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MELATONIN AND FRACTURE RISK

Previous studies have demonstrated an association between anxiolytic or hypnotic drug use and the risk of hip fracture in the elderly. As an alternative, melatonin has been increasingly used, rising in the United Kingdom (U.K.) by 21% over the past 10 years. This study compared the fracture risk associated with melatonin and hypnotic drugs among older adults.

The data for this study were obtained from The Health Improvement Network (THIN), a database of electronic medical records from over 1,500 general practitioners in 380 U.K. medical practices. Data were reviewed to identify patients who were 45 years of age or older who were prescribed melatonin (cohort 1), at least two prescriptions of hypnotic benzodiazepines (cohort 2) at least two prescriptions of Z drugs including zolpidem and zopiclone (cohort 2B), or who had never been prescribed any of these drugs (control). The outcome was any fracture following study entry. Potential confounders identified were gender, age, medical morbidity, prescriptions for non-study drugs, body mass index, socioeconomic status, smoking and alcohol use status.

Compared to the control cohort, the unadjusted risks of fracture at follow-up were 1.90 for melatonin ($p<0.001$), 1.70 for hypnotic benzodiazepines ($p<0.001$) and 2.03 for Z drugs ($p<0.001$). In the adjusted model, significant hazard ratios were again found for melatonin ($p=0.04$) and Z drugs ($p=0.03$).

Conclusion: This British study of adults 45 years of age or older, found that melatonin and Z drugs are both independently associated with an increased risk of fracture.

Frisher, M., et al. Melatonin, Hypnotics and Their Association with Fracture: A Matched, Cohort Study. **Age and Ageing**. 2016, November; 45(6): 801-806.

NASAL CALCITONIN VERSUS GABAPENTIN FOR LUMBAR SPINE STENOSIS

Lumbar spine stenosis (LSS) is a chronic and prevalent disorder which affects a large portion of the older population. Calcitonin is a polypeptide hormone which affects skeletal mineralization, releases beta endorphins and can be used as an analgesic agent. This study compared calcitonin with gabapentin for the treatment of patients with symptomatic LSS.

From 2013 to 2015, nine patients with symptoms of neurogenic claudication and MRI demonstrated LSS were recruited. These subjects were randomized to receive salmon calcitonin, 200 international units daily for eight weeks, gabapentin 300 mg three times per day for eight weeks or a placebo daily for eight weeks. This regimen was followed by a washout period of four weeks. All subjects were assessed by physical exam and with the Oswestry Disability Index (ODI) and the Patient Satisfaction Index.

At eight weeks, the ODI scores in the calcitonin, gabapentin, and control groups were 31, 30.42 and 36 respectively ($p=0.91$). Three months after treatment, improvement in the ODI scores for the calcitonin group was significantly better than the gabapentin group ($p<0.05$) or the placebo group ($p<0.01$). At three-month follow-up, the mean patient satisfaction index score was 93% in the calcitonin group, 77.2% in the gabapentin group and 74.3% in the control group ($p<0.01$).

Conclusion: This study of patients with symptomatic lumbar spine stenosis suggests that 200 international units of nasal calcitonin spray is more effective than 300 mg of gabapentin three times daily for the relief of pain and symptoms.

Haddadi, K., et al. Effects of Nasal Calcitonin versus Oral Gabapentin on Pain and Symptoms of Lumbar Spinal Stenosis: A Clinical Trial Study. **Clin Med Insights Arthrit Musculoskelet Disord.** 2016, July; 9:132-138.

IMPAIRMENTS AFTER TRANSIENT ISCHEMIC ATTACK

A transient ischemic attack (TIA) is differentiated from stroke as being a brief episode of neurologic dysfunction without evidence of acute infarction. This systematic review investigated the association between TIA and subsequent symptoms of fatigue, psychological impairment or cognitive impairment.

This retrospective cohort study included data from patients with first-ever TIA, collected from The Health Improvement Network (THIN) database in the U.K. Patients with TIA were matched with up to five TIA-free controls. The data were reviewed for records of fatigue, psychological impairment or cognitive impairment.

The cohort was 55,930 individuals, including 9,419 with TIA and 46,508 controls. An adjusted analysis indicated that, compared with controls, TIA patients had a 43% increased risk of consulting for fatigue, a 26% increased risk of consulting for psychological impairment (most often depression) and a 45% increased risk of consulting for cognitive impairment ($p<0.0001$ for all comparisons).

