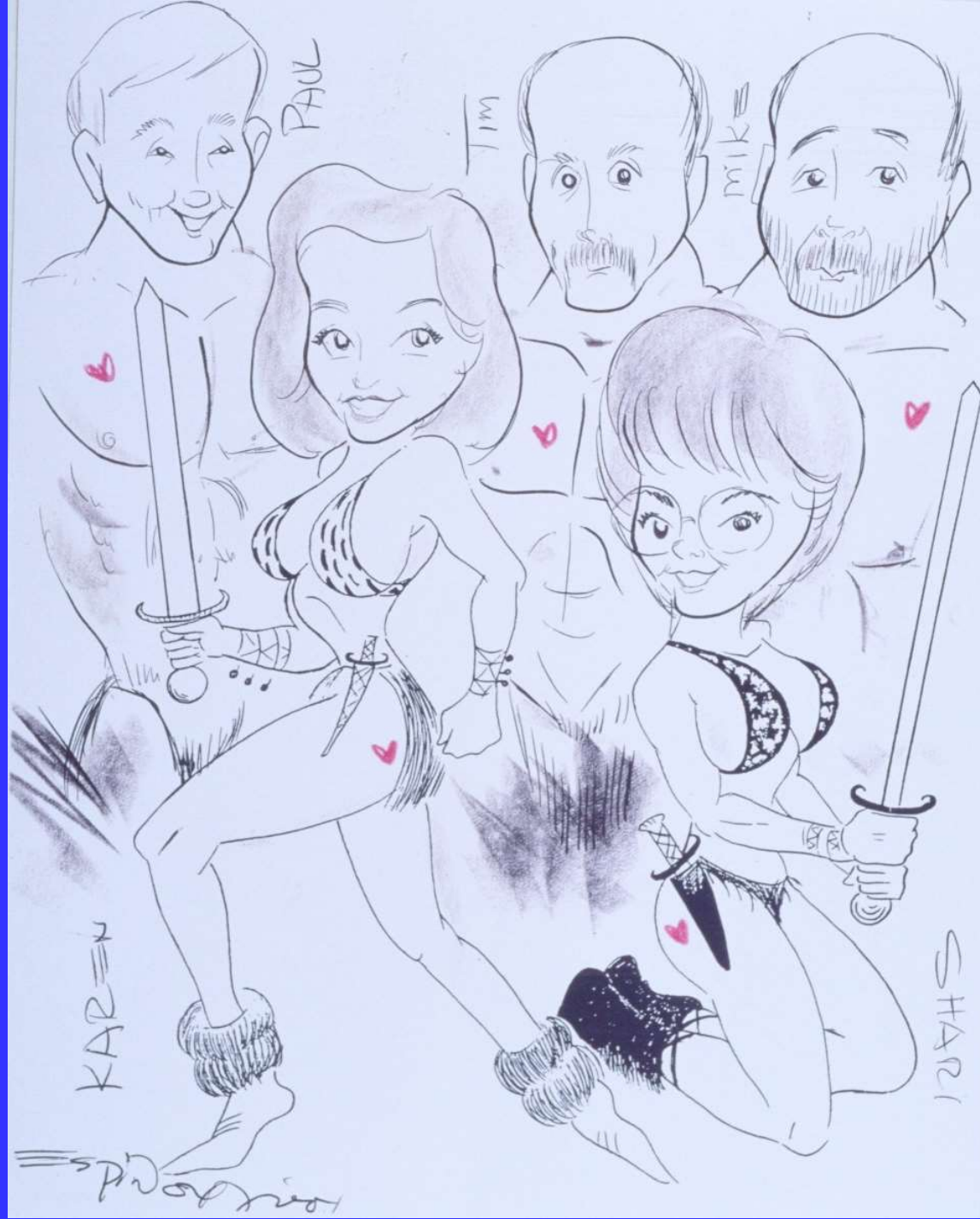
Identify indications, contraindications, risks, benefits, materials and proper injection techniques.

Identify common conditions of the upper and lower extremities that may benefit from injection therapy.

Obtain and document informed consent.

