

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

Editor's Message

This issue of the ACE Clinical Link Newsletter should hopefully have something for everyone. One article describes the potential future impact of 3D printing with a particular focus on splinting and aids for daily living. There are also several exercise-related pieces including exercise therapy for knee OA, the potential benefits of utilizing exercise booster sessions in your clinical practice, the Good Life with osteoarthritis in Denmark (GLA:D) program, and information on the EQUIP-TJR study. A couple of articles have a nice tie-in to last February's ACE Clinical Exchange on the topic of Managing Fibromyalgia, specifically one that looks at the potential role of vulnerability in chronic pain patients and another that focuses on the potential healing power of gratitude. Finally, I've included an article that describes strategies for counselling patients on smoking cessation and another that outlines tips for managing young adult rheumatology patients.

Future editions of the ACE Clinical Link Newsletter will be shorter, but disseminated more frequently, i.e., every 2 to 3 months. Please keep in touch – Paul.Adam@vch.ca

Are you GLA:D it's coming to a town near you? If you haven't heard of it yet – you likely will soon!



Good Life with osteoArthritis in Denmark (GLA:D™) is an evidence-based education and supervised neuromuscular exercise program delivered by certified physiotherapists and other qualified providers. It was developed in Denmark

in 2013 with the aim of implementing guideline recommendations for the treatment of knee and hip OA in clinical practice. The program consists of 2-3 education sessions and 12 supervised neuromuscular exercise sessions over 8 weeks for patients delivered by a trained clinician. A national data base tracks outcomes with data from baseline, 3 and 12 months.

The Canadian Orthopaedic Foundation holds the GLA:D™ licence in Canada with implementation, including the certification and management of the database, being undertaken by Bone and Joint Canada. Training sessions have been hosted in five provinces with sites launching in Ontario, Alberta, Nova Scotia, New Brunswick and BC. In February this year, the first training workshop took place in Vancouver with 43 physiotherapists receiving the training. Since the course 8 sites have launched with more clinics undertaking the preparation work to launch in the fall. The program is appropriate for individuals with mild to severe symptoms from hip and

or knee osteoarthritis and as such is being launched in private and public centres across the province. The locations of clinics can be found at: <http://gladcanada.ca/index.php/find-nearest-glad/>

In BC, Dr. Lynne Feehan, Lead, Clinical Research, Fraser Health is one of many researchers across Canada who will be looking at the results of the program for specific patient populations.

The GLA:D BC Implementation Steering Committee is co-chaired by Nancy Cho (VCH Physiotherapy Practice Lead) and Charla Gaudet (NHA Physiotherapist). Their role is to work with Bone and Joint Canada and The Arthritis Society of BC to coordinate the implementation for sites across BC.

A recent evaluation of 9,825 patients in the GLA:D registry in Denmark showed that GLA:D decreased pain intensity by 12.4 points (on 100 point scale) and quality of life by 5.4 points (100 pt scale) at 3 months (Skou ST et al. 2017) on the HOOS/KOOS scales. Longer term follow-up revealed more benefits with quality of life improving by 9.4 points from baseline. Small changes were seen at 3 months for walking speed over 40 metres (2.5 secs) and 30 sec chair stand test (2.3 reps) and self-reported physical activity (PA). The registry data also indicated that fewer patients took painkillers following the exercise program and fewer were on sick leave at 12 months following GLA:D compared with the year prior to GLA:D. These results are sustained at 12 months showing that the program has long term positive effects. At 12 months, there were no changes in self-reported PA from baseline based on the percentage of participants meeting PA guidelines thus stressing the need for this program, like so many others exercise interventions, to incorporate strategies to help participants sustain increased PA levels in the long term.

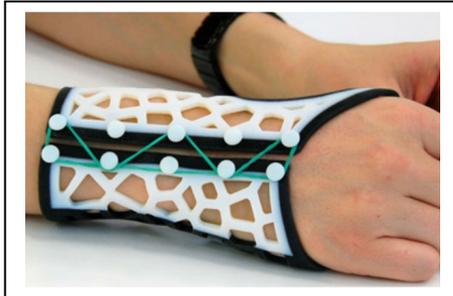
Reducing pain and improving function are critical for encouraging and supporting people in being more physically active and managing their health overall. It is important for all healthcare professionals to promote regular PA among their patients with arthritis and to bring up the conversation frequently in clinical encounters. Stay tuned for an update on the **MOVE More. Sit Less.** online repository of resources to help providers counsel and support their patients with chronic conditions to be active.

If you're interested in learning more about GLA:D training and programs contact Rhona McGlasson at RhonaMcGlasson@gmail.com or go to: <http://gladcanada.ca>

Can 3D Printing have an Impact on your Practice?

The July 2016 issue of The Rheumatologist had a fascinating article on the current state of [3D printing in rheumatology](#), with a particular focus on splinting, aids for simplifying daily activities, and joint replacements.