Conclusion: This retrospective study found that transient ischemic attack is associated with a significantly increased risk of consultation for fatigue, psychological and cognitive impairment.

Turner, G., et al. Ongoing Impairments following Transient Ischemic Attack: Retrospective Cohort Study. **Eur J Neurol.** 2016, November; 23: 1642-1650.

CARDIOVASCULAR SAFETY OF CELECOXIB, NAPROXEN OR IBUPROFEN

Nonsteroidal anti-inflammatory drugs are known to inhibit cyclooxygenase, which reduces pain and inflammation. With the development of selective COX-2 inhibitors, patients have the potential to retain efficacy while reducing gastrointestinal adverse events. Evidence of adverse cardiovascular outcomes has resulted in the withdrawal at least one COX-2 inhibitor from the market. This study, the Progressive Randomized Evaluation of Celecoxib Integrated Safety versus Ibuprofen or Naproxen (PRECISION) trial, compared the cardiovascular, gastrointestinal, renal and other outcomes of these three medications.

Subjects were adult patients who reported daily treatment with NSAIDs for arthritis pain. The participants were randomly assigned to receive celecoxib, 100 mg twice per day, ibuprofen, 600 mg three times a day naproxen, 375 mg twice a day or a matching placebo. Higher doses could be prescribed for those with rheumatoid arthritis. Esomeprazole (20 to 40 mg) was provided to all patients for gastric protection. The primary outcome measures were the first occurrence of death from cardiovascular causes, including hemorrhagic death, or nonfatal myocardial infarction or nonfatal stroke.

A total of 24,222 patients underwent randomization at 926 centers. In the intention to treat population, the primary outcome occurred in 2.3% of patients in the celecoxib group, 2.5% in the naproxen group and 2.7% in the ibuprofen group. The hazard ratio for the primary outcome in the celecoxib group as compared with the naproxen group was 0.93, and compared with the ibuprofen group was 0.81 (both $p<0.001$ for noninferiority).

Conclusion: This study found that celecoxib, when given in moderate doses, is non-inferior to ibuprofen or naproxen with regard to cardiovascular safety.

Nissen, S., et al. Cardiovascular Safety of Celecoxib, Naproxen or Ibuprofen for Arthritis. **N Engl J Med.** 2016; 10.1056/ NEJMoa1611593.

TRANSCRANIAL MAGNETIC STIMULATION ON MOTOR RECOVERY AFTER STROKE

In recent years, noninvasive brain stimulation techniques, such as repetitive transcranial magnetic stimulation (rTMS), have been used to promote

functional recovery among patients with stroke. Positive effects have primarily been found among those treated with rTMS at an early stage of stroke. This study was designed to investigate the effects of rTMS on motor recovery at three month follow-up.

Subjects were 87 consecutive patients with middle cerebral artery stroke and motor deficits, recruited at three to 30 days after stroke. Those subjects were randomized to receive high-frequency, 3 Hz, low-frequency, 1 Hz or sham rTMS, daily for five consecutive days. Stroke severity was measured by the National Institutes of Health Stroke Scale (NIHSS). The primary outcome measure was the score on the Fugl-Meyer (FM), with secondary outcomes including the Barthel Index (BI) and the Modified Rankin Scale (MRC), assessed at baseline, after treatment, and then at one, two and three months.

As compared to sham rTMS, both rTMS groups demonstrated significant improvements in NIHSS, BI and MRC scores. In the motor performance analysis, the upper limb scores of the FM and the MRC improved with 1 Hz stimulation, with no substantial difference noted with the other groups. For the lower limb scores of the FM and MRC, significant improvements were noted with both stimulation groups compared with the sham group. The therapeutic effects persisted beyond the intervention by at least three months.

Conclusion: This randomized, controlled trial found significant motor improvements through the use of repetitive transcranial magnetic stimulation at an early stage of stroke.

Du, J., et al. Effects of Repetitive Transcranial Magnetic Stimulation on Motor Recovery and Motor Cortex Excitability in Patients with Stroke: A Randomized, Controlled Trial. **Eur J Neurol**. 2016, November; 23 (11): 1666-1672.

