GUIDELINES & PROTOCOLS
ADVISORY COMMITTEE

Osteoarthritis in Peripheral Joints – Diagnosis and Treatment

Effective Date: September 15, 2008

Scope

This guideline summarizes current recommendations for assessment, diagnosis and treatment of osteoarthritis (OA) in peripheral joints for patients 19 years-of-age and older. Discussion will include patient education, rehabilitation, medications, and surgical choices as viewed within the chronic disease management context. A medication table is enclosed for reference.

Diagnostic Code: 715 (Osteoarthritis)

Introduction

Arthritis is a leading cause of long-term disability and one of the leading economic burdens to society. From a 2005 survey, 10.8% of British Columbians aged 12-64 and 42.4% aged 65 and over self-report that they have arthritis or rheumatism.[1] OA is the most common form of arthritis. From British Columbia 2005/2006 Medical Services Plan (MSP) claims data (physician billing, hospitalizations and PharmaCare claims), approximately 306,000 people (6.03% of the population) received medical services for OA.[2]

OA should not be considered simple wear and tear of joints. It is a slowly progressing disorder of unknown cause, but risk factors include: obesity, muscle weakness, heavy physical activity, inactivity, previous trauma, reduced proprioception, family history[3] of primary generalized OA, and mechanical factors. Often there is a progressive loss of articular cartilage and abnormal bone formation. OA symptoms usually begin in mature adults, presenting with minimal morning stiffness or stiffness after inactivity, pain in and around the affected joints (particularly with weight-bearing exercise), and transient pain alleviated with inactivity and rest. The joints usually have bony enlargement, crepitus with motion, and/or limitation of motion. Inflammation is usually absent or very mild. Any joint may be affected but most often involve the hands, great toes, spine, knees and hips.

Because there is no known cure for OA, the treatment goals are to: reduce pain, maintain or improve joint mobility, limit functional disability and improve self-management. The four pillars of treatment are: patient education, rehabilitation, medications and referrals (surgery and non-surgical). These are best achieved using a multidisciplinary approach and multi-modal treatments.

RECOMMENDATION 1 **Follow an organized approach to achieve an accurate diagnosis and functional assessment**

OA is a clinical diagnosis. There are no tests that are completely reliable in making the diagnosis. Current tests are primarily used to monitor the disease or exclude other types of arthritis. Radiographs may indicate OA but may not relate to symptoms. People with symptoms of osteoarthritis are usually mature adults and the elderly. As the patient is being considered for OA, it is recommended that assessment include the following:

A. Patient History
B. Physical Examination
C. Assessment to Exclude Other Diagnoses
D. Investigations
E. Clinical Impression and Factors to Consider Prior to Treatment and Management

A. Patient History

FACTORS SUGGESTIVE OF OA (REFER TO APPENDIX A: HISTORY)	
• Gradual onset • Absence of inflammation (morning stiffness < 30 minutes, minimal heat, minimal swelling, no redness) • Absence of systemic symptoms or signs suggesting alternate diagnoses (Red Flags in Appendix C)	• Joint pain with activity • Joints most likely affected: hip, knee, cervical and lumbar spine, thumb CMC (Carpo-Metacarpal), finger PIP (Proximal Interphalangeal), DIP (Distal Interphalangeal), and first MTP (Metatarsophalangeal) joint
RISK FACTORS FOR DISEASE	
• Older age • Family history of generalized OA • Heavy physical activity	• Obesity • Previous trauma or deformity
COMORBIDITIES TO CONSIDER IN TREATMENT	
• GI (ulcers, bleeds and hepatic disease) • Cardiovascular (hypertension, ischemic heart disease, stroke, CHF) • Hepatic disease	• Renal impairment • Asthma (ASA and NSAIDs require caution) • Depression
OTHER FACTORS TO CONSIDER IN TREATMENT	
• Cognitive status (ability to learn and to adhere to treatment) • Substance abuse and/or prior dependency	• Drug interactions (alcohol, OTC medications, supplements and herbals) • Language issues (understand treatment recommendations)
HOW CONDITION IMPACTS PAIN AND FUNCTION	
• Sleep (night pain) • Activities of daily living (ADLs/IADLs) • Walking distance • Others: falls, social isolation, depression	• Recreation • Pain features and level • Work (household, paid employment, volunteer activities)

B. Physical Examination *(For more detailed information, see Appendix B: Physical Examination)*

PHYSICAL EXAMINATION

- Height and weight (refer to attached BMI chart)
- Gait (limp)
- Muscle wasting
- Inflammation (heat, redness, swelling)
- Range of motion
- Pain on movement or at end of range

SPECIFIC ABNORMAL JOINT FINDINGS

Hip Examination

- Flexion causes external rotation
- Limited internal rotation (in flexion)
- Limited abduction
- Fixed flexion deformity
- Leg length discrepancy
- Trendelenburg position

Knee examination

- Quadriceps wasting
- Valgus or varus deformity
- Flexion deformity
- Patellar pain

Hand examination

- Bouchard's and Heberden's nodes
- CMC squaring of the thumb

C. Assessment to Exclude Other Diagnoses *(For more details on differential diagnosis of non-osteoarthritis symptoms in the history and physical examination, refer to Appendix C: Alternate Diagnosis and Overall Assessment)*

EMERGENCY CONDITIONS – URGENT REFERRAL TO SPECIALIST OR ER

- Infection
- Fracture

URGENT CONDITIONS - URGENT REFERRAL

- Malignancy
- Rheumatoid arthritis

DIFFERENTIAL DIAGNOSIS THAT MAY MIMIC OA

- Inflammatory arthropathies
- Crystal arthropathies (gout or pseudogout)
- Bursitis (e.g. Trochanteric, Pes Anserine)
- Soft tissue pain syndromes
- Referred pain
- Medical conditions presenting with arthropathy (e.g. neurologic, metabolic, etc.)

D. Investigations *(For more details see Appendix D: Investigations)*

- Blood tests do not diagnose OA. Blood tests may help rule out other conditions and monitor medications. Order tests when history and physical findings indicate a possible alternative diagnosis.
- X-rays are indicated for diagnostic clarification or in anticipation of orthopaedic referral. Indicate that the x-rays are for OA. For knees, x-rays must include standing AP, lateral, and skyline. For hip, specify OA hip series including lateral view of the affected hip and upper 1/3 of femur.

E. Clinical Impression and Factors to Consider Prior to Treatment and Management *(Refer to Appendix C: Alternate Diagnosis and Overall Assessment.)*

- Rule out alternate diagnosis
  - If the diagnosis is unclear, a Rheumatology assessment can assist with
    - Ruling out non-OA conditions or arthritic mimics
    - Diagnostic arthrocentesis
- Severity of condition (pain and function)
- Impact on independence in society
- Patient goals, expectations, preferences, past treatments
- Self-management needs/modifiable factors (e.g. assistance with weight management strategies, education about pain management, exercise, etc.)
- Psychosocial issues such as: pain amplification, depression, cognition, adherence to treatment, social support

RECOMMENDATION 2 **Consider the four pillars of treatment: patient education, rehabilitation, medications and referrals (surgical and non-surgical)**

Treatment of OA as a chronic disease is most effective using a multidisciplinary approach and multi-modal treatments. An OA Follow-Up Patient Assessment Form is available in Appendix E.

Step 1: Patient Education

- Explain the nature of OA as a chronic disease process. Refer patient to education and treatment resources including:
  - The Arthritis Society (toll free Arthritis Answers Line 1800 321-1433 or (Web site: www.arthritis.ca)
  - Arthritis Resource Guide for BC (Web site www.argbc.ca)
  - OASIS, Vancouver Coastal Health OsteoArthritis Service Integration System (Web site: www.vch.ca/oasis)
  - Arthritis Consumer Experts (Web site www.arthritisconsumerexperts.org)
  - CAPA, Canadian Arthritis Patient Alliance (Web site www.arthritis.ca/capa)
- Emphasize the importance of appropriate exercise, joint protection, strengthening of muscles supporting the joint with activity modification.
- Emphasize the importance of developing skills to self-manage the condition (refer to attached *A Guide for People Living with Osteoarthritis* and patient resources). Also, consider a prescription for exercise which specifies the number of minutes per week for each of the following exercises: walking, range of motion, strengthening and, if available, aquatic exercises. Ask the person to keep an exercise diary.
- Address specific issues e.g. social and financial support, nutrition and weight management programs, pain and stress management. Refer to *Overweight, Obesity and Physical Inactivity* guideline at www.BCGuidelines.ca
- Awareness of private and community programs e.g. The Arthritis Society (toll free Arthritis Answers Line 1-800-321-1433 or web site www.arthritis.ca) or The Arthritis Resource Guide for BC (Web site www.argbc.ca)

Step 2: Rehabilitation

- Therapeutic exercise (range of motion, strengthening and aerobic activity).
- Generally, a sign that the patient has done too much exercise is increased pain in the joint lasting longer than 2 hours after exercise.
- Refer to physiotherapy for assessment and specific exercise recommendations if needed
- Recommend supportive footwear with shock absorption such as high-quality, well-fitted shoes and add orthotics if needed.