- Splinting: one story in the article described Dr. Abby Paterson’s use of 3D printing to create wrist splints for patients with rheumatoid arthritis. Some problems with conventional plastic splints are that they’re often poorly ventilated and usually difficult to clean, especially if they incorporate a padded lining. To construct a 3D-printed splint, Dr. Paterson uses 3D laser scanning or other optical scanning techniques to produce a high-resolution image of the patient’s arm. Using this data, a computer-aided design program converted the scanned data into a 3D model from which the splint design was created. Dr. Paterson’s team is currently working with hand therapists to develop a clinician-friendly software program to simplify the splint design process. Some of the benefits of creating splints using 3D printing are that they can be made of multiple colours and materials, thus making them potentially more attractive and easily washable. They can also be made with a lattice effect to aid breathability. As of yet, I am not aware of any companies in British Columbia that are using this technology to create 3D splints, however if you know of a company that is doing so, please let me know.



- Aids for simplifying daily activities: the 3D Printing Lab of Politecnico di Milano is one of many individuals and groups that are exploring the development of 3D-printed aids for people with arthritis. These individuals and groups have made some of their designs available for download on Thingiverse. Designs that are currently available include a key holder, pop can opener, jar openers, and many more - <http://www.thingiverse.com/search/page:1?q=arthritis&sa>



- Joint replacement: China’s Food and Drug Administration recently approved a 3D-printed, titanium alloy-based acetabular cup prosthesis for the hip joint. And in Britain, Metalysis and TWI are two companies collaborating on

working with a bio-inert powder form of the metal tantalum. While 3D-printed joint replacements do not appear to be commercially available at this time, if proven effective, they offer the possibility of reduced costs and more personalized joint replacements.

Exercise Therapy for Knee OA

The July 2016 issue of *The Rheumatologist* also had an article summarizing the optimal combination of [exercise therapy for knee OA](#). The article reviewed the literature in relation to delivery systems, mode and dosage of exercise therapies, supplementation of exercise with manual therapies or other techniques, and strategies for sustaining benefits over the long term. In relation to delivery systems, the article cited the 2015 Cochrane review on exercise for OA of the knee that compared home-based and group-based exercise programs to individual treatment and found the effect sizes for pain to be quite different: standardized mean difference (SMD) 0.38 for home-based programs, SMD 0.42 for class-based programs, and SMD 0.76 for individually supervised programs. For reference, a 0.4 SMD is considered a medium effect size. Unfortunately, the literature is unclear as to the most appropriate number of individually supervised sessions to provide. With respect to mode, few studies have directly compared aerobic vs. resistance exercise in knee OA. Because studies have not clearly delineated the optimal mode of exercise, it is recommended that exercise prescription be patient-specific and consider the patient's tolerance for pain-free movement and weight-bearing. Current international guidelines consistently recommend both aerobic and resistance training for knee OA. There is also no consensus on optimal dosage, as concluded by the previously mentioned Cochrane review and another 2015 Cochrane review on high-intensity vs. low-intensity physical activity or exercise in people with hip or knee OA. The current ACR guidelines conditionally recommend manual therapy as a supplement to supervised exercise therapy. More recent studies have supported this recommendation, as it appears as if manual therapy provides at least short-term benefits in pain and physical function for individuals with knee OA. Two primary strategies have been pursued for maintaining the long-term benefits of exercise. One of these strategies is the use of booster sessions, follow-up appointments held several weeks or months after the termination of a course of supervised therapy. Two recent studies have found that booster sessions may be a promising way to sustain treatment effects over time. A second strategy is the promotion of physical activity and lifestyle changes. A 2013 review and meta-analysis showed that individuals with knee OA on average only achieved 50 minutes of moderate to vigorous physical activity each week per week (measured in bouts of at least 10 minutes) This is far short of the recommended 150 minutes per week. Recent studies in this area have suffered from methodology design issues that limit the generalizability of their findings. However, one promising approach was an Internet-based physical activity promotion program for people with knee and/or hip OA. While self-reported physical activity was higher in the intervention group after 12 months, the study experienced high rates of nonadherence and

dropouts. The authors concluded that manual therapy, exercise booster sessions and physical activity promotion programs require further study to confirm their potential long-term benefits in individuals with knee OA.

Booster Sessions as a Strategy for Sustaining Exercise in Older Adults

As a nice follow-up to the last article, the February 2017 issue of *The Rheumatologist* provided an overview of a systematic review and meta-analysis on [the role of booster sessions](#) in older adults with OA. The study by Nicholson et al. is summarized in the 'Articles of Interest' section. In brief, a "booster" session is thought to be beneficial because it allows clinicians the opportunity to monitor progress, adjust exercise programs, re-motivate patients, and help troubleshoot any difficulties that the patient may be experiencing. Two studies that assessed booster sessions with a physical therapist found a small to moderate pooled effect in favour of the sessions (SMD 0.39, 95% confidence interval 0.05 to 0.72). While booster sessions may entail a physical visit with the patient, there may also be a role for Internet Communication Technology, such as the use of text messages to obtain patient feedback on how they're managing with their exercise program.

