IWH Research Alert
January 19, 2018

Missed an issue? Catch up on previous 2017 *Research Alerts* available on the IWH website http://www.iwh.on.ca/research-alerts

Research Alerts is a service provided to you by the Institute for Work & Health (IWH) to help you keep abreast of recent literature in the areas of occupational health and safety, epidemiology, public health and others within the IWH mandate. Please note that these articles have not been reviewed by Institute scientists to assess the quality of the studies. *Research Alerts* should not be considered an endorsement of the findings. Readers are cautioned not to act on the results of single studies, but rather to seek bodies of evidence. It should also be noted that the Institute for Work & Health cannot provide full-text of articles listed in *Research Alerts* to individuals outside of the organization, as this violates copyright legislation.

***Beaton DE, Mamdani M, Zheng H, Jaglal S, Cadarette SM, Bogoch ER, Sale JEM, Sujic R, and Jain R. Improvements in osteoporosis testing and care are found following the wide scale implementation of the Ontario Fracture Clinic Screening Program: an interrupted time series analysis. Medicine. 2017; 96(48):e9012.**
http://dx.doi.org/10.1097/MD.0000000000009012 [open access]
Abstract: We evaluated a system-wide impact of a health intervention to improve treatment of osteoporosis after a fragility fracture. The intervention consisted of assigning a screening coordinator to selected fracture clinics to identify, educate, and follow up with fragility fracture patients and inform their physicians of the need to evaluate bone health. Thirty-seven hospitals in the province of Ontario (Canada) were assigned a screening coordinator. Twenty-three similar hospitals were control sites. All hospitals had orthopedic services and handled moderate-to-higher volumes of fracture patients. Administrative health data were used to evaluate the impact of the intervention.Fragility fracture patients (>/=50 years; hip, humerus, forearm, spine, or pelvis fracture) were identified from administrative health records. Cases were fractures treated at 1 of the 37 hospitals assigned a coordinator. Controls were the same types of fractures at the control sites. Data were assembled for 20 quarters before and 10 quarters after the implementation (from January 2002 to March 2010). To test for a shift in trends, we employed an interrupted time series analysis-a study design used to evaluate the longitudinal effects of interventions, through regression modelling. The primary outcome measure was bone mineral density (BMD) testing. Osteoporosis medication initiation and persistence rates were secondary outcomes in a subset of patients >/=66 years of age.A total of 147,071 patients were used in the analysis. BMD testing rates increased from 17.0% pre-

intervention to 20.9% post-intervention at intervention sites (P < .01) compared with no change at control sites (14.9% and 14.9%, P = .33). Medication initiation improved significantly at intervention sites (21.6-23.97%; P = .02) but not at control sites (17.5-18.5%; P = .27). Persistence with bisphosphonates decreased at all sites, from 59.9% to 56.4% at intervention sites (P = .02) and more so from 62.3% to 54.2% at control sites (P < .01) using 50% proportion of days covered (PDC 50).Significant improvements in BMD testing and treatment initiation were observed after the initiation of a coordinator-based screening program to improve osteoporosis management following fragility fracture

***Leao ALM, Barbosa-Branco A, Turchi MD, Steenstra IA, and Cole DC. Sickness absence among municipal workers in a Brazilian municipality: a secondary data analysis. BMC Research Notes. 2017; 10(1):773. http://dx.doi.org/10.1186/s13104-017-3116-5 [open access]**
Abstract: BACKGROUND: Sickness absence, work disability associated with illness or injury, is a major public health problem worldwide. Some studies have investigated determinants of sickness absence among workers with shorter job tenure, but have only focused on certain diagnostic groups. Although it is well established that job tenure has an inverse relationship with work injury rate, less is known about its association with sickness absence for other disorders. Therefore, this study aimed to investigate the risk factors for incidence and duration of sickness absence according to diagnosis over a 7-year period. A dynamic cohort consisting of all permanent civil servants hired from 2005 to 2011 by the Goiania municipality-Brazil. Data of certified sickness absences longer than 3 days were analyzed. The incidence density was calculated per 1000 person-years in each ICD-10 category. The association between sickness absence and socio-demographic and occupational characteristics was examined using negative binomial regression models. RESULTS: 18,450 workers, mean age of 32 years, accumulated 14,909 episodes of sickness absence. Overall, the incidence density was 234.6 episodes per 1000 person years. Diagnostic groups with the highest incidence density of sickness absences were injuries (49.1), musculoskeletal disorders (31.3) and mental disorders (29.2). Factors predicting any sickness absence were female gender, older age, low education, being a health professional, multiple jobs and full-time employment. Mental health disorders were more common among education professionals, musculoskeletal disorders among blue collar workers and injuries among inspection workers. Prolonged time on sick leave was associated with male gender, older age groups, low education and income, blue-collar workers, more than one job contract and full time employment. CONCLUSIONS: These findings demonstrate a substantial sickness absentee burden and they provide relevant information for targeting prevention and health promotion policies to the most vulnerable occupational groups

