# ACE Clinical Link Newsletter
# May 2018

**Created and distributed by the Mary Pack Arthritis Program: A newsletter for health professionals working with people with arthritis**

## Editor's Message

Comments or questions always welcomed - Paul.Adam@vch.ca.

## Inflammation Raises Cardiovascular Event Risk

An article in the January issue of The Rheumatologist described how inflammation is thought to raise the risk of cardiovascular events, even in the absence of traditional heart risk factors. Rheumatoid arthritis (RA), lupus, and ankylosing spondylitis are three of the rheumatic diseases thought to have an increased risk for cardiovascular disease (CVD), and the mechanisms by which this occurs are considered to vary in all three diseases. Surprisingly, a low body mass index (BMI) is also a risk factor for heart disease in RA patients, as it is believed that inflammation itself influences the low BMI - http://bit.ly/2GmrbQy

## Love Your Heart

As noted above, people with rheumatoid arthritis (RA) or other types of inflammatory arthritis (IA) are at an increased risk for CVD. A new online interactive video program called, "Love Your Heart," has been made available by the National Rheumatoid Arthritis Society in the UK. The aim of this free online tool is to help people with RA/IA to understand and manage an increased risk of CVD - https://www.nras.org.uk/loveyourheart

The online program includes videos of past program participants who describe the benefits that resulted from taking the program, a QRISK2 assessment (a prediction algorithm for CVD), videos from experts describing lifestyle management strategies for reducing CVD risk, and a tool for setting and tracking lifestyle behavior change goals.

## ACE Clinical Exchange - PT-Prescribed Exercise for Knee OA via Skype

Can a Skype-related intervention address access issues related to geography, inability to pay, and the limited availability of trained therapists? An Australian study recruited individuals with persistent osteoarthritis (OA) knee pain to answer this question. The intervention consisted of 7 Internet-based, Skype-delivered PT sessions over a 3-month period. Participants were prescribed a home-based strengthening program to be done 3 times per week. Exercises were chosen based on participant goals, clinical history, and observation of walking, sit-to-stand, and squat tasks. Exercises were demonstrated by the therapist and participants then performed the exercise while the therapist watched. At subsequent sessions the exercises were reviewed and progressed. The study found:

- Both participants and therapists found Skype-delivered care to be convenient, time-efficient, flexible and accessible.
- Physical examination focused on ADL with therapists observing participants' performing functional tasks within the home.
- Therapists were forced to modify usual habits and rely more on information shared by the participant rather than gathering data from a hands-on assessment.

- Therapists perceived that participants took an active role in managing their OA, and thus were more likely to be adherent.
- Suggestions for improving the intervention included more early-stage consultations, extended treatment (i.e., longer than 3 months), initial in-clinic visit prior to Skype consultations, and development of an accompanying website with resource materials.

The following points were raised during and after the ACE Clinical Exchange:

- It was thought that this type of intervention could also have applicability for OT.
- No health authority in BC supports video chat and voice-calling services using Skype and Facetime because these systems do not provide consistent end-to-end encryption, and have no audit trail to identify possible data theft.
- WhatsApp has end-to-end encryption, and text message and video chat capabilities.
- Robin Roots, a physical therapy clinical instructor at UNBC in Prince George has used Physitrack with a Northern BC First Nations population - http://bit.ly/2gHsUCi - this site combines exercise prescription with patient education materials, outcomes analysis, and a telehealth component that features secure video, call recording, live exercise demonstrations, and secure real-time messaging. A PABC review of the software noted many benefits. The primary detriments were:
    - It is an American company and while HIPPA-compliant, it is unclear if it is FIPPA or PIPPA compliant.
    - The software has a feature that requires users to consent to "acceptance of terms of use," but does not appear to have "consent to the telehealth treatment."
    - Enhancements to the tool have been promised including a goniometer for the measurement of motion, file transfer capability, and a payment mechanism.
- Mari, a physical therapist who works on Haida Gwaii, stated that a colleague uses doxy.me - https://doxy.me/features - this American product has a free version that supports video patient visits and live messaging. Added paid features (individual & clinic rate) include real-time text, live image capture, two-way screenshare, live file transfers, and live payments. This product is HIPPA-compliant.
- In addition to barriers related to privacy, other noted barriers were that use would be difficult for patients with hearing, sight, or technology impairments.

## You Asked Us

Question: A physical therapist member of ACE asked when patients who have had a Total Knee Arthroplasty (TKA) are allowed to start kneeling, and whether there were circumstances that would delay kneeling for some patients, or prevent it altogether.

Answer: Wendy Watson, PT Clinical Educator at the Osteoarthritis Service Integration System (OASIS) program, stated that she advised OASIS patients to avoid deep kneeling and squatting in the first 3 months, in order to minimize additional swelling. She also said that Vancouver Coastal Health surgeons do not have any restrictions on kneeling post-TKR, and that clients can kneel when (and if) it is comfortable for them to do so. Marie Westby, PT Teaching Supervisor at the Mary Pack Arthritis Program, added that it's usually wound healing and pain that prevents a patient from kneeling before 3 months. Marie also recommended 2 journal papers:

> **White L, Stockwell T, et al.** Factors preventing kneeling a group of pre-educated patients post total knee arthroplasty. *J Orthopaed Traumatol* 2016;17:333-38.