Tips for Managing Young Adult Rheumatology Patients

Greg Taylor, a social worker at the Mary Pack Arthritis Program in Vancouver had an article published in the May issue of *The Rheumatologist*. The article summarized the particular psychosocial challenges faced by the young adult patient population and provided tips for improving communication. Developmental challenges are common in this population including identity formation; gaining autonomy from parents; the establishment of peer relationships; issues related to gender roles, sexuality & reproductive health; and vocational planning. The environment can also raise its own set of challenges. This may include financial instability, the influence of social media on adherence to treatment, and the emergence of medical marijuana for pain management. Finally, there are a third set of challenges related to the individual differences in how young adults adjust to living with a chronic disease. The article concludes with strategies on how clinicians can improve communication with young adults by employing respectful relating and direct & authentic feedback. Mr. Taylor has been a social worker at the MPAP for over 22 years and has worked on the Young Adults with Rheumatic Disease Clinic for over 10 years. The article can be accessed at http://www.the-rheumatologist.org/article/tips-managing-young-adult-rheumatology-patients/?elq_mid=18057&elq_cid=2835167

Smoking Cessation

Many of you likely attended Dr. Milan Khara's presentation at the 2016 MPAP REACH Education Day on the topic of *Treating Tobacco Use Disorder*. I was reminded of his talk when I wrote up the summary for Aimer et al.'s study on *Efficacy of a*

Rheumatoid Arthritis-Specific Smoking Cessation Program (see articles of interest). The study authors concluded that brief advice and Nicotine Replacement Therapy (NRT) are currently the best practice for supporting people with RA who wish to quit smoking. As Dr. Khara noted in his presentation, patients with inflammatory arthritis (IA) who smoke are more likely to have greater disease activity and radiographic presentation, a poorer response to medical treatment, and a decreased Quality of Life as compared to IA patients who do not smoke. His recommended approach for health care providers was to follow a brief smoking cessation intervention:

- ASK: about tobacco use
- ADVISE: every tobacco user to quit
- ASSESS: assess readiness to quit
- ASSIST: self-help material, pharmacotherapy (e.g., NRT), counselling/quit lines
- ARRANGE: follow-up or referral

For those of you who have clients in the VCH catchment area, the VGH Smoking Cessation Clinic is still operating out of the Diamond Health Care Centre 604.875.4800 (select option 2). And for elsewhere in BC, the [QuitNow Program](#) is an excellent resource. QuitNow Services provides a suite of smoking cessation services free-of-charge to all British Columbians. The services include: QuitNow by Phone, QuitNow Online, and QuitNow by TXT. Additional supports include healthcare provider referrals, Detailers and Quit Tools and Resources.



Patient views on quality indicator resources for hip and knee replacement rehabilitation: a Canada-wide survey

Researchers at the Centre for Hip Health and Mobility in Vancouver have developed quality indicators (QIs) for hip and knee replacement rehabilitation. Quality indicators state the quality of rehabilitation care that all patients having a joint replacement for hip or knee osteoarthritis (OA) should expect to receive. We are now creating a 'toolkit' to help patients and their families learn about these QIs and use them to:

- make informed decisions about their rehabilitation options
- track the quality of care they receive
- communicate their needs with their healthcare team

We are conducting a survey to learn what types of resources and information patients would like to have in this EQUIP-TJR toolkit. The survey is conducted completely online. It will take about 15 minutes to complete. Based on the survey results, we will develop a variety of tools that patients can use to help them prepare for and recover from surgery with optimal rehabilitation care. This survey will help us to learn whether patient preferences differ between provinces and ensure we are

developing tools that meet a variety of needs. We will ensure that your responses remain private by combining the responses from all participants.

You are eligible to participate in this survey if you:

- Are 19 years of age or older AND
- Have osteoarthritis of the hip or knee and waiting for hip or knee replacement surgery OR
- Have had joint replacement surgery for hip or knee osteoarthritis in the past year

We encourage you to share the survey link with others who you think may be interested and also meet these characteristics. Your participation will help inform the development of the EQUIP-TJR toolkit and ultimately the quality and consistency of rehabilitation care across Canada.

The survey is open until: **June 30th, 2017**

Click here to take the survey or copy and paste the URL into your browser:

<https://redcap.mobilityandhealth.ca/redcap/surveys/?s=YLA3T7PDKL>

More than 5,900,000 People can't be wrong

Michael Pohlmann, the PT Clinical Practice Leader in Victoria, shared a link to a TED Talks presentation by Dr. Brené Brown, a professor of Social Work at the University of Houston. The presentation is called *The Power of Vulnerability*, and Michael shared it because he wonders if vulnerability may be part of the challenge we face as clinicians and educators when working with people in chronic pain. Dr. Brown's presentation is highly entertaining and is based on the multi-year research she has undertaken to understand why some people are comfortable being vulnerable while others run from it. Those who struggle with vulnerability often try to ignore its presence in their lives, which can lead to ineffective coping strategies like consumerism and debt, overeating and obesity, addictive behaviour, and over-medicating. She also believes that when we try to numb our personal sense of vulnerability, we more easily fall into perfectionism, and a need to hold onto our beliefs, despite evidence to the contrary. She also feels that those who embrace their vulnerability are much more likely to believe that they are enough, to love whole heartedly, and to practice gratitude and joy. This summary just starts to touch on Dr. Brown's approach to the topic of vulnerability. I encourage you to check out [*The Power of Vulnerability*](#).