FOLIC ACID THERAPY AND THE RISK OF STROKE

Previous studies have found that the use of folic acid is associated with a reduced risk of stroke among those with hypercholesterolemia, with the effect most pronounced in populations with a low percent of statin use. This study, using data acquired from the China Stroke Primary Prevention Trial, was designed to determine whether folic acid supplementation can independently reduce the risk of first stroke associated with elevated cholesterol levels.

The subjects were 20,702 hypertensive adults with no history of major cardiovascular disease. The subjects were randomized to a daily treatment of enalapril, 10 mg, plus folic acid, 0.8 mg or enalapril, 10 mg alone. The primary outcome variable was first stroke, with secondary outcomes including first ischemic stroke, first hemorrhagic stroke and a composite of cardiovascular events.

Of those in the study, 20,166 were not taking lipid lowering medications. Over a median of 4.5 years, baseline total cholesterol levels of >200 mg/dL were associated with an increased risk of first stroke, as compared with those of lower levels (p=0.001). This was not true among those receiving folic acid (p=0.727). This interaction between total cholesterol and folic acid on the risk of stroke was significant for the composite of stroke or all cause death (p=0.038) and ischemic stroke (p=0.035), but not for hemorrhagic stroke (p=0.485).

Conclusion: This Chinese study found that folic acid supplementation can reduce the risk of first stroke associated with elevated total cholesterol by 31% among hypertensive adults with no history of major cardiovascular disease.

Qin, X., et al. Folic Acid Therapy Reduces the First Stroke Risk Associated with Hypercholesterolemia among Hypertensive Patients. **Stroke.** 2016, November; 47: 2805-2812.

CAPSAICIN PATCH FOR LUMBOSACRAL PAIN

Topical capsaicin formulations are widely used to manage pain. This study assessed the efficacy of a capsaicin eight percent patch in patients with lumbosacral pain.

Subjects were adults diagnosed with lumbosacral pain of at least three months' duration, with a visual analogue scale (VAS) score of greater than five on a 10 point scale. The participants were initially anesthetized with EMLA cream with the capsaicin eight percent patch then applied over the most painful area of the back, remaining in place for one hour. The patients were assessed for pain at two, eight and 12 weeks after treatment. At weeks two and 12, the patients completed the EQ-5D Health-Related Quality of Life instrument.

Ninety patients completed the study. At baseline, the mean VAS score was 7.6, falling to 5.6 at week two ($p<0.001$), 3.2 at week eight ($p<0.001$) and 2.6 at week 12($p<0.001$). The change in VAS scores at week 12, as compared to baseline, was negatively correlated with body mass index and age. Between baseline and weeks two, eight, and 12 significant improvements were noted in all five dimensions of the EQ-5D questionnaire ($p<0.001$).

Conclusion: This uncontrolled study of patients with lumbosacral pain found that the use of a capsaicin eight percent patch can significantly reduce pain and improve quality of life.

Zis, P., et al. Effectiveness and Impact of Capsaicin 8% Patch on Quality of Life in Patients with Lumbosacral Pain: An Open-label Study. **Pain Physician.** 2016:19:E1049-E1053.

BLOOD FLOW RESTRICTION TRAINING AFTER KNEE ARTHROPLASTY

Clinical practice guidelines recommend the use of aggressive strengthening to return patients' strength and function after knee surgery. While those guidelines suggest a minimum of 60% of a single repetition maximum for strengthening, many patients are limited by post-operative discomfort. As blood flow restriction training (BFR) uses partial venous blood flow restriction, combined with exercise at 20% to 30% of the patient's one rep maximum, this study assessed whether this technique could be beneficial in the rehabilitation of patients with non-reconstructive knee arthroscopy.

Patients scheduled for non-reconstructive surgery were randomized to receive either BFR plus standard therapy or standard physical therapy alone. Both groups followed the same accelerated physical therapy protocol consisting of immediate weight-bearing and unrestricted range of motion. The BFR group performed leg exercises at 30% of the one rep max, with blood flow restricted with a tourniquet set at 80% of the total limb occlusion pressure (the pressure required to eliminate a detectable pulse using ultrasound). All patients underwent 12 sessions, with outcome measures including, strength testing and thigh girth, as well as four physical performance and two patient-reported outcome measures.