Ardakani EM, Leboeuf-Yde C, and Walker BF. Failure to define low back pain as a disease or an episode renders research on causality unsuitable:

results of a systematic review. Chiropractic and Manual Therapies. 2018; 26:1.
http://dx.doi.org/10.1186/s12998-017-0172-9 [open access]
Abstract: Background: Causative factors may be different for the very first onset of symptoms of the 'disease' of low back pain (LBP) than for ensuing episodes that occur after a pain-free period. This differentiation hinges on a life-time absence of low back pain at first onset and short-term absence for further episodes. In this systematic review, we explored whether researchers make these distinctions when investigating the causality of LBP. Methods: A literature search of PUBMED, CINAHL, and SCOPUS databases was performed from January 2010 until September 2016 using the search terms 'low back pain' or 'back pain' and 'risk factor' or 'caus*' or 'predict*' or 'onset' or 'first-time' or 'inception' or 'incidence'. Two reviewers extracted information on study design, types of episodes of back pain to distinguish the disease of LBP and recurring episodes, and also to determine the definitions of disease- or pain-free periods. Results: Thirty-three articles purporting to study causes of LBP were included. Upon scrutiny, 31 of the 33 articles were unclear as to what type of causality they were studying, that of the 'disease' or the episode, or a mere association with LBP. Only 9 studies used a prospective study design. Five studies appeared to investigate the onset of the disease of LBP, however, only one study truly captured the first incidence of LBP, which was the result of sports injury. Six appeared to study episodes but only one clearly related to the concept of episodes. Therefore, among those 11 studies, nine included both first-time LBP and episodes of LBP. Consequently, 22 studies related to the prevalence of LBP, as they probably included a mixture of first-time, recurring and ongoing episodes without distinction. Conclusion: Recent literature concerning the causality of LBP does not differentiate between the 'disease' of LBP and its recurring episodes mainly due to a lack of a clear definition of absence of LBP at baseline. Therefore, current research is not capable of providing a valid answer on this topic

Bergs Y, Hoofs H, Kant I, Slangen J, and Jansen NW. Work-family conflict and depressive complaints among Dutch employees: examining reciprocal associations in a longitudinal study. Scandinavian Journal of Work, Environment & Health. 2018; 44(1):69-79.
http://dx.doi.org/10.5271/sjweh.3658
Abstract: Objectives The aim of this study was to examine the reciprocal association between work-family conflict and depressive complaints over time. Methods Cross-lagged structural equation modeling (SEM) was used and three-wave follow-up data from the Maastricht Cohort Study with six years of follow-up [2416 men and 585 women at T1 (2008)]. Work-family conflict was operationalized by distinguishing both work-home interference and home-work interference, as assessed with two subscales of the Survey Work-Home Interference Nijmegen. Depressive complaints were assessed with a subscale of the Hospital Anxiety and Depression scale. Results The results showed a

positive cross-lagged relation between home-work interference and depressive complaints. The results of the chi (2)difference test indicated that the model with cross-lagged reciprocal relationships resulted in a significantly better fit to the data compared to the causal (Deltachi (2)(2)=9.89, P=0.001), reversed causation model (Deltachi (2)(2)=9.25, P=0.01), and the starting model (Deltachi (2)(4)=16.34, P=0.002). For work-home interference and depressive complaints, the starting model with no cross-lagged associations over time had the best fit to the empirical data. Conclusions The findings suggest a reciprocal association between home-work interference and depressive complaints since the concepts appear to affect each other mutually across time. This highlights the importance of targeting modifiable risk factors in the etiology of both home-work interference and depressive complaints when designing preventive measures since the two concepts may potentiate each other over time

Crizzle AM, Bigelow P, Adams D, Gooderham S, Myers AM, and Thiffault P. Health and wellness of long-haul truck and bus drivers: a systematic literature review and directions for future research. Journal of Transport & Health. 2017; 7(Part A):90-109.
http://dx.doi.org/10.1016/j.jth.2017.05.359