- One of the most cost-effective treatments for OA of the hip and knee is a cane of appropriate height used in the hand of the opposite side.
- Assistive devices include splints, gait or mobility aids, braces, home and work adaptations. Consider referral to Occupational Therapist, Podiatrists, Orthotists, etc. as needed and available.
- Posture and positioning recommendations for daytime or sleep.

Step 3: Medications *(See Osteoarthritis (OA) Medications Table enclosure for more details)*
- Provide education on role of medications (options, risk factors, side effects, complications, cost)
- Begin with monotherapy prn and add/substitute medications depending on response and side effects

MILD OR MODERATE SYMPTOMS

- Acetaminophen up to 4 grams per day is the first line medication. Consider lowering dose where there is liver disease, alcohol abuse, and for the elderly.
- NSAIDs/Cox-2 inhibitors. Match adverse effects with patient history. Avoid long term daily NSAID use.
- Joint aspiration and/or hyaluronic acid injections.
- Topicals (capsaicin or NSAIDs).
- Glucosamine, MSM and chondroitin sulfate are not recommended due to questionable evidence of treatment benefit.[6]
- Consider risks and benefits of gastroprotection. Refer to note on GI issues with oral NSAIDs below.[4, 5]

SEVERE SYMPTOMS

- Evidence of progressive bone loss
- Advanced loss of joint space in association with moderate to severe pain
- Evidence of increasing acetabular protrusion or femoral head collapse in the hip

Note: Gastrointestinal Issues with oral NSAIDS
- There is no evidence that NSAIDs alter the natural course of arthritis. The patient should be made aware that NSAIDs represent symptomatic therapy, and that the therapy is associated with some risks.[6]
- Review risk factors in Appendix B: History (long term use, older age, poor health, past history of ulcers or bleeding disorders, and more than 3 alcoholic drinks per day. Consider current medications (anticoagulants, other NSAIDs and oral steroids).[4, 5]
- Choose an NSAID appropriate to the patient based on cardiovascular risk factors. Note that COX-2 inhibitors also carry a GI risk.
- When an NSAID is essential for control of symptoms, prescribe the safest NSAID in the lowest effective dose for the shortest period of time.[7]
- Gastroprotection does not eliminate risk of ulcers, particularly for patients with high GI risk.[5] Gastroprotection will likely reduce symptoms of dyspepsia.
- When there are risk factors, prescribe NSAIDs only for short term use along with gastroprotection: misoprostol, double dose H2 blockers and PPI have been shown to reduce the incidence of GI events.[5]
- Inform patient that GI bleeds can occur with or without warning symptoms. Patients should be informed to stop taking the medications and be reassessed if they have the following symptoms: stomach pain, heartburn, blood in vomit or stools.
- If the patient is experiencing GI problems, refer to guideline: *Dyspepsia – Clinical Approach to Adult Patients* available at www.BCGuidelines.ca
- Avoid long-term daily NSAID therapy.[7]

Note: Cardiovascular risk and NSAIDS

"Health Canada acknowledges the panel's view that, as a group, selective COX-2 inhibitors are associated with an increased risk of cardiovascular events, a risk that is similar to those associated with most NSAIDs ["The cardiovascular safety concerns associated with the traditional NSAIDs are not extended to aspirin"[8]]. The panel noted that this risk is present for all patients taking anti-inflammatory agents and that it increases with longer-term use and when other risk factors, such as cardiovascular disease, are present."[9]

Step 4: Referrals (Surgical and Non-Surgical)

Note urgency on referral: mild, moderate or severe

Indications for Non-Surgical Referral:

- Refer to Rheumatology or appropriate Internal Medicine specialist for: red flag conditions (alternative diagnosis), unexpected/unusual disease progression or complications.
- Refer to PT or OT for: education on self-management or on the disease process; specific exercises for range of motion, strengthening, or joint protection; gait training; knee bracing; pain management education and techniques; mobility aids; and education for dealing with functional difficulties (home, work or leisure).
- Refer to Dietitian for education on weight management.
- If the patient has significant disease progression but is not a surgical candidate, for example because of significant co-morbidities, consider referral to OT for assistance with activities of daily living (ADLs).

Indications for Surgical Referral

The indications for arthroscopic knee surgery in patients with OA are similar to patients without arthritis. Arthroscopic debridement has not been shown to have any significant benefit for OA of undiscriminated cause. [10-11]

FAILURE OF A NON-OPERATIVE PROGRAM	
• Inadequate pain control • Increasing need for narcotic medications	• Significant pain on motion, resting pain, presence of night pain
INCREASING FUNCTIONAL RESTRICTIONS	
• Inability to walk without significant pain • Significantly modified ADLs: i.e. putting on shoes, climbing stairs, squatting and bending	• Increasing threat to patient's ability to work or live independently
SIGNIFICANT ABNORMAL FINDINGS ON EXAMINATION	

• Of the knee
  • Progressing deformity, especially when valgus >15°or varus >5°
  • Loss of extension by 10°-15°
  • Loss of flexion to less than 110°
	• Of the hip
	  • Decreasing range of motion. Internal rotation of less than 5° measured in flexion
	  • Notable leg length discrepancy

PROGRESSION OF DISEASE ON X-RAY (WEIGHT-BEARING FOR KNEE)	
• Evidence of progressive bone loss • Advanced loss of joint space in association with moderate to severe pain	• Evidence of increasing acetabular protrusion or femoral head collapse in the hip

A Rheumatologist involved in the care of difficult cases may provide assistance with the timing of referral for surgical assessment.

RECOMMENDATION 3 **Follow-up** *(Consider using a form to monitor disease progress such as provided in Appendix E: Follow-Up Patient Assessment Form.)*

1. Review changes in pain, function and comorbidities.
   Refer to Recommendation 1, Section A and/or Appendix A: Patient History.

2. Review physical findings for red flag issues.
   Further information is found in Recommendation 1, Section C and/or Appendix C: Physical Examination.

3. Review effectiveness of patient education and self-directed treatment plans

   Step 1: Self-Directed Programs (questions on disease process, particularly importance of self-management, weight loss, and joint protection)

   Step 2: Rehabilitation Needs (home and/or community exercise programs, physical therapy for ROM and strengthening, medical devices, orthotics, cane, walker, raised seats, devices, and/or scooter)

   Step 3: Medications: for more details refer to Appendix D: Investigations and Osteoarthritis (OA) Medications Table enclosure

   <u>Medications for Mild OA</u>
   - Occasional prn use of acetaminophen up to 1 gram 4 times per day and add prn NSAIDs if necessary
   - If the person is on self-directed care and is doing well, then do routine follow-up unless there is a significant change in pain or function

   <u>Medications for Moderate OA</u>
   - For symptomatic OA, prescribe full dose acetaminophen (1 g 4 x day).
   - Within 30 days, do a baseline haemoglobin, blood pressure, AST or ALT, and creatinine if further therapy is contemplated.
   - If regular dosing of acetaminophen at 4 g/day or with NSAIDs, follow-up every 3-12 months depending on comorbidities and severity
   - Consider lowering dose where there is liver disease, alcohol abuse, and for the elderly
   - If the patient is using diclofenac, consider rare development of hepatitis
   - Consider risks and benefits of gastroprotection. Refer to GI Issues with oral NSAIDs note in Recommendation 2: Step 3 – Medications

   <u>Medications for Severe OA</u>
   - Same as for moderate OA but review more frequently (every 1-6 months) with a view to surgical referral
   - If there is an increase in severity, i.e. treatment is no longer efficacious or new symptoms, then revisit more often

   Step 4: Investigations
   - For monitoring liver and renal function and other possible side effects of medications (haemoglobin, blood pressure, AST or ALT, and creatinine tests). For more details refer to Appendix D: Investigations, and Osteoarthritis (OA) Medications Table enclosure

Step 5: Assess Need for Non-Surgical and Surgical Referrals. Details are given in Recommendation 2: Referrals.

Coordination of Care

Treatment is multi-disciplinary involving regular follow-up. The four pillars of treatment are: patient education and self-management, rehabilitation and physical activity, medications, and referrals, as well as consideration of other supports. As with all chronic diseases, optimal outcome is achieved through a multi-disciplinary approach coordinated by the family doctor.

Rationale

Osteoarthritis (OA) was identified by the BC Ministry of Health Services, BC General Practice Services Committee (GPSC), BC Health Authorities and other stakeholders as one of the top ten chronic diseases for which the greatest opportunities exist to improve the quality of the services delivered and the outcomes for patients.[10] OA is the most common type of arthritis and affects about 10% of the population.