Gratitude as a Psychotherapeutic Intervention

During our February 22nd ACE Clinical Exchange on the topic of Fibromyalgia it was suggested that one strategy to utilize when working with this patient population is to assist our clients in fostering gratitude. And in light of Dr. Brown's presentation on the Power of Vulnerability, there appears to be a strong evidence base for the

power of gratitude. Sara Falkner, a physiotherapist at the Vancouver Arthritis Clinic, shared an article with me on this topic called [*Gratitude as a Psychotherapeutic Intervention*](#). It was written by Emmons & Stern and published in the Journal of Clinical Psychology. The article describes what gratitude is, reviews the research on the mental health benefits of practicing gratitude, and then outlines techniques for fostering gratitude. They note that gratitude is rooted in two things; an affirmation of the “good things” that one has in one’s life, and the recognition that the sources of this goodness lie at least partially outside ourselves. And that authentic gratitude leads to a desire to openly engage with the world and to share and give back the goodness that has been received. Gratitude is a personality characteristic that is thought to have one of the strongest links to mental health and to one’s satisfaction with life. More specifically, those who feel gratitude have been shown to more effectively cope with daily stress, to have increased resilience in the face of trauma-induced stress, to recover more quickly from illness, and to have more robust physical health. Many of these findings have been based on gratitude journaling studies. In these studies, participants are often given the following instructions: “We want to focus for a moment on benefits or gifts that you have received in your life. These gifts could be simple everyday pleasures, people in your life, personal strengths or talents, moments of natural beauty, or gestures of kindness from others. We might not normally think about these things as gifts, but that is how we want you to think about them. Take a moment to really savour or relish these gifts, think about their value, and then write them down every night before going to sleep.” Having the ability to feel grateful on a consistent basis is not easy, although it can be cultivated with strategies such as journaling or letter-writing (i.e., writing and delivering a letter of thankfulness to someone who had been especially helpful but had never been properly thanked). An activity such as mindfulness meditation is also thought to be a useful strategy in promoting gratitude, as it can lead to an increased attentiveness to and appreciation for the simple blessings of life. One reason why gratitude may be helpful when working with someone with fibromyalgia is that it is thought to bring about a trauma-induced transformation, or a healing of from past wounds.

Articles of Interest

Menz HB, Auhl M, Tan JM, et al. Effectiveness of foot orthoses versus rocker-sole footwear for first metatarsophalangeal joint osteoarthritis: Randomized trial. *Arthritis Care & Research* 2016;68(5):581-589. This study compared the effectiveness of prefabricated foot orthoses to rocker-sole footwear in reducing foot pain in people with first MTP joint OA. Study eligibility included: 1) age ≥ 18 years, 2) reported first MTP joint pain on most days for at least 12 weeks, 3) reported pain of at least 20 mm on a 100-mm visual analog scale (VAS), 4) $<64^\circ$ of dorsiflexion range of motion of the first MTP joint, 5) pain on palpation of the dorsal aspect of the first MTP joint, and be able to walk >50 meters without the use of mobility aids. At baseline, participants were assessed for height, weight, BMI, foot posture (using the Foot Posture Index [FPI]), passive non-weight bearing dorsiflexion range of

motion at the first MTP joint, and observation to determine the presence or absence of pain on palpation, a dorsal exostosis, joint effusion, pain during motion, a hard-end feel when the joint was fully dorsiflexed, and crepitus during movement. The presence of radiographic first MTP joint OA was determined at baseline using a radiographic atlas developed by Menz et al that scored OA on the presence and severity of osteophytes and the presence and degree of joint space narrowing. The prefabricated foot orthoses group received a pair of full length orthoses. In participants with pronated feet (FPI>7), full length, 4° medial (varus) wedges were applied to the underside of the orthoses until there was a reduction in the FPI score of at least 2 points. The rocker-sole group was provided with a pair of rocker-sole shoes (MBT, Mahuta, or Matwa models). The primary outcome measure was the foot pain domain of the Foot Health Status Questionnaire (FHSQ). Secondary outcome measures included 1) the function domain of the FHSQ; 2) the Foot Function Index Revised (short form); 3) severity of pain at the first MTP while walking over a flat surface and during rest over the last week (each using a 100-mm VAS); 4) duration and severity of stiffness at the first MTP on first awakening in the morning and during the last week (100-mm VAS); 5) severity of stiffness after sitting, lying, or resting later in the day, during the last week (100-mm VAS); 6) global change in symptoms (15-point Likert scale); 7) health status using the SF-12; 8) use of paracetamol rescue medication; 9) frequency and type of self-reported adverse events; and 10) the Incidental and Planned Activity Questionnaire. The study involved 102 participants, of whom 52 were randomized to the orthoses group and 50 to the rocker-sole group. Four participants withdrew from the rocker-sole group after randomization; 2 were unable to tolerate the shoes, 1 had very large feet and appropriately sized footwear could not be found, and 1 was advised not to participate by their chiropractor. By week 12 there were 5 additional drop-outs in the footwear group (2 could not tolerate the footwear and 3 were lost to follow-up) as well as 5 drop-outs from the orthoses group (1 could not tolerate the orthoses and 4 were lost to follow-up). Orthoses group participants reported wearing their intervention for more hours than the footwear group (mean ± SD total hours worn over study period: 448 ± 238 vs. 287 ± 192; $P<0.001$). Both groups showed an increase in the FHSQ pain domain (17 points in the orthoses group and 22 points in the footwear group), which is reflective of improved foot health. In relation to the secondary outcomes (FHSQ function, FFI, pain and stiffness, SF-12, and physical activity levels) there were no differences between the two groups at the 12-week follow-up for any of these measures. One difference was that the perception of global improvement was lower in the footwear group (39% vs. 62%; Relative Risk 0.63, 95% CI 0.41, 0.99; $P=0.043$). And the number needed to treat/harm (NNH) was 5 (95% CI 2.3, 43.9), meaning that 1 in 5 participants receiving footwear had an unsuccessful outcome compared to those receiving orthoses. There were no differences between the two groups in use of rescue medications. Finally, participants in the footwear group were more likely to report at least 1 adverse event (39% vs. 16%; Relative Risk 2.47, 95% CI 1.12, 5.44; $P=0.024$) and were more likely to a new episode of low back pain than the orthoses group (17% vs. 4%; Relative Risk 4.52, 95% CI 1.01, 20.22; $P=0.048$). In summary, the authors noted that while both interventions were equally effective at reducing foot pain, the higher