Seventeen subjects completed the study, including 10 in the BFR group. While both groups demonstrated improvement in outcome measures at follow-up, the BFR group demonstrated a 78% change in quadriceps extension strength as compared with 41% in the control group (p=0.097). On physical performance measures, including the Self Selected Walking Velocity, the Sit-To-Stand 5 Times, and the 4 Square Step Test, generally greater, though not significant improvements were seen in the BFR group, with outcomes on the Timed Stair Ascent significantly better (p=0.0149) than in the control group.

Conclusion: This pilot study of patients undergoing non-reconstructive knee surgery found that blood flow restriction exercise, added to conventional therapy, may accelerate gains in strength and physical function.

Tennant, D., et al. Blood Flow Restriction Training after Knee Arthroscopy: A Randomized, Controlled, Pilot Study. **Clin J Sport Med.**2016; DOI:10.1097/ JSM.0000000000000377.

ARTHROKINEX FOR KNEE OSTEOARTHRITIS

The American College of Rheumatology recommends several nonpharmacologic and pharmacologic options to treat knee osteoarthritis (KOA), with the goal to provide analgesic relief and decrease inflammation. This study reviewed the efficacy of Arthrokinex autologous conditioned serum for reducing pain and improving function in patients with KOA. This method has been shown to inhibit IL-1beta through the induction of IL-1-Ra.

This retrospective chart review included 100 patients with symptomatic KOA. For each participant, 60 mL of venous blood was drawn and conditioned through the Arthrokinex process. Each patient received a 1 mL injection of autologous conditioned serum on days zero, seven, 14, 90, 180 and 270. Outcome measures included the Visual Analogue Pain Scale and the Extra Short Musculoskeletal Functional Assessment Survey (XSMFA-D), completed on each injection day and at one year.

The subjects averaged 61.2 years of age with body mass index averaging 33 kg/m^2. Significant reductions in the VAS scores were noted at each time point, and were sustained for at least one year ($p<0.0001$). The participants reported pain relief after the first injection. Subjects reported a 47% reduction of pain at three months, 46% at six months and 61% at one year. At one year patients reported a 33% increase in knee function, 36% increase in knee activity, 36% increase in knee mobility and a 38% improvement in the amount of time bothered by KOA ($p<0.0001$ for all). Using a patient global impression of change survey, at one year, 30% reported being very much improved, 44% much improved and 18% minimally improved.

Conclusion: This retrospective review of 100 patients receiving a series of knee injections with autologous conditioned serum (Arthrokinex), reported a significant and sustained reduction in pain, and an improvement in function.

Baretto, A., et al. A New Treatment for Knee Osteoarthritis: Clinical Evidence for the Efficacy of Arthrokinex Autologous Conditioned Serum. **J Ortho.** 2017, March; 14(1): 4-9.

ALCOHOL INJECTIONS FOR MERALGIA PARESTHETICA

Meralgia paresthetica (MP) is a rare sensory mononeuropathy caused by compression or entrapment of the lateral femoral cutaneous nerve (LFCN) as it passes under the inguinal ligament. While this neuropathy usually runs a benign course, some patients present with intractable pain requiring surgical decompression or neurolysis. This case series describes the clinical course of patients undergoing alcohol neurolysis of the LFCN for intractable MP.

This retrospective case series included patients with a diagnosis of MP, identified by clinical exam

and verified by electrodiagnostic study. All were resistant to conservative treatment and verified by bupivicaine block. Therapeutic neurolysis was completed using three mm of 50% alcohol in 0.25% bupivicaine. The participants were assessed for pain intensity, medication use and quality of life at three months.

The six patients averaged 45.5 years of age, with an average duration of pain of 79 days. Pain intensity improved from 8.83 before the injection to 2.23 at two weeks and 1.83 at 12 weeks. Quality of life, as measured by the SF-36, improved, in the physical health domain, at two and 12 weeks ($p<0.05$), with only mild improvement noted in the mental health domain. There was a >50% improvement in pain intensity, as measured by the Numeric Rating Scale, and quality of life, as measured by the SF-36, in all patients.

Conclusion: This study of six patients with intractable meralgia paresthetica found that a guided neurolysis of the lateral femoral cutaneous nerve with alcohol was safe and effective for pain relief.

Ahmed, A., et al. Ultrasound-Guided Alcohol Neurolysis of Lateral Femoral Cutaneous Nerve for Intractable Meralgia Paresthetica: A Case Series. **Br J Pain**. 2016, November; 10(4): 232-237.