Helping patients to maintain a healthy and active lifestyle is an important goal. Timely physical therapy, appropriate exercise training and patient education can affect one's ability to work and remain active. Maintaining function may reduce the long-term damage to ligaments and joints. Lack of physical activity can potentially lead to a multitude of chronic illnesses including obesity, hypertension, and depression. Treatment for the symptoms (including self management and exercise) should be encouraged. As well, risks and benefits of non-steroidal anti-inflammatory drugs (NSAIDS) should be discussed with the patient. When other treatments are no longer effective, total hip and knee replacements can be a cost-effective means of improving quality of life.

List of Acronyms

ADLs	activities of daily living	MSM	methyl sulfonyl methane
ANA	antinuclear antibody	MSP	British Columbia Medical Services Plan
AP	anteroposterior	MTP	metatarsophalangeal
AST	aspartate aminotransferase	NSAIDs	non-steroidal anti-inflammatory drugs
ALT	alanine aminotransferase	OA	osteoarthritis
BMI	body mass index	OT	Occupational Therapist
C&S	culture and sensitivity	OTC	over-the-counter
CMC	carpo-metacarpal	PIP	proximal interphalangeal
Cox-2	cyclooxygenase-2	PPI	proton pump inhibitor
DIP	distal interphalangeal	prn	as needed
GI	gastrointestinal	PT	Physiotherapist
H2RA	histamine 2-receptor antagonists	RA	rheumatoid arthritis
IADLs	instrumental activities of daily living	ROM	range of motion

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Additional Supporting Materials

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Revised Date: December 1, 2009

This guideline is based on scientific evidence current as of the Effective Date.

This guideline was developed by the Guidelines and Protocols Advisory Committee, approved by the British Columbia Medical Association and adopted by the Medical Services Commission.

Enclosure
Osteoarthritis (OA) Medications Table

Appendices
Optional Decision Support Tools for the diagnosis and management of OA:
Appendix A: History
Appendix B: Physical Examination
Appendix C: Alternate Diagnosis and Overall Assessment
Appendix D: Investigations
Appendix E: Follow-Up Patient Assessment Form

Associated Documents

The following documents accompany this guideline:
- Patient Guide for People Living with Osteoarthritis
- A Guide for People with Hip Osteoarthritis
- A Guide for People with Knee Osteoarthritis
- A Guide for People with Hand Osteoarthritis
- Choosing a Complementary Therapy
- Calculation of Body Mass Index

A PDA version of this guideline is also available at www.Clinipearls.ca/BCGuidelines

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- recommend actions that are sufficient and efficient, neither excessive nor deficient
- permit exceptions when justified by clinical circumstances.

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Osteoarthritis (OA) Medications Table

Effective Date: September 15, 2008

This Medication Table pertains to the Guideline *Osteoarthritis in Peripheral Joints – Diagnosis and Management*

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Regularly review current listings of Health Canada advisories, warnings and recalls at: http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/index_e.html

Drug	DOSE	APPROX. COST/MONTH MAR 06	PHARMACARE COVERAGE	SERIOUS SIDE EFFECTS
NON-NARCOTIC ANALGESICS Acetaminophen is as effective as oral NSAIDs for pain relief according to evidence[1].				
acetaminophen generics available	650-1000 mg q4-6h OR SR caps 1300 mg q8h; max 4000 mg/day	$5-$13	full coverage for OA only via special authority	rare elevations of INR when using warfarin anticoagulants, liver toxicity
mefenamic acid generics available	250 mg PO q 6h prn (generally 7 day max)	$0.34/tab	full coverage for lowest cost brand	Similar to NSAID risks below
NSAIDs Acetaminophen is the first choice. Trials have not demonstrated any consistent superiority of one NSAID over another[2]				
acetylsalicylic acid (enteric-coated) generics available	2600-5400 mg PO daily, divided q4-6h	$3-$6	full coverage	The side-effects listed below apply to NSAID class of drugs: • GI ulceration, perforation with or without bleeding • severe diarrhea • hepatotoxicity • renal impairment • cardiovascular events • CHF; angina; hypertension; arrhythmia; bronchospasm; pulmonary edema • blood dyscrasias • thrombocytopenia • erythema multiforme • symptoms of aseptic meningitis • blurred or diminished vision • fluid retention
ibuprofen generics available	200-500 mg bid-tid up to 1500 mg 24hr	$3-$10	full coverage	
naproxen generics available	250-500 mg bid-tid max 1500 mg/day	$10-$14	full coverage	
diclofenac generics available	50 mg PO bid-tid or 75mg bid; max 150 mg/day	$24-$40	partial coverage or full coverage with special authority	
diflunisal generics available	250-500 mg PO q12h	$27-$32	partial coverage or full coverage with special authority	
flurbiprofen generics available	50-100 mg PO bid-tid; max 300 mg/day	$16-$32	partial coverage or full coverage with special authority	
indomethacin generics available	25-50 mg bid-tid; max 200 mg/day	$5-$15	partial coverage or full coverage with special authority	
ketoprofen generics available	75 mg PO tid or 50 mg PO qid; max 300 mg/day	$21	partial coverage or full coverage with special authority	
meloxicam generics available	7.5-15 mg PO od	$17-$20	no coverage (full coverage with special authority)	
nabumetone generics available	500 mg	$30-$60	no coverage (full coverage with special authority)	
piroxicam generics available	20 mg PO qd	$22	no coverage (full coverage with special authority)	
sulindac generics available	150-200 mg PO bid; max 400 mg/day	$24-$30	no coverage (full coverage with special authority)	
tiaprofenic acid generics only for 300 mg	Either 300 mg bid or SR 600 mg od	$25-$40	no coverage (full coverage with special authority)	
tolmetin generic available	200-600 mg PO tid; max 1800 mg/day	$40-$80	no coverage (full coverage with special authority)	
etodolac generics available	300 mg PO bid	$51	no coverage	GI bleed, erythema multiforme, bronchospasm, hepatotoxicity
ketorolac generics available	10 mg PO q4-6h; max 40 mg/day; short-term use only	$59	no coverage	peptic ulcer, with/without bleeding; fatalities in the elderly

Drug	DOSE	APPROX. COST/MONTH MAR 06	PHARMACARE COVERAGE	SERIOUS SIDE EFFECTS
COX 2 inhibitors				
celecoxib (no generics)	200mg PO od or 100 mg bid	$42	no coverage; full coverage with special authority	as above in NSAIDs
NSAIDs (Topicals)				
diclofenac sodium	40 drops, applied qid	$50	no coverage	colitis, arrhythmia, 1% may develop hepatitis
Other Topicals				
menthol	apply tid-qid	$7.40/50g tube	no coverage	allergic skin reaction
capsaicin	apply tid-qid to unopened skin	$20-$40	no coverage	skin irritation; sun sensitivity
INTRA-ARTICULAR MEDS (injection): steroids				
triamcinolone	2.5-40 mg intra-articularly	$2.60-$5.50 /injection	full coverage	anaphylaxis, masking of infections
NARCOTICS (oral)				
codeine* generics available	15-60 mg PO	$13-$18	full coverage *Requires a controlled prescription form when prescribed as a single entity or when included in preparations with > 60mg codeine	common: CNS depression; constipation; sweating; nausea and vomiting major: respiratory depression; circulatory depression; cardiac arrest; hypersensitivity other: arrythmias; syncope; headache; dysphoria; agitation; seizure; urinary retention; blood dyscrasias; potential for dependency; serious outcomes when combined with CNS depressants (e.g., alcohol), acetaminophen: liver toxicity
acetaminophen with codeine 15 mg and 30 mg (Emtec® acetaminophen 300 + codeine 30 mg, no caffeine)	1-2 tabs PO q4h PRN; max 12 tabs/day	$0.06-$0.13/tab	full coverage	
ASA with codeine 15 mg or 30 mg	individualized	$0.07-$0.18/tab	full coverage	
oxycodone with acetaminophen 5mg/325mg 2.5mg/325mg	individualized	$0.13 $0.61/tab	full coverage	
hydromorphone*	PO: 2-4 mg q4-6h	$30-$90	full coverage for immediate release–controlled release (long-acting) is special authority	
morphine*	PO initial dose: 10 mg q4h OR 30 mg SR q12h; titrate dose appropriately	$33-$52	full coverage	
oxycodone*	PO initial dose: 5-10 mg q6h OR 10-20 mg SR q12h; titrate dose appropriately	$51-$506	full coverage for immediate release–controlled release (long-acting) is special authority	
tramadol with acetaminophen (Tramacet®) 37.5mg/325mg OR single entity controlled release (Zytram XL®) 150 mg, 200 mg, 300 mg, 400 mg	Tramacet®: 1-2 tabs q4-6h PRN; max 8 tabs/day; max 5 days of treatment Zytram XL®, PO initial dose: 150 mg q24h; titrate dose appropriately	Tramacet®: $77-$153 Zytram XL®: $48-$120	no coverage	seizures (esp. with antidepressants); convulsions; allergic reactions; respiratory depression; addiction; cancer; pregnancy issues; dizziness; nausea