adherence and lower rate of adverse events observed in the orthoses group suggests that prefabricated foot orthoses may be the preferred intervention for people with first MTP joint OA.

Menz HB, Auhl M, Tan JM, et al. Biomechanical effects of prefabricated foot orthoses and rocker-sole footwear in individuals with first metatarsophalangeal joint osteoarthritis. *Arthritis Care & Research* 2016;68(5):603-611. The study evaluated the immediate biomechanical effects of individualized, prefabricated foot orthoses and rocker-sole shoes in people with first MPT joint OA. This was accomplished through baseline kinematic and in-shoe plantar pressure analyses of study participants. The study design, eligibility criteria, outcomes, and interventions are identical to the previously reviewed study. For the biomechanical assessment, the prefabricated orthoses group had comparisons made between wearing their own shoes (with and without the prefabricated orthoses) and the rocker-sole footwear group had comparisons made between their own shoes and the rocker-sole shoes. After a practice run of walking 250 meters, participants completed 4 walking trials for each footwear condition over an 8-meter distance. To exclude the acceleration and deceleration steps, only the middle 4 steps from each trial were recorded for analysis. An average was then computed from 16 steps for each condition. Spatiotemporal parameters and sagittal plane peak-to-trough ROM of the hip and knee joints during gait were recorded using a wireless, wearable sensor motion analysis system (LEGSys, Biosensics) consisting of accelerometers and gyroscopes attached with Velcro strips to each lower leg and thigh. Gait phases were determined from the precise events of heel-strike (initial foot contact) until toe-off (terminal foot contact) using the gyroscopes. Based on each participant's height and using a biomechanical model, spatial parameters (i.e., stride length and stride velocity) and kinematics (hip and knee) were estimated by integration of the angular rate of rotation of the thigh and shank relative to the waist sensor. Peak plantar pressure under the hallux, lesser toes, first MTP joint, second to fifth MTP joints, midfoot, and heel were assessed with the in-shoe Pedar system (Novel GmbH). The most symptomatic foot was selected as the index foot for all analyses. The results found that compared to participants' own footwear, the orthoses had minimal effects on spatiotemporal or kinematic parameters, with a reduction in velocity (Cohen's $d = 0.14$; negligible effect) and knee ROM ($d = 0.36$; small effect). The rocker-sole shoes resulted in reduced cadence ($d = 0.26$; small effect), percentage of the gait cycle in stance phase ($d = 0.44$; medium effect), and reduced sagittal plane hip ROM ($d = 0.44$; medium effect). Between-group comparisons found that the percentage of the gait cycle spent in stance phase and sagittal plane hip ROM was lower in the rocker-sole shoe group compared to the orthoses group. With respect to plantar pressure, compared to participants' own footwear, the orthoses increased peak pressure under the lesser toes ($d = 0.59$; medium effect) and midfoot ($d = 0.45$; medium effect), and decreased peak pressure under the first MTP joint ($d = 0.55$; medium effect) and heel ($d = 0.72$; medium effect). And it was shown that the rocker-sole shoes decreased peak pressure under the first MTP joint ($d = 0.44$; medium effect), second to fifth MTP joints ($d = 0.92$; large effect), and heel ($d = 0.91$; large effect). Between-group comparisons found that the peak pressure

under the lesser toes, second to fifth MTP joints, and midfoot were lower in the rocker-sole shoes compared to the orthoses, but there was no difference in peak pressure under the first MTP joint. The authors concluded by stating that prefabricated foot orthoses and rocker-sole footwear are both effective at reducing peak pressure under the first MTP joint in people with first MTP joint OA, but that they achieve this through different mechanisms.