ACETYLCHOLINESTERASE INHIBITORS AND WEIGHT LOSS

Malnutrition and cognitive decline are geriatric syndromes associated with an increased risk of premature mortality in the elderly. As cognitive deterioration often alters oral intake, this meta-analysis was designed to better understand how acetylcholinesterase inhibitors affect nutritional status.

This systematic review and meta-analysis included studies published through 10/14/15. Pub Med was searched for randomized, controlled and open label trials involving acetylcholinesterase inhibitors for patients with dementia that reported nutritional status data. The primary outcome variables were changes between baseline and follow-up in the parameters of weight, body mass index and nutritional status.

The final analysis involved 12 open label trials, nine randomized, controlled trials and four longitudinal studies, including 10,792 patients with dementia. A significant, cumulative incidence of weight loss was noted, among those using acetylcholinesterase inhibitors in the longitudinal studies ($p<0.0001$). Similar results were found in the open label and randomized, controlled trials ($p<0.0001$ for both).

Conclusion: This literature review and meta-analysis found that, among patients with dementia, the use of acetylcholinesterase inhibitors is associated with an increased risk of weight loss.

Soysal, P., et al. Acetylcholinesterase Inhibitors Are Associated with Weight Loss in Older People with Dementia: a Meta-Analysis. **J Neurol, Neurosurg Psychiatr.** 2016, December; 87: 1368-1374.

DEPRESSION AND ANTIDEPRESSANT USE FOLLOWING SEVERE TRAUMATIC BRAIN INJURY

Traumatic brain injury (TBI) is a chronic health condition with physical, cognitive and neurobehavioral sequela. While post-TBI depression (PTD) is a common complication, the overlap in symptomatology of PTD and TBI-related cognitive impairments may complicate the differential diagnosis and treatment. This study evaluated the interrelationships between cognitive impairment, functional cognitive limitations and PTD in the first year following TBI.

Subjects were patients with nonpenetrating TBI, all with a Glasgow Coma Scale (GCS) score of less than nine. All patients were assessed for self-perceived cognition, using the FIM-Cog, neuropsychological assessment, and affect using the Patient Health Questionnaire (PHQ-9).

The subjects were 16 to 72 years of age, with PTD diagnosed in 38.3% at six months and 30.3% at 12 months. At six months, 51% of the patients with PTD were taking antidepressants, decreasing to 40% at 12 months. Among participants with no PTD, 26% were taking antidepressants at 12 months. Among those with no PTD, those taking antidepressants had significantly worse cognitive impairment at six months ($p=0.002$), with no significant difference at 12 months. In a secondary analysis, those both with and those without PTD had comparable cognitive performance at six months.

Conclusion: This study of patients with severe traumatic brain injury found that antidepressant use, regardless of posttraumatic depression status, was associated with cognitive impairment. In addition, posttraumatic depression did not seem to directly affect cognitive impairment.

Failla, M., et al. Effect of Depression and Antidepressant Use on Cognitive Deficits and Functional Cognition following Severe Traumatic Brain Injury. **J Head Trauma Rehab.** 2016, November/December; 31(6): E 62 -E73.

LEPTIN CONCENTRATION AND THE RISK OF IMPAIRED FUNCTION IN THE ELDERLY

Leptin is the first adipokine discovered, secreted by white adipose tissue and contributing to the regulation of appetite and

several neuroendocrine pathways. In addition, leptin has peripheral effects, some of which are associated with the production of pro-inflammatory cytokines and insulin resistance. This prospective study examined the association between serum leptin levels and the incidence of impaired physical function in older adults.

Baseline data were obtained from the Seniors-ENRICA cohort, involving 1,556 individuals in Spain, sixty years of age or older, and free from physical function limitations at baseline. At baseline, information was gathered on sociodemographic characteristics, lifestyle, health status and morbidity, dietary information and physical examinations, including blood and urine samples. From these, baseline serum leptin concentration was determined. Data were also collected on self-reported physical function and potential confounding variables. The data were used to estimate the association between serum concentrations of leptin and incident limitations in physical function.

The final analysis was conducted with 1,556 individuals. At a mean follow-up of 3.5 years, compared to individuals in the lowest quartile of leptin concentration, those in the highest quartile showed a significant increase in the risk of impaired physical function, including impaired mobility ($p= 0.006$), impaired agility ($p= 0.02$), impaired lower extremity function ($p = 0.04$) and decreased overall physical performance ($p = 0.01$).