Drug	DOSE	APPROX. COST/MONTH MAR 06	PHARMACARE COVERAGE	SERIOUS SIDE EFFECTS
Viscosupplementation (Devices as per Health Canada)				
hyaluronic acid Durolane®, Hyalgan®, Orthovisc®, Ostenil®, Neovisc®, Synvisc®	1-3 injections	$200-$400 per vial	no coverage	allergic reaction
Herbals and supplements: not recommended Products with a DIN (Drug Identification Number) have been supported by good-quality studies for safety and effectiveness. Products with a NPN (Natural Health Product Number), USP number (US Pharmacopeia), Consumers Lab logo, or NSF™ international certification may ensure quality but do not ensure effectiveness.				
chondroitin sulphate	200-400 mg bid–tid	$10	no coverage	unknown and may have serious interactions with other drugs
glucosamine sulphate	500 mg tid	$50	no coverage	
methylsulfonylmethane (MSM)	1-3 grams bid	$10-$48	no coverage	
s-adenosylmethionine (SAMe)	400 mg tid-qid 200 mg tid	$120	no coverage	

*Requires the use of a Controlled Prescription Program Form (formerly triplicate prescription program) Special Authority criteria and forms are available on the PharmaCare Web site at http://www.health.gov.bc.ca/pharme/sa/criteria/formsindex.html

Note: Cardiovascular risk and NSAIDS

"Health Canada acknowledges the panel's view that, as a group, selective COX-2 inhibitors are associated with an increased risk of cardiovascular events, a risk that is similar to those associated with most NSAIDs [The cardiovascular safety concerns associated with the traditional NSAIDs are not extended to aspirin[3]]. The panel noted that this risk is present for all patients taking anti-inflammatory agents and that it increases with longer-term use and when other risk factors, such as cardiovascular disease, are present."[4]

References

1. Tanna, S. Osteoarthritis opportunities to address pharmaceutical gaps. 2004. Available at URL: http://mednet3.who.int/prioritymeds/report/background/osteoarthritis.doc. Accessed October 30, 2007.
2. The University of British Columbia Therapeutics Initiative. Should we be using NSAIDS for the treatment of Osteoarthritis and "Rheumatism". Therapeutics Letter 1995;4:1-4. Available at URL: http://www.ti.ubc.ca/PDF/4.PDF. Accessed October 30, 2007.
3. Health Canada Health Products and Food Branch Marketed Health Products Directorate and Therapeutic Products Directorate. Report on the cardiovascular risks associated with COX-2-selective non-steroidal anti-inflammatory drugs. 2006 June. Available at URL: http://www.hc-sc.gc.ca/dhp-mps/prodpharma/activit/sci-consult/cox2/cox2_cardio_report_rapport_e.html. Accessed October 25, 2007.
4. Health Canada Health Products and Food Branch Marketed Health Products Directorate and Therapeutic Products Directorate. Panel on the safety of COX-2 NSAIDs. 2005 June 9-10; Ottawa. Available at URL: http://www.hc-sc.gc.ca/dhp-mps/prodpharma/activit/sci-consult/cox2/index_e.html. Accessed October 29, 2007.

Resource Documents

Canadian Pharmacists Association. Compendium of Pharmaceuticals and Specialties. Ottawa: Canadian Pharmacists Association; 2008 Canadian Pharmacists Association, Therapeutic Choices. 2008. Drug Prices: obtained from PharmaNet, for prescription medications, and at various Victoria, BC retail outlets for non-prescription medications.

Notes:

A. If a medication has a generic equivalent, the drug cost is for the generic product.
B. For prescription medications, the price does not include professional fees.
C. For non-prescription medications, the price does not include applicable sales taxes.
D. Where a price range is indicated, this reflects the cost based on minimum and maximum dose ranges.

Appendix A

OSTEOARTHRITIS – HISTORY

This Optional Decision Support Tool pertains to the Guideline:
Osteoarthritis in Peripheral Joints – Diagnosis and Treatment
www.BCGuidelines.ca

HISTORY – FEATURES TO CONSIDER

INDICATE LOCATION(S):

Onset	❑ Acute	❑ Gradual	
Trauma	❑ Yes	❑ No	
Type	❑ Red flags for inflammation*	❑ Osteoarthritis	
Location	❑ Non-articular	❑ Monoarticular	❑ Polyarticular*
Features	❑ Transient morning stiffness	❑ Painful crepitus	❑ Sensation of instability
	❑ Aware of deformity	❑ Impaired use of joint (limp, falling)	❑ Loss of range of motion

*Refer to Guideline: *Rheumatoid Arthritis – Diagnosis and Management* at www.BCGuidelines.ca

INFLAMMATORY/NON-INFLAMMATORY ARTHRITIS – DIFFERENTIATION** (Note: a patient with RA may develop OA)

FEATURE	NON-INFLAMMATORY	INFLAMMATORY
Joint pain	With activity	With activity at rest
Joint swelling	Bony	Soft tissue
Joint deformity	Common	Common
Local erythema	Absent	Sometimes
Local warmth	Absent/Minimal	Frequent
Morning stiffness	<30 minutes	>30 minutes
Systemic symptoms	Absent	Common
Joint distribution	PIP (Proximal Interphalangeal)/ DIP (Distal Interphalangeal), first CMC (Carpo-Metacarpal), hip, knee, first MTP (Metatarsophalangeal)	Elbow, wrist, PIP/MCP, MTP

**Modified from: *Getting a grip on arthritis best practice guidelines* The Arthritis Society (2004) available at http://acreu.ca/pdf/Best-Practice-Guidelines.pdf Accessed October 25, 2007.

PAIN AND FUNCTION

Mobility can be assessed using the Timed Up & Go test.† The patient is timed to rise from an arm chair (using usual footwear and walking aids), walk three metres, turn, walk back and sit. Normal time is between 7-10 seconds. Further assessment is suggested for those who take longer time or are unsteady.

† American Geriatric Society. *The Timed Up & Go Test for Fall Risk Assessment 2001,49(5):666*

Pain Features	
❑ Localized	❑ Present at rest
❑ Aggravated by motion/weight bearing	❑ Influenced by weather
❑ Night pain	❑ Radiating widely around affected joint(s)
❑ None/mild pain on motion	• Patient can move about including walking or bending. They may experience some pain but it does not prevent any activity. • They usually do not require pain medication.
❑ Moderate pain on motion	• Patient can move about including walking or bending. They experience pain most of the time that limits their activities to some degree. For example, patient experiences trouble walking up and down stairs or may be uncomfortable standing for long periods of time. • They occasionally need pain medication.
❑ Severe pain on motion	• Patient cannot walk or bend without experiencing pain. The pain restricts their activities in a major way. For example, patient experiences pain walking up and down stairs and may not be able to stand for long periods of time. • They need pain medication most of the time.
Walking capability without significant pain	❑ > 5 blocks ❑ 1-5 blocks ❑ Less than 1 block ❑ Household ambulation ❑ Unable to walk without pain

PAIN SUMMARY Scale between 1 and 10 ➡ _____/10

PAIN CONTROL ❑ Satisfied ❑ Unsatisfied Indicated by: ❑ Patient ❑ Physician

OVER ➡

REVIEW SYSTEMS

Overall risk factors for disease:

- ❑ Obesity
- ❑ Inactivity
- ❑ Family history
- ❑ Muscle weakness
- ❑ Previous trauma
- ❑ Mechanical factors
- ❑ Heavy physical activity
- ❑ Reduced proprioception

Review of risk factors for treatment with NSAIDs:

GI

- ❑ History of peptic ulcer
- ❑ Tobacco use
- ❑ Alcohol abuse
- ❑ History of GERD symptoms
- ❑ Liver disease
- ❑ Age > 65
- ❑ Glucocorticoids
- ❑ Anticoagulant

❑ Comorbidities (Describe):

Renal

- ❑ Calculated eGFR < 60
- ❑ Anti-hypertensive medication
- ❑ Diuretic

Cardiovascular

- ❑ Hypertension
- ❑ Ischemic heart disease
- ❑ Heart failure

Appendix B

OSTEOARTHRITIS – PHYSICAL EXAMINATION

This Optional Decision Support Tool pertains to the Guideline:
Osteoarthritis in Peripheral Joints – Diagnosis and Treatment
www.BCGuidelines.ca

Gait ❑ Normal ❑ Abnormal	Leg length discrepancy while standing (greater)? ❑ Left ❑ Right	Muscle wasting? ❑ Yes ❑ No	Pain progression: ❑ Yes ❑ No
Deformity while standing? ❑ Yes ❑ No	Pelvis level? ❑ Yes ❑ No	Pain with any motion? ❑ Yes ❑ No Pain range (1 = least pain; 10 = most pain): _____	