Demonstrated beginning competencies regarding the location and identification of important functional anatomical landmarks.

Demonstrate beginning competencies regarding the proper location for correct needle placement for injection therapy.



Goals of Treating of Musculoskeletal Problems

- Restore musculoskeletal tissue to its' normal healthy status
 - ◆ Predominantly for acute trauma/ younger patients
- Decrease symptoms of pain, stiffness, weakness
- Increase function: improved range of motion; strength; endurance
 - ◆ Improve ADL's- walking, standing, steps, getting out of chair; bathing, dressing, eating
 - ◆ Thereby improving quality of life
- Avoid toxic side effects of treatment
 - ◆ All treatments need a risk/benefit analysis
 - ◆ Vioxx, Bextra- example
 - ◆ Nsaids- 16,500 deaths secondary to GI bleeds; Singh, 1999; J Rheum

COMPREHENSIVE MANAGEMENT PROGRAM

NONPHARMACOLOGIC

PHARMACOLOGIC

INJECTIONS- are only part of comprehensive management program when addressing musculoskeletal problems. Depending on the patient, problem and its phase (acute, subacute, chronic)

COMPLIMENTARY/ ALTERNATIVE

SURGICAL



NONPHARMACOLOGIC

PATIENT EDUCATION- SELF MANAGEMENT- handouts, websites
(aaos,acr,arthritis foundation,niams)
self help (arthritis foundation (800-283-7800),
modify aggravating factors (work ergonomics, sports)

DIET/ NUTRITION- weight loss if appropriate, proper nutrition

EXERCISE- relative rest (sports, work), aerobic (walking, swimming),
stretching, strengthening (correct muscle imbalance), endurance,
posture/balance;
pt/ot (ionto/phonophoresis, tens)

LOCAL MODALITIES/ ASSISTIVE DEVICES- ice, heat, massage,
splints, braces, crutches, walkers, canes, proper footwear,
orthotics, grabbing tools, hand bars, elevated toilet seats, etc.



websites - [aaos](http://aaos.org); [acr](http://acr.org); arthritis.org (arthritis foundation)

arthritis foundation (800-283-7800)- local chapter info:

arthritis self help course

arthritis support groups

taking control of arthritis course

pamphlets, books, newsletter, video's

computer "connect and control" program

\$1.09 / \$1.19 Canada
Vol. 13 - No. 36 September 5, 1995
Sun

**SAVE ON PRESCRIPTIONS,
MEDICAL BILLS & DOCTORS.**

HAY FEVER
Vinegar, honey, tea
relieve symptoms!

BACK PAIN
Take aspirin and
herbal tea!

CHOLESTEROL
Low-fat foods
that work best!

DIABETES
Use Sage tea and
Ginseng for relief!

**HIGH BLOOD
PRESSURE**
Garlic will drop
those numbers!

BURNS
Treat with aloe,
potatoes, vitamins!

ASTHMA
Breath easier with
vitamins & caffeine!

COLDS
Banish with pepper,
and chicken soup!

DEPRESSION
Say goodbye to the
blues with spices!

ARTHRITIS
Vinegar makes
aches disappear!

MIRACLE HOME REMEDY CURES

Cheap, easy-to-use and
found in supermarkets!



\$1.09 / \$1.19 Canada



70989 06715

NEW SCIENTIFIC RESEARCH CONFIRMS:

WEEKLY WORLD

NEWS

October 24, 1995

99c/\$1.09 CANADA 70p U.K.