Conclusion: This prospective study of community dwelling, older adults found that higher levels of serum leptin are associated with a greater risk of impaired physical function.

Lana, A., et al. Leptin Concentration and Risk of Impaired Physical Function in Older Adults: The Seniors-ENRICA Cohort. **Age and Ageing.** 2016, November; 45(6): 819-826.

HEEL TO TOE DROP OF RUNNING SHOES VERSUS RISK OF INJURY

Despite advances in running shoe technology, the effect of specific footwear features on the risk of running related injury have had little attention from the scientific community. This randomized, controlled trial investigated the relationship between shoe drop (the height difference between the forward and rear of the inside of the shoe) and the risk of injury.

This randomized, controlled trial included leisure-time adult runners 18 to 65 years of age. The runners were randomized to receive one of three versions of a running shoe, identical except for the height of the sole at the heel and the forefoot, to generate predefined foot drops of 10 mm (D10), 6 mm (D6) and 0 mm (D0). Data collected included type of activity, duration of session, subjective perceived intensity, distance covered, running surface, shoe pair used and whether the participant experienced any pain during the session.

Of the 553 participants, 25% sustained an injury during the follow- up period. Neither of the shoe models with reduced drop were associated with the injury risk as compared with D10. An adjusted regression model revealed that previous injury ($p=0.012$) and weekly running frequency ($p<0.001$) were risk factors for injury, while running duration was found to be a protective factor. In a secondary analysis, among occasional runners, the rate of injury was found to be lower while using low drop shoes, while, in the regular runners, that injury rate was higher.

Conclusion: This randomized trial involving recreational runners found that, overall, shoe drop is not associated with injury risk.

Malisoux, L., et al. Influence of the Heel-to-Toe Drop of Standard, Cushioned Running Shoes on Injury Risk in Leisure Time Runners. A Randomized, Controlled Trial with Six-Month Follow-Up. **Am J Sports Med.** 2016, November, 44(11): 2933-2940.

RADIOFREQUENCY DENERVATION OF THE MEDIAL CALCANEAL NERVE

Heel pain is a frequent complaint of athletes with plantar fasciosis, estimated to involve seven percent of running related injuries. A number of conservative measures have been suggested, with more invasive interventions including injections, extracorporeal shockwave therapy or surgery. This study was designed to establish whether ultrasound (US) guided radiofrequency denervation of the medial calcaneal nerve (MCN) can provide symptomatic improvement for patients with refractory heel pain.

Subjects were patients referred with refractory heel pain for MCN radiofrequency denervation. The denervation was performed under US guidance, with either three periods of three minutes or six periods of two minutes, targeting temperatures above 80°C. After denervation, 2 mL bupivicaine was administered as procedural analgesia, with 1 mL of dexamethasone provided to reduce related inflammation. The efficacy of the procedure, as compared to previous treatments, was assessed by telephone questionnaire. Subjects were divided into group 1, including those assessed more than six months after the procedure, and group 2, assessed at 6 months or less from the procedure.

Pain scores decreased significantly in both groups, with significant changes from baseline in best pain scores ($p<0.01$ for both groups), as well as residual improvement ($p<0.01$ for both groups). Satisfaction ("very" or "somewhat" satisfied) with the

results was reported by 69% of group 1 and 54% of group 2.

Conclusion: This retrospective study of patients with recalcitrant heel pain found that radiofrequency denervation of the medial calcaneal nerve may provide pain relief for at least six months after the procedure.

Counsel, P., et al. Ultrasound-Guided Radiofrequency Denervation of the Medial Calcaneal Nerve. **Clin J Sports Med**. 2016, November; 26(6): 465 -470.

EARLY PHYSICAL THERAPY FOR ACUTE ANKLE SPRAIN

Ankle sprains are among the most common musculoskeletal injuries. This study was designed to determine the role of supervised physiotherapy in the management of acute ankle sprain.