Loss of ROM?	❑ Yes	❑ No
ROM knee observations (examine standing)	Describe the range that the knee goes through **Fixed flexion deformity (FFD):** ❑ None ❑ Mild 5^0 ❑ Moderate 5^0-15^0 ❑ Severe > 15^0	
	Flexion range of motion: ❑ Mild > 115^0 ❑ Moderate 90^0 - 115^0 ❑ Severe < 90^0	
	Genu Valgum (knock-knee) Left: ❑ Mild ❑ Moderate ❑ Severe Right: ❑ Mild ❑ Moderate ❑ Severe	
ROM hip observations	**Flexion deformity (FFD) test with maximum flex of opposite hip:** ❑ None ❑ Mild 0^0-5^0 ❑ Moderate 5^0-15^0 ❑ Severe >15^0	
	Flexion range of motion: ❑ None ❑ Mild > 115^0 ❑ Moderate 90^0-115^0 ❑ Severe < 90^0	
	Progression: ❑ Yes ❑ No **External rotation with flexion (early sign of OA):** ❑ Yes ❑ No ❑ Left ❑ Right	
	Limited internal rotation: ❑ Yes ❑ No ❑ Left ❑ Right	
	Limited abduction: ❑ Mild ❑ Moderate ❑ Severe ❑ Left ❑ Right	
Joint	❑ Effusion mild, moderate, severe ❑ Crepitus ❑ Warmth Progression? ❑ Yes ❑ No	❑ Localized swelling ❑ Bony enlargement
Physical Exam Summary (abnormal findings)	❑ Mild ❑ Moderate ❑ Severe	

Appendix C

OSTEOARTHRITIS – ALTERNATE DIAGNOSIS AND OVERALL ASSESSMENT

This Optional Decision Support Tool pertains to the Guideline:
Osteoarthritis in Peripheral Joints – Diagnosis and Treatment
www.BCGuidelines.ca

ALTERNATE DIAGNOSIS

Consider alternate diagnosis of non-osteoarthritis symptoms for history and physical examination (amplification of condition)

Red flag indications

- ❑ Acute severe pain
- ❑ Fever, night sweats or significant weight loss
- ❑ Neurogenic pain pattern
- ❑ Significant trauma (e.g. fracture)
- ❑ Focal or diffuse muscle weakness
- ❑ Claudication pain pattern
- ❑ Night pain
- ❑ Hot and swollen joint *(not OA)

Red flag condition suspected

Infective arthritis	❑ Bacterial ❑ Tuberculosis	❑ Viral
Inflammatory arthritis*	❑ Reactive ❑ Rheumatoid*	❑ Gout ❑ Seronegative spondyloarthropathy
Connective tissue disease	❑ SLE	❑ Scleroderma
Other medical conditions presenting with pain	❑ Polymyalgia rheumatica ❑ Sarcoidosis ❑ Thyroid disease ❑ Fracture ❑ Infective endocarditis	❑ Referred pain (i.e. pain originating in the back masquerading as hip pain or hip pain radiating to the knee) ❑ Hemochromatosis ❑ Diabetic cheiroarthropathy ❑ Paraneoplastic syndromes ❑ Multiple myeloma

Consider other issues:

- ❑ Fear/avoidance behaviour
- ❑ Passive attitude to rehabilitation
- ❑ Substance overuse/abuse
- ❑ Pain amplification
- ❑ Impaired sleep because of pain
- ❑ Depression
- ❑ Over-protective partner-spouse
- ❑ Lack of social/financial support
- ❑ Poor adherence to exercise

*Review guideline: *Rheumatoid Arthritis – Diagnosis and Management* at www.BCGuidelines.ca

OVERALL ASSESSMENT

If osteoarthritis is suspected, an overall assessment of the condition is important. Ask what problems the patient is having and how much it impacts their life. Consider the following criteria:

FEATURE	NONE	MILD	MODERATE	SEVERE
Pain				
Overall function				
Abnormal findings on physical exam				
Ability to function at work				
Ability to enjoy recreational activities				

What are the modifiable factors? From this overall impression, anticipate the nature of treatment:

Likely satisfactory/sufficient response to non-pharmacologic and/or pharmacologic treatment	❑ Yes	❑ No
Referral for non-surgical specialist assessment indicated	❑ Yes	❑ No
Referral for surgical assessment indicated	❑ Yes	❑ No

Appendix D

OSTEOARTHRITIS – INVESTIGATIONS

This Optional Decision Support Tool pertains to the Guideline:
Osteoarthritis in Peripheral Joints – Diagnosis and Treatment
www.BCGuidelines.ca

There are no blood tests to diagnose osteoarthritis. Blood tests are done to rule out other conditions and monitor the disease and/or medications.

Order tests when history and physical findings indicate and consider inflammatory versus non-inflammatory presentations (non-OA or OA respectively)

INVESTIGATIONS TO CONSIDER OF OTHER CONDITIONS SUSPECTED

Blood work

❑ Hematology profile	Test for chronic or inflammatory condition (baseline to monitor NSAID treatment).
❑ Creatinine	Test renal function if considering NSAID use.
❑ ESR	Use when considering rheumatoid condition, multiple myeloma or infection. See guideline: *Erythrocyte Sedimentation Rate* available at www.BCGuidelines.ca
❑ C-Reactive Protein	Use in septic arthritis diagnosis and to monitor treatment. Selectively consider use when it is important to rule out inflammatory conditions
❑ ANA	Use when considering connective tissue disease – see guideline: *Antinuclear Antibody (ANA) Testing for Connective Tissue Disease* at www.BCGuidelines.ca
❑ Rheumatoid Factor (RF)	Review guideline: *Rheumatoid Arthritis – Diagnosis and Management* at www.BCGuidelines.ca
❑ AST	Consider AST (aspartate aminotransferase test) for diagnosing and monitoring liver disease when considering NSAID use.

❑ Crystals ❑ C&S ❑ Microscopy

DIAGNOSTIC IMAGING

X-rays are indicated for persistent unexplained joint pain or in anticipation of orthopaedic/rheumatologic referral. Specify the x-rays are for OA.

❑ knees – must include standing AP, lateral and skyline.
❑ hips – specify OA hip series including lateral view of the affected hip and upper 1/3 of femur.

Appendix E

OSTEOARTHRITIS – PATIENT ASSESSMENT FOLLOW-UP

This Optional Decision Support Tool pertains to the Guideline:
Osteoarthritis in Peripheral Joints – Diagnosis and Treatment
www.BCGuidelines.ca

Pain

Satisfactory pain control	❑ yes	❑ no
Night pain affecting sleep	❑ yes	❑ no
Overall pain rating (0= none; 10= most)		

Satisfaction with Function

Walking	❑ yes	❑ no
Interference with activities of daily living (ADLs or IADLs)	❑ yes	❑ no
Work	❑ yes	❑ no
Recreation	❑ yes	❑ no

Patient Education

Self-management completed	❑ yes	❑ no
Weight loss/diet plan needed	❑ yes	❑ no
Joint protection	❑ yes	❑ no

Rehabilitation and Exercise	**Tolerated**		**Effective**		**Change plan**	
Home exercise program	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Community exercise program	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Physical therapy for ROM and strengthening	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Medical devices	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no

	Tried		**Suitable**	
Orthotics	❑ yes	❑ no	❑ yes	❑ no
Cane/walker	❑ yes	❑ no	❑ yes	❑ no
Raised seats/devices	❑ yes	❑ no	❑ yes	❑ no

Medications for OA (names, doses and side effects)	**Tolerated**		**Effective**		**Change plan**	
Acetaminophen	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
NSAIDs	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Gastro protection	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Cox-2 inhibitor	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Opiates	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
Injectibles	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no
	❑ yes	❑ no	❑ yes	❑ no	❑ yes	❑ no

Referrals

Surgical	❑ yes	❑ no	❑ N/A	Urgent?	❑ yes ❑ no
Other (indicate):					

Osteoarthritis

A Guide for People Living with Osteoarthritis

Effective Date: September 15, 2008

What is Osteoarthritis?

Osteoarthritis (OA) is the most common type of arthritis. It can happen in any joint but is most often in the hands, hips, knees and spine. In osteoarthritis, there is a breakdown of the cartilage on the ends of bones. Healthy cartilage is firm, rubbery and smooth. It acts as a shock absorber. The slippery surface of cartilage allows joints to glide easily. Usually in early OA there is no swelling. Later, bits of cartilage may break off and disturb other tissue in the joint. This can cause pain and swelling. Over time, the bones can change, creating bumps, called spurs. The cartilage may wear away completely and bones may rub together.

What causes Osteoarthritis?

Researchers are studying how the cartilage breaks down. They have found some enzymes that damage cartilage. These enzymes can occur with extra stress in the joint. Factors that increase your chance of getting OA include:

- Previous injury to the joint
- Repeated stress on the joint, such as heavy physical activity or being overweight
- Heredity, and
- Getting older.

What can I do about Osteoarthritis?

Learn about OA. Become skilled at setting goals and solving problems. These skills help you apply the things you learn. A self-management program, such as Arthritis Self-Management Program (ASMP) from The Arthritis Society is a good place to start. If not available or convenient, try other group or home-based programs for relaxation, weight control, and balancing exercise with rest to improve your comfort and function.