Gupta N, Wahlin-Jacobsen CD, Abildgaard JS, Henriksen LN, Nielsen K, and Holtermann A. Effectiveness of a participatory physical and psychosocial intervention to balance the demands and resources of industrial workers: a cluster-randomized controlled trial. Scandinavian Journal of Work, Environment & Health. 2018; 44(1):58-68.
http://dx.doi.org/10.5271/sjweh.3689
Abstract: Objectives The aim of this study was to evaluate the effectiveness of a participatory physical and psychosocial workplace intervention (known as PIPPI) on work ability and recovery among industrial workers. Methods Eligible workers were cluster-randomized into intervention (N=193) and control (N=222) groups. Intervention group members participated in three workshops where they mapped positive and negative aspects of their physical and psychosocial work environment and developed action plans addressing the highlighted issues, which were subsequently implemented by the participants. Questionnaire-based data on work ability and recovery were collected at baseline and 8-, 10- and 12-month follow-up. Data on productivity, well-being, mental health, and physical demands and resources were collected at baseline and 12-month follow-up. Results The intervention was delivered and received as planned (100% planned workshops conducted, 69% [standard deviation (SD) 7%] participation in workshops) and with a response rate of 76% (SD 8%) to the questionnaires. No significant between-group improvements for any of the outcomes were found in intention-to-treat multi-level mixed models. On the contrary, tendencies were observed for poorer recovery and reduced work ability in the intervention compared to control group. Conclusion The intervention did not improve the outcomes. This result can have several explanations, such as a regression-

toward-the-mean effect or that the intervention might have put an additional burden on the workers already facing high work demands. In addition, there may have been an insufficient match between the intervention components implemented and the predetermined outcomes, and implementation may have been unsuccessful. These potential explanations need to be investigated using process evaluation data

Hallman DM, Rasmussen CDN, Jorgensen MB, and Holtermann A. Time course of neck-shoulder pain among workers: a longitudinal latent class growth analysis. Scandinavian Journal of Work, Environment & Health. 2018; 44(1):47-57.
http://dx.doi.org/10.5271/sjweh.3690
Abstract: Objectives The aims of this study were to (i) identify trajectories of neck-shoulder pain (NSP) over one year in an occupational population and (ii) determine whether these trajectories are predicted by NSP characteristics as well as personal and occupational factors at baseline. Methods This longitudinal study was conducted among Danish workers (N=748) from 2012-2014. Text messages were used to collect frequent data on NSP over one year (14 waves in total). Peak NSP intensity in the past month was rated on a 0-10 numeric scale. A baseline questionnaire covered NSP characteristics (pain intensity, duration, comorbidity, pain medication, and pain interference) as well as personal (age, gender, body mass index) and occupational (seniority, work type, physical strain at work) factors. Latent class growth analysis was used to distinguish trajectories of NSP. Multivariate regression models with odds ratios (OR) were constructed to predict trajectories of NSP. Results Six distinct trajectories of NSP were identified (asymptomatic 11%, very low NSP 10%, low recovering NSP 18%, moderate recovering NSP 28%, strong fluctuating NSP 24% and severe persistent NSP 9% of the workers). Female gender, age, physical strain at work, NSP intensity and duration, pain medication, and pain interference in daily work at baseline were positively associated with severe persistent NSP and strong fluctuating NSP (all $P<0.05$). Altogether, personal and occupational factors accounted for 14% of the variance, while NSP characteristics accounted for 54%. Conclusions In an occupational sample, six distinct trajectories of NSP were identified. Physical strain at work appears to be a pertinent occupational factor predicting strong fluctuating and severe persistent NSP

Howard J, Murashov V, and Branche CM. Unmanned aerial vehicles in construction and worker safety. American Journal of Industrial Medicine. 2018; 61(1):3-10.
http://dx.doi.org/10.1002/ajim.22782
Abstract: Applications of unmanned aerial vehicles (UAVs) for military, recreational, public, and commercial uses have expanded significantly in recent years. In the construction industry, UAVs are used primarily for monitoring of construction workflow and job site logistics, inspecting construction sites to assess structural integrity, and for maintenance assessments. As is the case with

other emerging technologies, occupational safety assessments of UAVs lag behind technological advancements. UAVs may create new workplace hazards that need to be evaluated and managed to ensure their safe operation around human workers. At the same time, UAVs can perform dangerous tasks, thereby improving workplace safety. This paper describes the four major uses of UAVs, including their use in construction, the potential risks of their use to workers, approaches for risk mitigation, and the important role that safety and health professionals can play in ensuring safe approaches to the their use in the workplace