This prospective study included patients presenting for acute medical treatment of an ankle sprain (grades 1 to 2) at one of two acute care settings. The participants were randomized to a usual care arm or a physiotherapy arm. Those in the usual care arm received standard emergency department care consisting of a medical assessment and a one-page written summary of instructions for basic management of the injury at home. The physiotherapy group were provided with usual care plus a regimen of therapy including a progression of functional exercises. Treatment sessions were 30 minutes in length, with augmentation by standardized home exercise instructions. The primary outcome measure was the Foot and Ankle Outcome Score (FAOS). The primary outcome of efficacy was excellent recovery, defined as a total FAOS score of at least 450/500 at three months.

Between October of 2009 and April of 2013, 504 patients were randomized into this study. In the intention to treat analysis, at three months, excellent recovery was achieved in 43% of the physiotherapy and 37% of the usual care group (p=0.26). Differences between groups in the mean change of the FAOS scores were not significant at any time point during follow-up.

Conclusion: This study of patients presenting with acute ankle sprain failed to demonstrate that early, supervised physiotherapy leads to improved clinical function up to six months after injury, as compared to usual care alone.

Brison, R., et al. Effect of Early Supervise Physiotherapy on Recovering from Acute Ankle Sprain: Randomized, Controlled Trial. **Br Med J.** 2016; 355: i6153.

LIFE EXPECTANCY AFTER MYOCARDIAL INFARCTION

Since 2007, the centers for Medicare and Medicaid Services (CMS) has reported hospital specific 30-day, risk-standardized mortality rates for several common conditions, including myocardial infarction (MI). This study evaluated the association between hospitals' 30-day, risk-standardized mortality rates and life expectancy after acute MI.

Data were analyzed from the Cooperative Cardiovascular Project (CCP), a large, nationally representative cohort study of Medicare beneficiaries who had been hospitalized with acute MI, and had more than 17 years of follow-up data. The data were used to calculate the risk of death within each hospital, within 30 days of admission, and then stratified by case mix profiles. Comparisons were made between the hospitals in the lowest versus highest 30 day CMS mortality quintile.

Subjects included 119,735 patients admitted to 1,824 hospitals. Within each case mix stratum, patients treated in the highest-performing hospital quintile had the highest cumulative probability of survival, while those in the lowest performing hospital quintile had the lowest cumulative probability of survival. The differences in life expectancy across risk-standardized mortality rate quintiles remained significant in all five case mix strata (p<0.001). When 30-day survivors were analyzed separately, no differences were found between the groups.

Conclusion: This study of patients hospitalized with acute myocardial infarction found that those treated at hospitals with lower 30-day risk-standardized mortality rates had significantly longer life expectancies than did patients treated at hospitals with higher risk-standardized mortality rates.

Bucholz, E., et al. Life Expectancy after Myocardial Infarction, According to Hospital Performance. **N Engl J Med.** 2016, October 6, 375 (14): 1332-1342.

LIFE EXPECTANCY FOR HIV-INFECTED INDIVIDUALS

The use of combination antiretroviral therapy (ART) has dramatically increased the lifespan of patients infected with HIV. This study compared the life expectancy of HIV-infected patients to demographically similar HIV uninfected individuals from within the same healthcare system.

Data were collected from a large, integrated healthcare system in California. Those with HIV were compared to a control group of HIV uninfected members, frequency match 10:1 by age, gender, medical center and year of follow-up. The data were used to compare HIV status over time, using abridged life tables to estimate the expected years of life remaining at age 20.

Data were collected for 24,768 HIV-infected and 250,600 uninfected individuals. Life expectancy at age 20 of the HIV uninfected was 63.4 years in 1996 and 64.9 years in 2011. Life expectancy at age 20 of HIV-infected individuals increased

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from 19.1 years in 1996 to 53.1 years in 2011. In 2008 to 2011, the life expectancies at the age of 20 of HIV infected and HIV uninfected individuals were 49.3 years and 62.3 years, respectively. Those who initiated ART with a CD4 count > 500 had a life expectancy at age 20 of 54.5 years, reducing this gap. The gap was further narrowed in subgroups with no history of HBV or HCV infection, no history of drug/alcohol abuse, and no history of smoking.

Conclusion: This study found an eight-year gap in survival between those with and those without infection with HIV, even among those who initiate ART while CD4 counts are still high.

Marcus, J., et al. Narrowing the Gap in Life Expectancy between HIV-Infected and HIV-Uninfected Individuals with Access to Care. **J Acquired Immune Deficiency Syndrome**. 2016, September 1; 73(1): 39-46.

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