Regular exercise helps reduce pain and improve function because:

- strong muscles help protect painful joints, help maintain balance and prevent falls;
- joint movement helps nourish the cartilage;
- flexible muscles allow the body to use less painful positions; and
- fitness exercises help maintain body weight, reduce stress, improve sleep and reduce fatigue.

Consider walking, swimming, Pilates and Tai Chi.

Generally, a sign that you've done too much exercise is increased pain in the joint lasting longer than two hours after the exercise has ended. Next time do a bit less. If you have difficulty exercising, you may need advice from a physical therapist.

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Ministry of Health Services

An occupational therapist can advise you how to reduce stress to your joints while continuing your daily activities. This may include advice about:

- Methods to make daily tasks easier including tools such as jar openers;
- Proper posture, sleeping positions, and work station set up;
- Proper footwear and orthotics supports;
- Splints or braces to protect joints, and
- Getting a better sleep including mattresses, pillows and relaxation.

There are many medications available including creams and gels, acetaminophen (such as Tylenol®), non-steroidal anti-inflammatory drugs (NSAIDs) and injections. All medications have possible side effects whether taken alone or with herbal or over-the-counter medication. Your doctor will help you find a medication to reduce your pain with minimal risks. Your pharmacist can also help with medication questions. Your doctor may recommend surgery if the joint is significantly damaged or if your pain is not well controlled. Surgery for OA can include removing torn cartilage from the joint, realigning bones around the knee or replacing the joint with an artificial joint.

How do I learn more?

- The Arthritis Helpbook by K. Lorig and J. Fries (at libraries and bookstores and The Arthritis Society)
- Arthritis Information Line (toll free): 1-800-321-1433 (or 604-875-5051) or info@bc.arthritis.ca
- The Arthritis Society website: www.arthritis.ca/bc
- The Arthritis Resource Guide for BC website: www.argbc.ca
- Arthritis Foundation: www.arthritis.org
- Find a Physical Therapist in BC at www.bcphysio.org or call 604-736-5130
- Find an Occupational Therapist in BC at http://www.bcsot.org or call 604-736-5645 or 1-888-736-5645.
- Dial-a-Dietician at 1-800-667-3438 or 604-732-9191
- BC Primary Health Care Web site: http://www.primaryhealthcarebc.ca
- BC Health Guide Handbook or online at: www.bchealthguide.org.
- BC Nurse Line (24 hour advice & information) at 1-866-215-4700 or 604 215-4700 or hearing impaired 1-866-TTY-4700
- OASIS, Vancouver Coastal Health OsteoArthritis Service Integration System (Web site www.vch.ca/oasis)
- Arthritis Consumer Experts (website www.arthritisconsumerexperts.org)
- CAPA, Canadian Arthritis Patient Alliance (website www.arthritis.ca/capa)
- Telephone book: (1) Red Cross Equipment Loans & (2) Recreation Centres

Hint: When searching the internet for information, look for sites with ".edu", ".org" or ".gov". Universities and governments are often reliable sites. Be aware that some sites with .com may be selling products.

Content prepared by Mary Pack, Arthritis Program, Vancouver Coastal Health.
Illustrations prepared for BCMA© by Meike Boer Design

Hip Osteoarthritis

A Guide for People with Hip Osteoarthritis

Effective Date: September 15, 2008

What happens in hip osteoarthritis?

When a hip joint gets osteoarthritis (OA) the joint becomes painful and stiff and muscles become weak. When the hip is stiff, the lumbar spine (lower back) moves more. When hip muscles are too weak to keep the pelvis level during walking, the body may sway sideways with each step. These changes can increase low back discomfort. Keeping the hip joint flexible and strong helps balance forces in the joint, and nourishes the cartilage. It also helps reduce strain in other joints.

Common features of hip OA are:

- Pain and stiffness at the front of the hip or groin;
- Rotation stiffness that causes the toe to point outwards;
- Weakness of muscles which pull the leg out and keep the pelvis level;
- Weakness of the buttock muscles which pull the leg back, and
- Belly muscles too weak to stabilize the lower back.

What can I do about hip osteoarthritis?

Learn as much as you can about OA. Read *A Guide for People Living with Osteoarthritis* including the list of places to get more information.

- Maintain a healthy weight. When you walk fast or on stairs, the forces in your hip are seven times your body weight. Losing ten pounds means 70 pounds less pressure during those activities.
- A cane used in the opposite hand lowers hip pressures.
- Wear shoes that cushion and support. Consider custom insoles.
- Maintain aerobic fitness by walking, bicycling or swimming.
- **Try the exercises on the back of this page. Start gently and increase slowly.** If they don't help, or if they increase pain, ask your doctor to recommend a physiotherapist (PT). A PT assessment will identify where you are tight, which muscles are weak, how your body compensates and what causes pain. A personal exercise program can be created for you.
- If exercise causes more joint pain for over two hours, do less next time.

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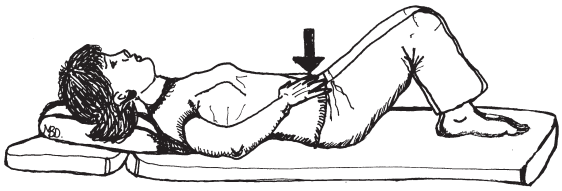
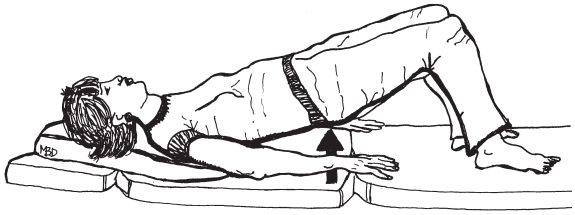
To strengthen, hold about 3 seconds and repeat 10 – 15 times. (3-4 times/week)

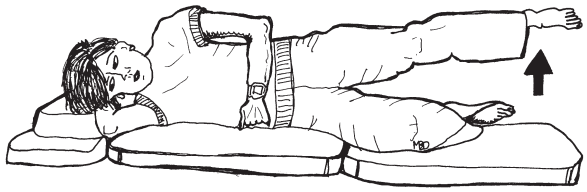
1. **Strengthen belly muscles**
   Lie on your back with knees bent and feet flat. Tighten lower belly muscles by pulling your belly button down to your spine. Breath normally.



2. **Strengthen hip muscles at back**
   Lie on your back with knees bent, feet flat and belly tight. Squeeze buttocks and lift hips off bed. If this is too easy, try it one leg at a time.

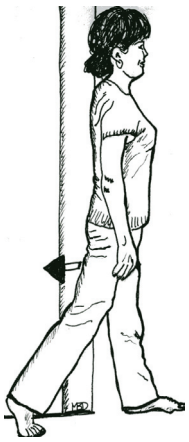


3. **Strengthen hip muscles at side**
   Lie on your side with lower leg bent and top leg in line with your body. Lift the top leg without rolling your pelvis. Don't lift leg high, just level.

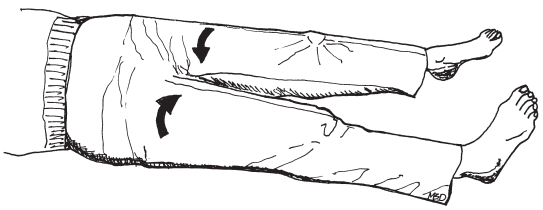


Hold stretches for 20 seconds. Repeat 2 –3 times. (daily)

4. **Stretch the front of your hip**
   Stand against a wall at an edge or doorway, so half your body leans against the wall. Tighten your belly muscles. Step back with the free leg just far enough to feel a stretch at the front of your hip. Keep your body touching the wall.



5. **Stretch hip rotation**
   Lie on your back. Slowly roll both knees and thighs inward, toward each other keeping knees straight. Return to starting position.



For advice about planning an exercise program, see *The Arthritis Helpbook* by Lorig and Fries, available at libraries, bookstores and The Arthritis Society.

Content prepared by Mary Pack, Arthritis Program, Vancouver Coastal Health.
Illustrations prepared for BCMA© by Meike Boer Design

Knee Osteoarthritis

A Guide for People with Knee Osteoarthritis

Effective Date: September 15, 2008

What happens in knee osteoarthritis?

Osteoarthritis (OA) is a disease of the cartilage. When a knee joint gets OA it feels stiff, sore and weak. Knee cartilage can have a healthy response to exercise. Forces in the knee joint influence the risk of osteoarthritis. Too much force can damage the cartilage and increase the risk of getting OA. This can happen if a joint is injured, or if a person is overweight. People with chronic knee pain are more likely to develop OA if their knee muscles are weak and the joint is stiff. Exercise is important to keep the muscles strong, the joint flexible and the cartilage nourished.

Common features of knee OA are:

- weakness when getting up from a chair;
- pain when going up or down stairs; and
- stiffness when trying to bend or straighten the knee.

What can I do about knee osteoarthritis?

Learn as much as you can about OA. Start by reading *A Guide for People Living with Osteoarthritis* including the list of places to get more information.