**Calvert N, Milne L, Kuster M**. A comparison of kneeling ability after lateral or midline incisions in total knee arthroplasty. *Eur J Orthop Surg Traumatol* 2016;26:915-9.

## Internet Cognitive Behavioral Therapy for Depression

A 2012 review in *Best Practice & Research Clinical Rheumatology* found that the prevalence of clinical anxiety and clinical depression in rheumatic diseases is approximately twice the rate observed in the general population - http://bit.ly/2HupFv1

A study by O'Moore et al. (2018) that I've summarized on page 5 in the *Articles of Interest* section found that an internet-based cognitive behavioral therapy (iCBT) program for depression not only reduced depression in patients with knee OA, but also improved pain, stiffness, and physical function at follow-up.

While the iCBT program in the O'Moore study is different than Kelty's Key, an iCBT service developed by Vancouver Coastal Health that I first mentioned in the March ACE Clinical Link newsletter, it does show the benefits that can accrue from use of an iCBT program. Kelty's Key provides support for patients who are struggling with anxiety, depression, insomnia, and/or panic attacks. Each course is divided into a number of different modules. For example, the course on depression has modules entitled: *What is Depression? Get Active, Problem Solving, Thought Challenging,* and *Understanding Medication* https://www.keltyskey.com/

## Inflammation in OA: Signs & Treatment Opportunities

The March issue of The Rheumatologist summarized research that was presented last November at the American College of Rheumatology Annual Meeting. The research involved participants with a meniscal tear (MT) on MRI, OA on MRI or radiograph, and knee symptoms. MRI scans were used to identify baseline effusion synovitis and change in effusion synovitis over 18 months. The study found that effusion-synovitis status at baseline and 18 months was related to worsening cartilage damage in patients with MT and OA, regardless of study treatment (i.e., arthroscopic partial meniscectomy vs. PT) - http://bit.ly/2FECGBI - Take-home messages:

- Inflammation likely plays a bigger role in cartilage damage than previously thought.
- A significant minority of patients likely will not develop effusion-synovitis.
- Effusion-synovitis is an important predictor for disease activity based on knee MRI.
- Steroid injections could be beneficial for certain patients with OA of the knee who exhibit persistent effusion synovitis.

## Articles of Interest

**Ackerman IN, Bohensky MA, de Steiger R, et al.** Lifetime risk of primary total hip replacement surgery for osteoarthritis from 2003 to 2013: A multinational analysis using national registry data. *Arthritis Care & Research* 2017;69(11):1659-67. The aim of this study was to compare the lifetime risk of total hip replacement (THR) surgery for osteoarthritis (OA) between countries, and over time. Data on primary THR surgical procedures performed for OA in 2003 and 2013 were pulled from national arthroplasty registries in Australia, Denmark, Finland, Norway, and Sweden. Lifetime risk of THR was determined using registry, life table, and population data. In 2003, lifetime risk of THR ranged from 8.7% (Denmark) to 15.9% (Norway) for females, and from 6.3% (Denmark) to 8.6% (Finland) for males. Other than females in

Norway, where lifetime risk started and remained high, lifetime risk of THR increased for both sexes and in all countries from 2003 to 2013. In the discussion section, the authors suggest possible reasons for the increase in lifetime risk of THR, some of which include:

- In Finland, the increased lifetime risk of THR over time can be partially explained by the introduction of hip resurfacing in the early 2000s, which led to a broadening of THR indications to include younger OA patients.
- Referring physicians and patients are increasingly aware of the value of THR.
- Improvements in prosthesis longevity might impact a surgeon's decision to operate, and a patient's decision to undergo surgery, with excellent 15-year prosthesis survival rates now reported.

The authors also suggested that the higher lifetime risk of THR in females was most likely due to the fact that hip OA is more common in females than males.

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**George MD, Giles TJ, Katz PP, et al.** Impact of obesity and adiposity on inflammatory markers in patients with rheumatoid arthritis. *Arthritis Care & Research* 2017;69(12):1789-98. The aim of this study was to determine the extent to which obesity biases disease activity biomarkers like C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) in patients with RA. The rationale is that inflammatory biomarkers that are elevated due to adiposity may lead to an inaccurate assessment of clinical RA disease activity. Two RA cohorts were evaluated, and associations between body mass index (BMI) and inflammatory markers were also evaluated in the general population. The key results from this study were as follows:

- Among women, BMI as a continuous variable was positively associated with CRP level in both RA cohorts and in the general population after adjustment for age, race, and smoking status.
- In particular, women who were severely obese (BMI $\geq$35 kg/m$^2$) had a significantly higher CRP level than women with normal BMI (20 - 25 kg/m$^2$) in both RA cohorts and in the general population. Further adjustment for glucocorticoid and DMARD use did not substantially change the results.
- Among men with RA, BMI was not associated with CRP level, although it was positively associated with CRP level among men in the general population (although the strength of the association was weaker than among women).
- ESR was associated with BMI among women in the general population and a similar pattern of higher ESR in higher BMI categories was observed among women in the 2 RA cohorts.
- ESR was modestly associated with BMI among men in the general population. ESR was not associated with BMI among men in one of the RA cohorts, and was negatively associated with BMI among men with RA in the other cohort.