Hart RI, McDonagh JE, Thompson B, et al. Being as normal as possible: How young people ages 16 – 25 years evaluate the risks and benefits of treatment for inflammatory arthritis. *Arthritis Care & Research* 2016;68(9):1288-1294. The study goal was to determine how young people evaluated the risks and benefits of treatments, in particular biologic therapies. Study eligibility included those who were ages 16 – 25 and with a diagnosis of some form of inflammatory arthritis. Multiple methods and sources were used including interviews, audio-recordings of consultations (n = 4), and focus groups (n = 4). The participants were young people with arthritis (n = 37), trusted others (n = 15), and health care professionals (n = 16). Purposive sampling was used so as to obtain diversity (in demographics, diagnosis and treatment history) in the interviewees (n = 25) who were young people with arthritis. Trusted others (n = 11) were identified by the young people with arthritis and included 8 mothers, 1 father, 1 grandmother and 1 partner. Six health care professionals (nurses and doctors) were also interviewed. The audio recordings of consultations involved 11 participants who represented different combinations of young people, trusted others, and health care professionals. And the 4 focus groups at the end of the study were used to explore the face validity of study findings. Two focus groups involved young people (n = 10), while one was held with trusted others (n = 4) and one with health professionals (n = 8). A grounded theory approach was taken for the analysis of interview, focus group, and consultation data. Six major themes were identified. **Theme 1: Aspiring to a normal life** – young people wanted to live a normal life with “normal” being defined in terms of their pre-diagnosis lives, their life on a “good day” or the lives of their peers. **Theme 2: Seeing treatment as an opportunity and as a threat** – treatment was seen as playing an important role in achieving or maintaining a normal life. However, based on past experiences, treatment could also be perceived as a threat to having a normal life either in terms of living with side effects or the impact of one’s treatment schedule. **Theme 3: Experiencing powerful emotions** – young people identified being anxious about several aspects of treatment such that even seemingly small adjustments to dosage, routines, or mode of administration could unleash strong emotions. Escalation of treatment forced young people to confront their self-perceptions of being normal, and such decisions also made them aware of the uncertainties of the future. **Theme 4: Acquiring information from different sources** – health care professionals, family or friends with relevant experience, research, and personal experiences were all important sources of information for young people. With respect to personal experiences, attitudes towards their disease and the treatments used to manage it were at times shaped by past experiences. And while at times experiential evidence aligned with clinical measures, there were also situations when conflicting evidence led to a sense of frustration on all sides. **Theme**

5: Making provisional decisions – young people were often uncertain about the potential effects and challenges of new treatments. Thus, treatment decisions were often considered as provisional and open to change. Young people re-assessed their provisional decisions on the basis of the degree to which treatments or side effects helped or hindered the ability to maintain a normal life. This was non-problematic when the impact of treatment was rapid and clear cut, as was often the situation with biologics. However, when treatment benefits took longer to be realized or initial side effects were perceived as onerous, young people might consult care teams or could unilaterally decide to discontinue or be partially non-adherent to treatment. **Theme 6: Focusing on the short term** – in most instances, young people focused on short-term over long-term concerns, unless they were sensitized by having had more complex treatment histories or a history of cancer in the family. Those who focused on the short-term, viewed long-term risks as being of low probability or easily solved. Others recognized that problems might ensue in the future, but that it wasn't worth considering a possible problem until it actually happened.

Nicholson PJA, Bennell KL, Dobson FL, et al. Interventions to increase adherence to therapeutic exercise in older adults with low back pain and/or hip/knee osteoarthritis: a systematic review and meta-analysis. *British Journal of Sports Medicine* 2017;0:1–10. doi:10.1136/bjsports-2016-096458. This systematic review and meta-analysis evaluated whether interventions aimed at increasing adherence to therapeutic exercise increased adherence greater than contextually equivalent control interventions among older adults with chronic low back pain and/or hip/knee osteoarthritis. Secondly, a meta-analysis on similar RCTs was performed to determine if interventions are effective at increasing exercise adherence. A search was conducted of MEDLINE (PubMed), CINAHL, SportDISCUS (EBSCO), Embase (Ovid) and Cochrane Library from inception to August 1st, 2016. Eligible studies were those that involved therapeutic exercise of any form (i.e., aerobic exercise, strengthening exercise, balance exercise, etc.) for people 45 years or older with chronic (>3 months) low back pain and/or hip/knee osteoarthritis. Studies were required to test an intervention aimed to improve adherence, and the control arm of the study had to receive therapeutic exercise comparable to the intervention arm. Finally, eligible studies were required to measure adherence and to have been published in English. The quality of intervention reporting was assessed using the Template for Intervention Description and Replication (TIDieR). And the risk of bias was assessed using the Cochrane Risk of Bias Tool. For the meta-analysis, studies were deemed comparable when inclusion criteria, interventions, patients and comparators were assessed as being similar, and when comparable outcome measures were used to assess adherence. Following the meta-analysis, the strength of the body of evidence was synthesized using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. Nine unique studies involving 1045 participants were deemed eligible for inclusion in the systematic review. Of these, 3 recruited participants with chronic low back pain, 3 with knee OA, and 3 with either hip or knee OA. Intervention duration ranged from 3 sessions over 8 weeks to 23 sessions over 55 weeks. Interventions to

enhance adherence were varied and ranged from multi-component to single component interventions evaluating education, counselling, positive reinforcement techniques, exercise diaries, behavioural graded exercise, booster sessions, action coping plans, and audio or video tape of exercises. Three studies fulfilled all 12 TIDieR checklist requirements, while less than half of included studies (n=4, 44%) were assessed as adequately reporting intervention activities and processes. All studies had at least 1 domain that was considered to have unclear risk of bias, with only 1 study rated at low risk. Chronic low back pain – 2 studies using positive reinforcement and education reported statistically significant differences between intervention and control group adherence at one or more time points measured. Effect sizes ranged from large (d=1.23) at short-term follow-up to small to medium (d=0.44) at long-term follow-up. Behavioural counselling based on readiness to change did not improve adherence. Hip and/or knee osteoarthritis – one study that provided behavioural graded activity for people with knee OA and another that provided behavioural graded exercise and ‘booster’ sessions in people with hip or knee OA reported statistically better adherence at one or more time points compared to controls. Effect sizes ranged from large (d=0.80) at mid-term follow-up to medium (d=0.53) at long-term follow-up. The four studies that did not find statistically significant benefits utilized goal setting and strategies to overcome barriers to adherence, booster sessions with a physiotherapist, action coping plans, or audio/video exercise performance cues. The two studies (n = 229) that used booster sessions were pooled for the meta-analysis and were found to have small to medium, but significant, benefits as compared with controls (SMD 0.39, 95% CI 0.05 to 0.72, z=2.26, p=0.02, I² = 35%). The current evidence for booster session interventions was graded as ‘moderate’. And while not included in the meta-analysis, the results of the systematic review suggested that a behavioural graded exercise approach may improve therapeutic exercise adherence in people with chronic low back pain and osteoarthritis, although effect sizes declined to moderate (at best) over the long term. Behavioural graded exercise, which entails gradually increasing the intensity of exercises into daily living, is thought to work because it addresses exercise barriers related to lack of time and lack of confidence in one’s exercise capability. And booster sessions may be beneficial because they provide ongoing contact and reinforcement.