- Maintain a healthy weight. If you are heavy, each pound of weight you lose can result in 4 pounds less force in your knee at each step.
- Keep your thigh muscles strong and your knee flexible so it bends and straightens all the way. Good balance is important too.
- Wear good shoes that absorb shock and have firm support around heels. Consider orthotics in shoes and a knee brace if pain continues.
- Avoid sitting on low chairs. You can protect a knee by using a raised toilet seat and a cane. Consider avoiding stairs.
- Maintain aerobic fitness by walking, bicycling or swimming.

Try the exercises on the back of this page. Start gently. Increase slowly.

- If exercise causes more joint pain for over 2 hours, do less next time.
- If these exercises do not help or if they increase your pain, ask your doctor to recommend a physiotherapist (PT). A PT assessment will identify where you are tight, which muscles are weak, how your body compensates and what causes pain. A personal exercise program can then be created for you.

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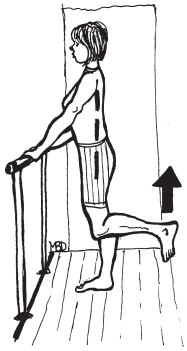
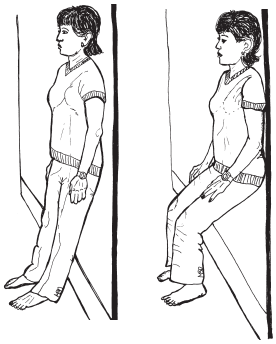
To strengthen, hold about 3 seconds and repeat 10 – 15 times. (3-4 times/week)

1. **Strengthen knee flexors - standing**
   Stand on one leg while holding onto a firm object for support. Keep your body upright and abdomen tucked in. Bend the opposite knee, pulling your foot toward your buttock as far as possible. If this is easy you can put a small weight on your ankle or wear a heavy shoe.

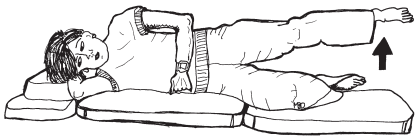


2. **Strengthen thigh muscles**
   Stand with your back against a wall. Feet are shoulder width apart and about 6 inches from the wall. Keep your abdominals tight and slide down the wall until your knees are abut 30 – 45 degrees. Only go as far as you can feeling safe and without pain. A rolled towel between your knees helps alignment. Some people may need additional support – such as a nearby countertop to assist in returning to standing.

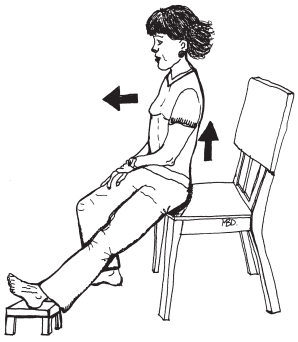


Hold stretches for 20 seconds. Repeat 2 –3 times. (daily)

3. **Stretch knee & gently tighten thigh**
   Lie on your back with your legs straight. Pull your toes up towards you and push the back of your knee down into the bed or floor. When the back of your knee is pushed into the bed or floor your heel should be able to rise a bit.



4. **Stretch Hamstring muscles**
   Sit on the edge of a chair, with one leg out straight and your foot on a low stool or thick book. Pull toes up and keep the low back straight. Slowly bend forward from your hips without twisting your pelvis. You should feel the stretch at the back of your leg and knee.



For advice about planning an exercise program, see *The Arthritis Helpbook* by Lorig and Fries, available at libraries, bookstores and The Arthritis Society.

Content prepared by Mary Pack, Arthritis Program, Vancouver Coastal Health.
Illustrations prepared for BCMA© by Meike Boer Design

Hand Osteoarthritis

A Guide for People with Hand Osteoarthritis

Effective Date: September 15, 2008

What happens when osteoarthritis is in the hand?

Osteoarthritis (OA) is a disease of the cartilage. Without healthy cartilage, pressure is put on bones. Ligaments across joints may stretch. The finger joints may have periodic, painful swollen cysts. Eventually bone spurs or nodes grow around the joint and it may become crooked and stiff. OA in the hand usually affects the two sets of joints that are closest to the fingertips. The base of the thumb, near the wrist, is a common place for OA. Wrist OA may occur after injuries to the wrist.

Common features of hand OA are:

- finger joints get bigger, these are nodes or bone spurs;
- pain or aching at rest or when holding things;
- stiffness in the fingertips causing difficulty making a fist; and
- stiffness of the thumb so it is difficult to hold a large glass or bottle.

What can I do about Hand Osteoarthritis?

Learn as much as you can about OA. Read *A Guide for People Living with Osteoarthritis* including the list of places to get more information.

- Exercise your hands to stretch tight joints and to keep the cartilage healthy. Exercising in warm water may help stiffness and pain.
- Protect joints by using jar openers, key holders and large handled tools. Avoid extreme or prolonged positions and repetitive activities.
- Consider splints for your thumb or wrist.
- **Try the exercises on the back of this page. Start gently. Increase slowly.** If they don't help, or if they increase pain, ask your doctor about a Certified Hand Therapist, Occupational Therapist (OT) or Physiotherapist (PT). These specialists will assess you, teach you a personal exercise program and give advice about joint protection.
- If exercise causes more joint pain for over 2 hours, do less next time.

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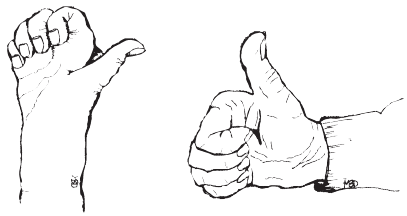
Hold stretches for 20 seconds. Repeat 2 – 3 times. (daily)

1. **Stretch your fingers**
   Gently curl the tips of your fingers down to touch the base of each finger, then the middle of the palm then open to the straight position. Do this in a sink of warm water.

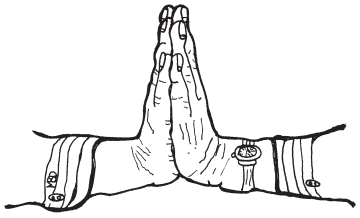


2. **Stretch your thumb**

   Touch the tip of your thumb to the tip of each finger, making a circle (not a "D"). Open your hand completely after each touch.

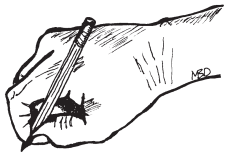
3. **Stretch your wrist**

   Put your palms together with your fingertips near your chin. Slowly lower your hands towards your waist, by moving your elbows apart. Keep your palms together to stretch the wrist. Watch yourself in a mirror to see if both hands are equal.

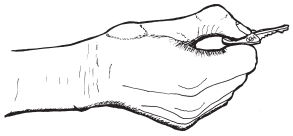


Protect your joints

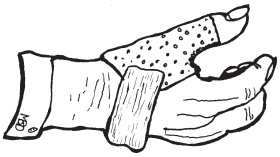
A good, stable thumb position



An unstable thumb position to avoid



A good thumb splint



It's good to use large handles

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Osteoarthritis

Choosing a Complementary Therapy

Effective Date: September 15, 2008

Complementary therapies are activities or supplements that are added to or used as an alternative to medical care. Generally, they have not been validated by quality scientific research so the risks and any benefits are not clear. The use of complementary therapy is not endorsed. This guide is provided for your information. It is a guide about questions to ask and precautions to take if you are considering the use of a complementary therapy.

Complementary therapies include a wide range of treatments such as:

- dietary changes;
- vitamins, minerals, herbal supplements, etc.;
- techniques such as relaxation, visualization, meditation; and
- magnets, massage, therapeutic touch, etc.

What should I consider before starting?

Before starting, make sure that you are already eating healthy food, exercising regularly and following the advice of your health care providers. Nutrients from food sources are absorbed best so improve your diet before adding dietary supplements.

1. **Have a specific goal when trying a new therapy.**
   - Know the specific action and benefit you are trying to achieve and the timeline.

2. **Do your research first.**
   a. Use reliable Internet resources, such as university, government or non-profit agency websites (e.g. The Arthritis Society).
   b. Use reliable books or written publications/journals.
   c. Ask questions.
      - Is the evidence offered convincing to the general scientific/medical community? If not, why not?
      - How much, how often and how long is necessary to get benefit?
      - How much will the consultations, procedures, and supplements cost?
      - Does it interact with other medications/supplements or therapies?
      - What are the possible risks and side effects?
      - Will it interfere with other medical conditions?
      - Is this therapy accepted by the broad medical community?

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3. **Inform your health care providers.**
   a. Begin by discussing options with your doctor, nurse, pharmacist, physiotherapist, etc.
   b. Tell your health care providers about all complementary therapies you are using.
   c. Provide a list of all current medications, supplements and therapies that you are taking or are not taking that were prescribed.
   d. Inform your health care provider of any prescribed therapies you are not using.