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**Badley EM, Canizares M, Perruccio AV.** Population-based study of changes in arthritis prevalence and arthritis risk factors over time: Generational differences and the role of obesity. *Arthritis Care & Research* 2017;69(12):1818-25. The objectives of this study were to 1) investigate cohort effects in arthritis prevalence across 4 birth cohorts: World War II (born 1935-1944), older baby boomers (born 1945 - 1954), younger baby boomers (born 1955 - 1964), and

Generation X (born 1965 - 1974) and 2) determine whether any birth cohort effects in arthritis prevalence were associated with differences in risk factors over time or period effects. The study analyzed biannually collected data from the longitudinal Canadian National Population Health Survey (1994 - 2011). Data included self-reported arthritis diagnosed by a health professional, risk factors (years of education, household income, smoking, physical activity, sedentary behavior, and/or body mass index [BMI]), and survey year as an indicator of period. The study found the following:

- More recent cohorts had successively a greater prevalence of arthritis.
- Generation X and young baby boomers had higher education levels and/or incomes than their predecessors.
- Those with higher education and/or income were less likely to report arthritis.
- Of the behavioral risk factors examined, only BMI and smoking were statistically significant. The odds of reporting arthritis increased with increasing levels of BMI. Additionally, nonsmokers were less likely to report arthritis than current smokers.

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**Meade T, Manolios N, Cumming S, et al.** Cognitive impairment in rheumatoid arthritis: A systematic review. *Arthritis Care & Research* 2018;70(1):39-52. Recent studies have suggested that there may be a link between RA and cognitive impairment. If true, it may be related to the disease itself (e.g., inflammation in the brain), cardiovascular comorbidity (e.g., metabolic syndrome), clinical symptoms (e.g., pain or depression), or medical management (e.g., long-term adverse effects like neurotoxicity). The aim of this systematic review was two-fold: to determine the rates and types of cognitive impairment in adults with RA, and to identify which demographic, clinical and psychological factors may be associated with cognitive impairment in adults with RA. Eighteen psychological, health, medical, and cross-disciplinary databases were searched. The initial search produced 1,980 articles, of which 15 articles were considered eligible and thus were included in the systematic review. These 15 studies reported on 749 participants with RA with sample sizes ranging from 13 to 157 participants. The prevalence of cognitive impairment could not be determined as only 3 of 15 studies included relevant information. A cognitive impairment effect size analysis found that clinically significant (large) effect sizes were noted across 3 (attention, memory, and verbal function) of 5 cognitive impairment domains between the RA and the control groups. The study concluded that while there is evidence of cognitive impairment in adults with RA, additional studies are required to confirm prevalence rates and determine potential mechanisms.

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**O'Moore KA, Newby JM, Andrews G, et al.** Internet cognitive-behavioral therapy for depression in older adults with knee osteoarthritis: A randomized controlled trial. *Arthritis Care & Research* 2018;70(1):61-70. The purpose of this study was to determine the efficacy of an internet-based cognitive-behavioral therapy (iCBT) program for depression in older adults with osteoarthritis (OA) of the knee and comorbid major depressive disorder (MDD). Study eligibility criteria included age ≥50 years, a self-reported diagnosis of symptomatic knee OA based on radiographic criteria and knee pain on most days, and a diagnosis of major depressive disorder based on a Mini-International Neuropsychiatric Interview (MINI). Exclusion criteria included patients not on a stable does of antidepressant medication or were currently receiving CBT for depression. Participants meeting the study criteria were randomized to one of two groups: OA

treatment as usual + iCBT, or the OA control group who received treatment as usual. The iCBT program used in this study was the Sadness Program, which has been validated in several clinical efficacy and effectiveness trials. Outcome measures included the PHQ-9 (self-reported depression severity), the K-10 (general psychological distress), the physical (PCS) and mental (MCS) health component scores of the 12-item SF-12, the Arthritis Self-Efficacy Scale, and the WOMAC (OA-specific pain, stiffness and physical function). Forty-four participants were in the iCBT arm of the study and 25were in the usual treatment arm. Intervention participants who received iCBT experienced fewer depressive symptoms, less distress, and improved overall mental health compared with those receiving usual care. Intervention participants were also found to have improved OA-related self-efficacy, pain, stiffness, and physical function compared to the usual care group.

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