GOLDEN

RAISINS &

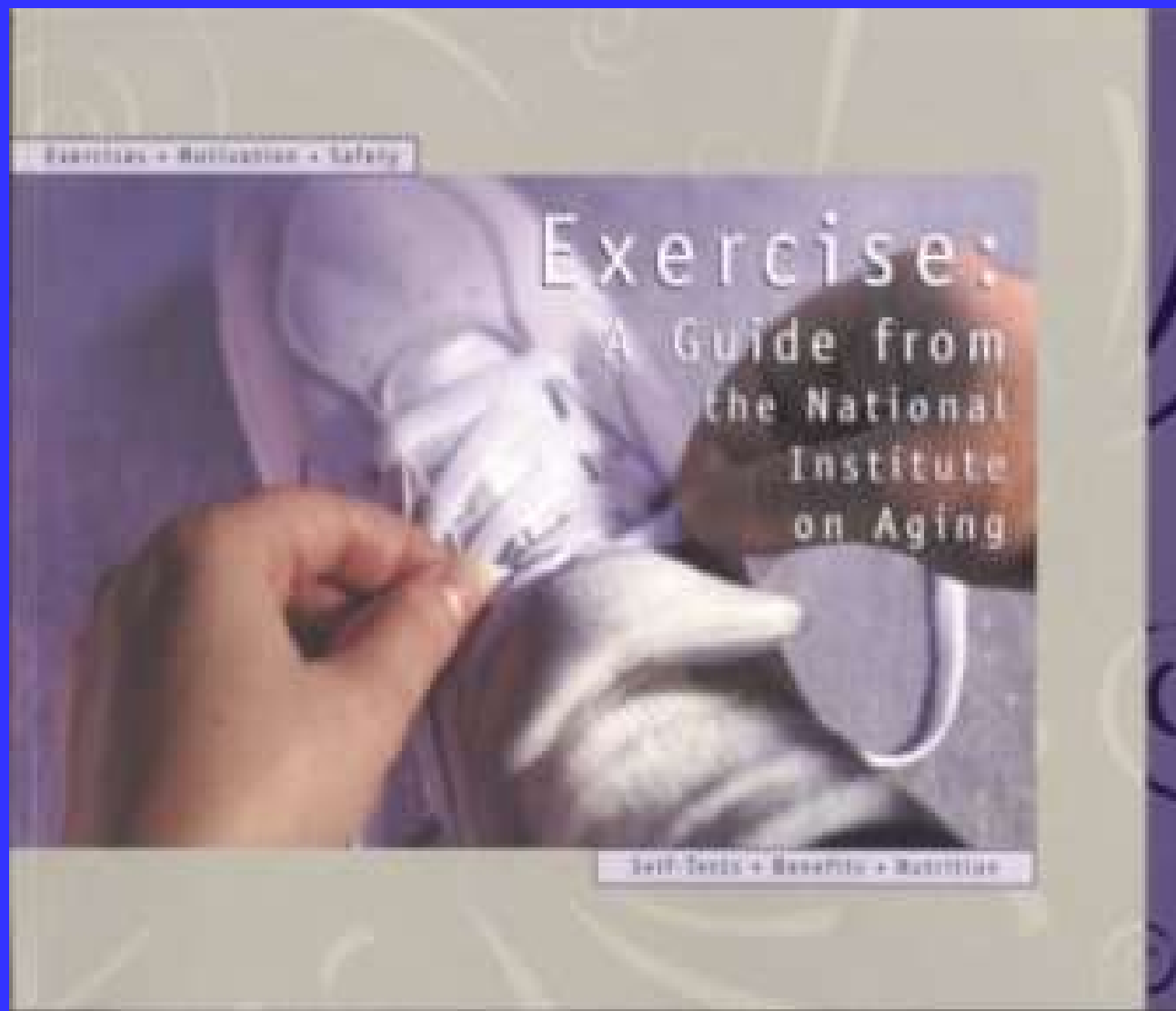
GIN CURE

ARTHRITIS



KISS PAIN GOODBYE — FOREVER!

IF YOU DON'T USE IT YOU WILL LOSE IT



<http://www.niapublications.org/exercisebook/exercisebook.asp>

<http://www.nia.nih.gov/>

PHARMACOLOGIC

TOPICAL- capsaicin, methylsalicylate, diclofenac

ORAL- acetaminophen (apap), nsoids (non selective),
cox-2 specific , opioids

INJECTIONS- lidocaine, corticosteroids, viscosupplementation

COMPLIMENTARY/ ALTERNATIVE

Glucosamine/chondroitin, vitamin supplementation, tai-chi,yoga,accupuncture

The healing process is complex and more likely in a healthy environment. For this, a balanced lifestyle addressing mind, body and spirit is needed. For the mind a healthy attitude and balanced emotional health. For the body, proper diet, exercise, healthy sleep habits, as well as avoidance of smoking, excess alcohol use and being overweight. lastly appropriate spirituality.