4. **Use only health products that have proper certification.**
   Products with a DIN (Drug Identification Number) have been supported by good-quality studies for safety and effectiveness. Products with a NPN (Natural Health Product Number), USP number (US Pharmacopeia), or Consumers Lab logo, or NSF™ international certification may ensure quality but do not ensure effectiveness.

5. **Take the same precaution you would with conventional medicine.**
   Supplements should be treated as drugs. They may have side effects.

6. **Try only one new therapy at a time and assess benefit.**
   Continue the therapy only if it works, with no side effects, and is affordable.

7. **Before surgery, stop dietary/herbal supplements for several weeks.**
   Many supplements have biological effects (such as increased bleeding) that interact with medicines used during or after the operation. Provide a list of all current medications, supplements and therapies to your health care providers.

Resources (also see the Patient Guide: *A Guide for People Living with Osteoarthritis)*

- Arthritis Today Supplement Guide (updated every 1–2 years)
- The Arthritis Foundation's Guide to Alternative Therapies. Horstman, J. (1999)
- Mayo Clinic on Chronic Pain, New York: Kensington. Swanson, DW, (1999).
- www.nccam.nih.gov (National Centre for Complementary & Alternative Medicine)
- http://dietary-supplements.info.nih.gov/ (Office of Dietary Supplements)
- www.mayoclinic.com
- www.canadian-health-network.ca
- www.quackwatch.org

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SUMMARY OF GUIDELINE

Effective Date: September 15, 2008

Osteoarthritis in Peripheral Joints – Diagnosis and Treatment

For full Guideline please go to website: http://www.BCGuidelines.ca

DIAGNOSIS

- OA is a clinical diagnosis
- Consider history, physical exam, exclusion of other diagnoses and impact of disease
- Early diagnosis is important for modifiable factors (weight loss, exercise programs and self-management)

INVESTIGATIONS

- No test is reliable for diagnosis
- X-rays may indicate OA, but may not relate to symptoms
- X-rays are generally not useful except for alternate diagnosis or orthopaedic referral
- When x-rays are necessary, specify they are for OA*
- Lab tests do not diagnose OA and are used mainly to monitor medications
- Joint aspirations may be used to rule out other conditions

MANAGEMENT

Patient education

- Explain OA as a chronic disease process
- Encourage self management & provide resources
- Encourage weight loss and diet plan if needed

Rehabilitation

- Recommend exercise programs (ROM, strengthening & aerobic) with joint protection
- Recommend assistive devices when needed

Medications

- There is no evidence that NSAIDs alter the natural course of arthritis. They provide symptom relief but are associated with some risks (GI & CV). Avoid long-term daily NSAID therapy
- Begin with monotherapy PRN and add/substitute medications depending on response and side effects
- Mild or moderate symptoms:
  - Acetaminophen max 4 g/day (lower dose where there is liver disease, alcohol abuse and for the elderly)
  - NSAIDS/Cox-2 inhibitors. Match adverse effects with patient history. Avoid long term daily use
  - Consider risks and benefits of gastroprotection
  - Joint aspiration and/or hyaluronic acid injections
  - Topicals (capsaicin or NSAIDs)
- Severe symptoms:
  - Use combination therapy as above and reassess
  - Intra-articular corticosteroid injections
  - In complex or difficult cases, consider referral to a rheumatologist for assistance with medication and analgesia titration, complex aspiration/injection procedures, and/or corticosteroid or hyaluronic acid injections

Indications for Referral:

- Internist or Rheumatologist – for red flag conditions, complex/difficult cases, complications
- PT– for assessment and specific exercise recommendations
- OT– for assistive devices and home or work adaptations
- Dietician – for weight management
- Orthopaedic Surgeon – failure of non-operative program, increasing function restrictions, significant abnormal findings on exam, progression of disease on x-ray, considering use of opiates & intra-articular injections. The indications for arthroscopic knee surgery in patients with OA are similar to patients without arthritis.

Follow-up regularly and coordinate care

* Indicate that the x-rays are for OA – For knees they must include standing AP, lateral, and skyline. For hip, specify OA hip series including lateral view of the affected hip and upper 1/3 of femur.

OVER ➡

Osteoarthritis (OA) Medications Table

Effective Date: September 15, 2008

This Medication Table pertains to the Guideline *Osteoarthritis in Peripheral Joints – Diagnosis and Management*
www.BCGuidelines.ca

Regularly review current listings of Health Canada advisories, warnings and recalls at: http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/index_e.html

DRUG	DOSE	APPROX. COST/MONTH	PHARMACARE COVERAGE	SERIOUS SIDE EFFECTS
Non-Narcotic Aanalgesics – There is no strong evidence to support that oral NSAIDS differ from paracetamol/acetaminophen in pain relief[1]				
acetaminophen	650-1000 mg q4-6h OR SR caps 1300 mg q8h; max 4000 mg/day	$5 - $13	full for OA only via SA	rare elevations of INR when using warfarin anticoagulants, liver toxicity
mefenamic acid√	250 mg PO q6h prn (generally 7 day max.)	$0.34/tab		Similar to NSAID risks below
NSAIDs – Acetaminophen is the first choice. Trials have not demonstrated consistent superiority of one NSAID over another[2] ⟷				The side-effects listed below apply to NSAID class of drugs: • GI ulceration, perforation with or without bleeding; • severe diarrhea • hepatotoxicity • renal impairment • cardiovascular events • CHF; angina; hypertension; arrhythmia; bronchospasm; pulmonary edema • blood dyscrasias • thrombocytopenia • erythema multiforme • symptoms of aseptic meningitis • blurred or diminished vision • fluid retention
acetylsalicylic acid (enteric-coated)√	2600-5400 mg PO daily, divided q4-6h	$3-$6	full	
ibuprofen√	300-800 mg PO tid-qid; max 2400 mg/day	$3-$10	full	
naproxen√	250-500 mg bid-tid max 1500 mg/day	$10-$14	full	
diclofenac√	50mg PO bid-tid or 75mg bid; max 150 mg/day	$24-$40	PC or full with SA	
diflunisal√	250-500 mg PO q12h	$27-$32	PC or full with SA	
flurbiprofen√	50-100 mg PO bid-tid; max 300 mg/day	$16-$32	PC or full with SA	
indomethacin√	25-50 mg bid-tid; max 200 mg/day	$5-$15	PC or full with SA	
ketoprofen√	75 mg PO tid or 50 mg PO qid;max 300 mg/day	$21	PC or full with SA	
meloxicam√	7.5-15 mg PO od	$17-$20	PC or full with SA	
nabumetone√	500 mg	$30-$60	PC or full with SA	
piroxicam√	20 mg PO qd	$22	PC or full with SA	
sulindac√	150-200 mg PO bid; max 400 mg/day	$24-$30	PC or full with SA	
tiaprofenic acid generics only for 300 mg	Either 300 mg bid or SR 600 mg od	$25-$40	PC or full with SA	
tolmetin√	200-600 mg PO tid; max 1800 mg/day	$40-$80	PC or full with SA	
etodolac	300 mg PO bid	$51	none	GI bleed, erythema multiforme, bronchospasm, hepatotoxicity
ketorolac√	10 mg PO q4-6h; max 40 mg/day; short-term use only	$59	none	peptic ulcer, with/without bleeding; fatalities in the elderly
Cox 2 inhibitors				
celecoxib (no generics)	200 mg PO od or 100 mg bid	$42	none; full with SA	as above in NSAIDs
NSAIDs & OtherTopicals				
diclofenac sodium	40 drops, applied qid	$50	none	colitis, arrhythmia, 1% may develop hepatitis
menthol	apply tid-qid	$7.40/50g tube	none	Allergic skin reaction
capsaicin	apply tid-qid to unopened skin	$20-$40	none	Skin irritation; sun sensitivity
Intra-Articular Medications (injection): steroids				
triamcinolone	2.5-40 mg intra-articularly	$2.60-$5.50 per injection	full	anaphylaxis, masking of infections
Viscosupplementation (Devices as per Health Canada)				
hyaluronic acid	1-3 injections	$200-$400 per vial	none	allergic reaction

√ Generics available

Pharmacare coverage: full= full coverage, PC=partial coverage, SA=special authority, none=no coverage

*Special Authority criteria and forms are available on the PharmaCare Web site at http://www.health.gov.bc.ca/pharme/sa/criteria/formsindex.html

Note: Cardiovascular risk with NSAIDS and Cox-2 inhibitors and GI risk with NSAIDs*

*References presented in full guideline

1. Tanna, S. Osteoarthritis opportunities to address pharmaceutical gaps. 2004. Available at URL: http://mednet3.who.int/prioritymeds/report/background/osteoarthritis.doc. Accessed October 30, 2008.
2. The University of British Columbia Therapeutics Initiative. Should we be using NSAIDS for the treatment of Osteoarthritis and "Rheumatism". Therapeutics Letter 1995;4:1-4. Available at URL: http://www.ti.ubc.ca/PDF/4.PDF. Accessed October 30, 2008.

Body Mass Index