Qu H, Shewchuk RM, Alarcón G, et al. Mapping perceptions of lupus medication decision-making facilitators: The importance of patient context. *Arthritis Care & Research* December 2016;68(12):1787-1794. The study aim was to determine patient-identified facilitators to lupus medication decision-making. Cognitive mapping was used to produce maps that group responses into thematic clusters. In the first phase, conducted previously, a nominal group technique (NGT) was used to identify and prioritize responses as to the facilitators of treatment decision-making in patients with lupus nephritis. Specifically, 52 patients with lupus nephritis were asked, “What sorts of things make it easier for people to decide to take the medicines that doctors prescribe for treating their lupus kidney disease?” The NGT process resulted in the identification and prioritization of 98 facilitators. The second phase of cognitive mapping involved both qualitative (sorting cards) and

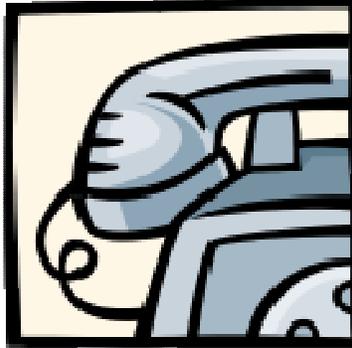
quantitative (rating) data collection methods. For the card-sorting task, stakeholders (patients, physicians, and non-physician health care professionals) were asked to independently sort 98 cards, each of which had one of the 98 facilitators identified in the phase 1 NGT process. Each stakeholder was asked to sort the cards into at least 2 piles with a least 2 cards/pile according to their perceived similarity. Stakeholders also rated the importance of each facilitator in the patient decision-making process. Data were analyzed using multidimensional scaling and hierarchical cluster analysis. Stakeholders included 15 physicians, 3 patients, 2 patient advocates, and 8 non-physician health care professionals. Ranked in order of importance, the card-sorting process resulted in 10 categories: 1) hope for a normal/healthy life, 2) understand benefits and effectiveness of taking medications, 3) desire to minimize side effects, 4) medication-related data, 5) medication effectiveness for “me”, 6) family focus, 7) confidence in physician, 8) medication research, 9) reassurance about medication, and 10) medication economics. Some facilitators were rated as important by patients but not by providers, and vice versa. Two essential facilitators for patients when deciding to take medications were “Confidence in physician” and “affordability”. The risk of side effects was also very important to patients.

Aimer P, Treharne GJ, Stebbings S, et al. Efficacy of a rheumatoid arthritis-specific smoking cessation program: A randomized controlled pilot trial. *Arthritis Care & Research* January 2017;69(1):28-37. Individuals with established RA who continue to smoke face an increased risk of such RA comorbidities as cardiorespiratory disease, cancer, serious infection, and osteoporosis. Smoking is known to negatively impact RA disease activity including higher RF titers, worse radiographic damage and disability, poor clinical response and failure to respond to treatments including methotrexate and TNF-inhibitors. The aim of this study was to determine if smoking cessation increased following a 3-month smoking cessation intervention tailored for people with RA. Participants were eligible if they were ≥ 18 years with a diagnosis of RA and were current smokers. Participants were randomized into either a control or intervention arm. The control group received the ABC pathway that comprises 3 steps to help smokers quit: 1) ask about smoking status, 2) give brief advice to stop smoking to all smokers, and 3) provide evidence-based cessation support for those who wish to stop smoking. This included offering nicotine replacement therapy (NRT) for 8 weeks. The intervention group received the same ABC pathway and offer of NRT, as well as a 3-month tailored smoking cessation program designed to address 5 previously identified RA-specific barriers to smoking cessation: 1) lack of support, 2) limited knowledge of the relationship between smoking and RA, 3) uncontrolled pain, 4) inability to exercise, and 5) using smoking as a coping strategy. Intervention group participants were interviewed by telephone or face-to-face with the aim of identifying each individual’s specific RA-related barriers to smoking cessation. They then received individualized education and support including assistance with setting a quit date. The intervention group also received 3 follow-up telephone calls, access to a support website, and 12 weekly smoking cessation advice emails. The primary outcome of this study was self-reported smoking cessation at 6 months post-randomization. The secondary outcome was reduction in