SURGERY

INJECTION THERAPY

CONTROVERSIAL

EVIDENCE BASED MEDICINE

INJECTION THERAPY INCLUDED IN THE PRACTICE GUIDELINES OF:
AMERICAN COLLEGE OF RHEUMATOLOGY
AMERICAN ACADEMY OF ORTHOPEDIC SURGEONS
AMERICAN ACADEMY OF NEUROLOGY
AMERICAN PAIN SOCIETY

national guideline clearinghouse: www.guideline.gov

PRACTICE BASED EXPERIENCE- surveys

90% OF ORTHOPEDISTS USE CORTICOSTEROID INJECTIONS
95% OF RHEUMATOLOGISTS USE CORTICOSTEROID
INJECTIONS

INDICATIONS FOR INJECTIONS FOR VARIOUS MUSCULOSKELETAL SOFT TISSUE PAIN SYNDROMES

JOINT- osteoarthritis, gout, pseudogout, rheumatoid arthritis

BURSA- subacromial, olecranon, trochanteric, pesanserine, prepatellar

PERI-TENDINOUS- tennis elbow (lateral epicondylitis), golfers elbow (medial epicondylitis), trigger finger, DeQuervains'

FASCIA- plantar fasciitis

NEURAL TUNNELS- carpal tunnel, tarsal tunnel

CONTRAINDICATIONS

HYPERSENSITIVITY TO MEDICATION

INFECTION PRESENT- septic joint/bursa, cellulitis

INACCESSABLE TISSUE

ANTICOAGULANT THERAPY

JOINT PROSTHESIS

RISKS OF STEROID INJECTION THERAPY

Injection therapy is only one part of a comprehensive management program

RARE- shouldn't occur if following protocols and guidelines (no more than 2-4 injections into weight bearing joint per year, no injections into tendon bodies)

HYPERSENSITIVITY

INFECTION- less than 0.001%

STEROID ARTHROPATHY

TENDON RUPTURE

RISKS OF STEROID INJECTION THERAPY CONTINUED

WILL OCCUR- more patient education required

VASO-VAGAL REACTION- ptn lightheaded after injection

STEROID FLAIR- post injection pain for a few days (2-5%)

SUBCUTANEOUS ATROPHY/ HYPOPIGMENTATION-
more likely when injections are superficial (ie. DeQuervains')

FACIAL FLUSHING

**TEMPORARY INCREASE IN BLOOD GLUCOSE IN
DIABETICS**

BENEFITS OF JOINT INJECTION & ASPIRATION

DIAGNOSTIC:

JOINT FLUID ASPIRATION AND ANALYSIS

LOCAL INJECTION OF LIDOCAINE TO CONFIRM DX

THERAPEUTIC:

IMPROVEMENT OF PAIN AND FUNCTION

SOME PATIENTS RESPOND:

WITH FASTER, GREATER, LONGER RESPONSE
THAN WITHOUT INJECTION

POST INJECTION INSTRUCTIONS & INFORMED CONSENT

MAY BE PAINFUL FOR 1-2 DAYS

SHOULD RELATIVELY REST JOINT FOR 1-2 DAYS

MAY APPLY ICE FOR 20-30 MINUTES, 2-3 TIMES DAILY, DAY
OF INJECTION

MAY TRY NSAIDS/APAP (if no contraindications)

CALL OFFICE IF HAVING SIGNIFICANT PROBLEMS

MAY BE A WHILE BEFORE **MAXIMUM** BENEFIT IS SEEN:

REVIEW PATIENT EDUCATION - THERAPEUTIC LIFESTYLE CHANGES
- ACTIVITY MODIFICATION
- PREVENT REOCCURANCE

INFORMED CONSENT - VERBAL
- WRITTEN

MATERIALS

EQUIPMENT- betadine, alcohol swabs, syringes (10cc, 3cc, 1cc), needles (20g. 1 1/2"-2"; 25g. 5/8"-1 1/2"; 30g. 1/2"), gloves (nonsterile/sterile), mosquito clamp

ANESTHETIC- lidocaine 1-2%, lasts 1-2 hours, bupivacaine (marcaine) 0.5% lasts 2-6 hours
works by stabilizing neuronal membrane, blocking conduction

CORTICOSTEROID- triamcinolone acetonide (TAC, kenalog) 10- 40mg
methylprednisolone acetate (depo-medrol) 10-80mg
betamethasone (celestone) 1-6mg
dexamethasone (decadron) 2-8mg
appears to work as an antiinflammatory by stabilizing the phospholipid membrane , thereby preventing the production of arachadonic acid and the inflammatory cascade

VISCOSUPPLEMENTATION- HYALGAN; SYNVISC; ORTHOVISC;
EUFLEXXA; SUPARTZ

INJECTION APPROACH; FOUR E's

ENGAGE- connect with patient in your own special way, shake hands, “smile with your eyes”

EMPATHY- impart empathy and caring in both body language and vocal inflection, patients perception is their reality

ENLIST- have patient participate in decision making, especially with invasive procedures such as injections, having the patient understand risk/benefit ratio

EDUCATE- have patient understand what they can do to influence their disease state.

INJECTION TECHNIQUE

STERILE DRAW UP OF MEDICATION

PATIENT POSITION

ANATOMICAL LANDMARKS OUTLINED

TISSUE TO AVOID- (think if any neuro/ vascular structures present)

PREP- betadine, alcohol wipe, local anesthetic (lidocaine, ethylchloride)

NEEDLE INSERTION- angle, depth

DEPOSITION OF MEDICATION- bolus, peppering

OBSERVE PATIENT- watch for vaso-vagal reaction, apply gentle
“healing” massage and range of motion, re-examine patient
after 5- 10 minutes

Technique is dependent on tissue being injected

JOINT FLUID ANALYSIS

Liquid biopsy of the joint

COLOR- clear yellow suggests non inflammatory, non infectious;
cloudy suggests inflammatory; purulent suggests infectious

CRYSTALS- gout, pseudogout (calcium pyrophosphate deficiency disease, cppd)

CULTURE- GRAM STAIN- infection

CELL COUNT- WBC COUNT-

less than 2,000 suggests non infectious, non inflammatory;
traumatic, osteoarthritis

2,000- 50,000 suggests inflammatory; gout, pseudogout,
rheumatoid arthritis

greater than 50,000 suggests septic joint

CODING & BILLING

Encounter Form for SY-TEST CPRS 1 NC (Dec 13,2006@10:24)

Visit Type | Diagnoses | Procedures | Vitals | Immunizations | Skin Tests | Patient Ed | Health Factors | Exams

Type of Visit	Section Name	Modifiers
ESTABLISHED PATIENT	<input type="checkbox"/> Brief (no MD seen) 99211	
NEW PATIENT	<input type="checkbox"/> Problem Focused 99212	
PREVENTIVE MED ESTAB	<input type="checkbox"/> Expanded Problem Focus 99213	
PREVENTIVE MED NEW	<input type="checkbox"/> Detailed 99214	
	<input type="checkbox"/> Comprehensive 99215	

Encounter Form for SY-TEST CPRS 1 NC (Dec 13,2006@10:24)

Visit Type | Diagnoses | Procedures | Vitals | Immunizations | Skin Tests | Patient Ed | Health Factors | Exams

Diagnoses Section	Section Name	
Problem List Items	<input checked="" type="checkbox"/> Osteoarthritis (ICD-9-CM 715.90)	715.90
CARDIOVASCULAR	<input type="checkbox"/> Peptic ulcer	533.90
-HTN	<input type="checkbox"/> Prostate Cancer	185
-Lipids	<input type="checkbox"/> Sprain Lumbar Region	847.2
-Dysrhythmias	<input type="checkbox"/> Schizoaffective Disorder, chronic (ICD-9-CM 295.72)	295.72
-Valvular	<input type="checkbox"/> Colon Cancer	153.9
DERMATOLOGY	<input type="checkbox"/> Osteoporosis	733.00
-Cellulitis, By Site	<input type="checkbox"/> CHF	428.0
-Dermatitis	<input type="checkbox"/> Dental Caries, extending into pulp	521.02
-Dermatophytosis, by site		

Encounter Form for BU-ORTHO RUDZINSKI PA (Feb 02,2007@11:00)

Visit Type | Diagnoses | Procedures | Vitals | Immunizations | Skin Tests | Patient Ed | Health Factors | Exams

Procedure Section	Section Name	Modifiers
ARTHROCENT/ASPIRATION	<input type="checkbox"/> Arth/Asp/Inj, Sm Jt(Fing/Toes) 20600	
CASTING	<input type="checkbox"/> Arth/Asp/Inj, Int Jt(Wri/Ank) 20605	
IMPLANTS/PROSTHETIC DI	<input type="checkbox"/> Arth/Asp/Inj, Mj Jt(Shou/Knee) 20610	
INCISION/DRAINAGE	<input type="checkbox"/> Inj, Ten/Lig/Trig Pt/Gang Cyst 20550	
SPLINTS	<input type="checkbox"/> THER/PROPH/DIAG INJ, SC/IM 90772	
STRAPPING (TAPE/ACE BAN)	<input type="checkbox"/> Lidocaine HCL IV 10Mg J2001	
MISCELLANEOUS	<input type="checkbox"/> +++Marcaine 30ml S0020	
	<input type="checkbox"/> +++Depo-Medrol 20mg J1020	
	<input type="checkbox"/> +++Depo-Medrol 40mg J1030	
	<input type="checkbox"/> +++Depo-Medrol 80mg J1040	
	<input type="checkbox"/> Hyalgan 20mg J7319	
	<input type="checkbox"/> +++Kenalog 10mg J3301	
	<input type="checkbox"/> +++Dexamethosone 1 mg J1100	

Other Procedure...

Quantity	Selected Procedures
2 times	Hyalgan 20mg Arth/Asp/Inj, Mj Jt(Shou/Knee)

COMPARING OFFICE-BASED PROCEDURES

<i>Procedure</i>	<i>CPT code</i>	<i>Medicare reimbursement*</i>	<i>Estimated physician time (minutes)</i>	<i>Initial cost of equipment</i>	<i>Reimbursement per hour (not including nursing or overhead costs)</i>
Flexible sigmoidoscopy	45330	\$103	20-30**	\$3,000- \$7,000	\$206-\$309
Colposcopy	57452	\$120	20-25**	\$3,000- \$5,000	\$288-\$360
Colposcopy with biopsy	57455	\$148	25-30**	\$3,000- \$5,000	\$296-\$355
Exercise treadmill	93015	\$103	20-30**	\$5,000- \$10,000	\$206-\$309
Epidermal shave biopsy <= 0.5 cm	11300	\$55	10-15	Supplies only	\$220-\$330
Excisional biopsy <= 0.5 cm	11400	\$108	20-30**	Supplies only	\$216-\$324
Joint injection, small joint (e.g., finger, toe)	20600***	\$50	5	Supplies only	\$600
Joint injection, medium joint (e.g., elbow, wrist)	20605***	\$55	5	Supplies only	\$660
Joint injection, large joint (e.g., shoulder, knee, hip)	20610***	\$67	5	Supplies only	\$804

*Based on Arizona carrier data.

**Usually requires nursing time in addition to physician time.

***Combine with J3301, triamcinolone acetonide (Kenalog) injection. Medicare will reimburse \$1.60 per 10 mg of Kenalog; most injections require 20-40 mg.

TREAT HOLISTICALLY
CRAFT MANAGEMENT PLAN WITH RISK/BENEFIT
ASSESSMENT SPECIFIC FOR THAT PATIENT
EMPHASIZE LOCAL TREATMENT FOR A LOCAL PROBLEM