cigarette consumption at 6 months. Data were collected from each participant at baseline, month 3 and month 6. This included sociodemographic information, health status, smoking history, HAQ, the personal impact HAQ, Arthritis Self-Efficacy Scale, the Hospital Anxiety and Depression Scale (HADS), the Perceived Stress Scale, the EuroQol 5D, the EQ-VAS, the Smoking Self-Efficacy Questionnaire, and the Fagerström Test for Nicotine Dependency. Thirty-nine participants were recruited (19 intervention group and 20 control group). Three participants dropped out of the intervention group because they no longer wished to quit smoking. One participant was excluded from the control group analysis was found to not have RA. There were no statistically significant differences at baseline between the 2 groups. At 6 months there was no significant difference in smoking cessation rates between the intervention and control participants (5 of 19 [26%] versus 4 of 19 [21%]; $p = 0.70$). There was also no statistically significant difference between the number of cigarettes smoked at baseline (16.6 ± 8.2 vs. 16.4 ± 7.0) and 6 months (9.9 ± 19.7 vs. 8.6 ± 6.7) in either group. An exploratory analysis did not find any factors that predicted smoking cessation. NRT was used by more quitters (89%) than nonquitters (69%), but this did not reach statistical significance. The successful quitters also showed a trend toward having a greater number of years of education beyond high school ($p = 0.06$) and had smoked less across their lifetime ($p = 0.07$). It was concluded that brief advice and NRT is currently the best practice for supporting people with RA who wish to quit smoking.

Wahl E, Gross A, Chernitskiy V, et al. Validity and responsiveness of a 10-item patient-reported measure of physical function in a rheumatoid arthritis clinic population. *Arthritis Care & Research* 2017;69(3):338-346. This study was motivated by concerns with the Health Assessment Questionnaire (HAQ), the most commonly used measure of physical function in rheumatology. Concerns with the HAQ include that it was designed to measure impairment in patients with great disability than seen today, has significant floor effects, and is not sensitive to changes in disease activity over time. An alternative instrument that has been validated in patients with RA and shown to be responsive to changes in RA disease activity is the Patient-Reported Outcome Measurement Information System (PROMIS) physical function 10-item short form questionnaire (PF-10a). The aim of this study was to utilize the PF-10a in a real-world clinical setting and evaluate its content validity, floor and ceiling effects, and sensitivity to change over time. Clinical and demographic data were pulled from the Electronic Health Record (EHR) for all patients seen at the University of California, San Francisco (UCSF) Rheumatology Clinic between February 2013 and February 2015. Patients were eligible if they had an ICD-9 code for RA, had at least 1 face-to-face encounter with a rheumatologist in the time period noted, and had at least a Clinical Disease Activity Index (CDAI) score and a PF-10a score recorded at that encounter. Physical function was measured for all participants using the PF-10a, and the HAQ was also measured for a subgroup of participants. A higher PF-10a T score represents better physical function and a higher HAQ score represents greater functional impairment. RA disease activity was measured using the CDAI with a higher value representing greater disease activity. For the analysis, floor and ceiling effects and construct validity was evaluated in the

subgroup of patients with HAQ scores (n = 189). And linear mixed-effects modelling was conducted to assess for responsiveness of PF-10a to longitudinal changes in the CDAI (n = 326). A majority of the study participants were female with a mean \pm SD age of 59 ± 14 years. And the group was racially and ethnically diverse (52% nonwhite), and the majority reported English as their preferred language. Other results showed that a larger proportion (35 of 189, 19%) of HAQ scores clustered at the ceiling (highest level of functioning) as compared to only 16 (8%) of PF-10a scores ($P < 0.001$). Neither the HAQ nor the PF-10a exhibited significant floor effects. With respect to validity, PF-10a scores were strongly correlated with HAQ scores ($r = -0.874$). Linear mixed-effects modelling showed that changes in CDAI scores over time were significantly associated with changes in PF-10a scores over time ($P < 0.001$), which suggests that the PF-10a is responsive to changes in disease activity. In conclusion, the PF-10a was determined to be feasible to implement in a diverse RA population, including those of non-white race/ethnicity or non-English language. It was found to correlate strongly with the HAQ, but with fewer ceiling effects. It was also shown to be responsive to change in RA disease activity.



As an ACE member, you have access to physical therapists, occupational therapists and a nurse with many years of rheumatology experience. If you have a clinical question or complex or challenging client and would like to consult with one of our experienced clinicians, please contact one of the people listed below. We will return your call or e-mail as quickly as possible.

You can also contact senior clinicians in our regional centres (Cranbrook, Penticton & Victoria). They are a valuable local resource.

An ACE member who has used this service in the past stated: "Great resource. Please continue!"

Contacts:

Physiotherapy

Marie Westby
PT Teaching Supervisor
604-875-4111 Ext. 68834
marie.westby@vch.ca

Occupational Therapy

Catherine Busby
OT Clinical Specialist
604-875-4111 Ext. 68815 (Th, Fri)
cathy.busby@vch.ca

Nursing

Jane Prince
Clinical Resource Nurse
604-875-4111 Ext. 68857
jane.prince@vch.ca

Barbara Porter
OT Clinical Specialist
604-875-4111 Ext. 68816 (Mon,Tu,Th)
barbara.porter@vch.ca

Regional Centres

Cranbrook: 250-426-4442
Penticton: 250-492-4000 Ext. 2286
Victoria: 250-598-2277