Kocman A, Fischer L, and Weber G. The Employers' perspective on barriers and facilitators to employment of people with intellectual disability: a differential mixed-method approach. Journal of Applied Research in Intellectual Disabilities. 2018; 31(1):120-131.
http://dx.doi.org/10.1111/jar.12375
Abstract: BACKGROUND: Obtaining employment is among the most important ambitions of people with intellectual disability. Progress towards comprehensive inclusive employment is hampered by numerous barriers. Limited research is available on these barriers and strategies to overcome them. METHOD: A mixed method approach in a sample of 30 HR-managers was used to assess (i) differences in perceived barriers for employment of people with specific disabilities and mental disorders; (ii) barriers specific to employing people with intellectual disability; (iii) strategies to overcome these barriers. RESULTS: Employers perceive more barriers for hiring people with intellectual disability and mental disorders than for physical disabilities. Employment for this population is hampered by a perceived lack of skills and legal issues. Strategies perceived as beneficial are supplying information, changes in organizational strategies and legal changes. CONCLUSIONS: Employers' differentiated expectations and reservations towards hiring individuals with specific disabilities need to be taken into account to increase employment for people with intellectual disability

Korshoj M, Hallman DM, Mathiassen SE, Aadahl M, Holtermann A, and Jorgensen MB. Is objectively measured sitting at work associated with low-back pain? A cross sectional study in the DPhacto cohort. Scandinavian Journal of Work, Environment & Health. 2018; 44(1):96-105.
http://dx.doi.org/10.5271/sjweh.3680
Abstract: Objectives Low-back pain (LBP) is a substantial health challenge due to the risk for long-term sickness absence and early retirement. Several biomechanical exposures at work, including sitting, have been suggested to increase the risk for LBP. The objectives of this study were to determine (i) the extent to which temporal patterns and total amount of objectively measured sitting is associated with LBP intensity and (ii) whether selected modifiers influence these associations. Methods This cross sectional study uses baseline data from the Danish PHysical ACTivity cohort with Objective measurements (DPhacto) of physical activities in the cleaning, transport and manufacturing

sectors. Peak intensity of LBP was collected by questionnaire on a 0-10 scale and sitting was expressed in terms of total duration and temporal pattern, ie, time spent in brief bursts (</=5 minutes), moderate periods (>5-</=20 minutes), and prolonged periods of sitting (>20 minutes); both during work and whole day (waking hours only). Associations were determined using linear regression in models accounting for moderation and confounding. Factors evaluated as moderators or confounders were assessed by questionnaire. Results The population consisted of 704 participants. No significant associations were found between total duration or temporal patterns of sitting and LBP intensity, neither during work nor for the whole day. Body mass index (BMI) significantly moderated the association between sitting and LBP; participants with a high and low BMI showing a negative and positive association, respectively. Conclusion Sitting was not independently associated with peak LBP intensity, suggesting other exposures are more powerful risk factors for LBP

Miller BM, Metz D, Smith TD, Lastunen J, Landree E, and Nelson C. Understanding the economic benefit associated with research and services at the National Institute for Occupational Safety and Health: an approach and three case studies. Santa Monica, Calif.: RAND Corporation; 2017.
https://www.rand.org/content/dam/rand/pubs/research_reports/RR2200/RR2256/RAND_RR2256.pdf

Munn Z, Stern C, Aromataris E, Lockwood C, and Jordan Z. What kind of systematic review should I conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. BMC Medical Research Methodology. 2018; 18(1):5.
http://dx.doi.org/10.1186/s12874-017-0468-4 [open access]
Abstract: BACKGROUND: Systematic reviews have been considered as the pillar on which evidence-based healthcare rests. Systematic review methodology has evolved and been modified over the years to accommodate the range of questions that may arise in the health and medical sciences. This paper explores a concept still rarely considered by novice authors and in the literature: determining the type of systematic review to undertake based on a research question or priority. RESULTS: Within the framework of the evidence-based healthcare paradigm, defining the question and type of systematic review to conduct is a pivotal first step that will guide the rest of the process and has the potential to impact on other aspects of the evidence-based healthcare cycle (evidence generation, transfer and implementation). It is something that novice reviewers (and others not familiar with the range of review types available) need to take account of but frequently overlook. Our aim is to provide a typology of review types and describe key elements that need to be addressed during question development for each type. CONCLUSIONS: In this paper a typology is proposed of various systematic review methodologies. The review types are defined and situated with regard to establishing corresponding questions and inclusion criteria. The ultimate objective is to provide clarified guidance for both

novice and experienced reviewers and a unified typology with respect to review types

Oldfield M, MacEachen E, Kirsh B, and MacNeill M. Helping employees with fibromyalgia manage their reputations through disclosure dances. OOHNA Journal. 2017; (Spring/Summer)28-33.
http://mi5.ca/oohna/2017springsummer/index.html#p=38

Shockey TM, Luckhaupt SE, Groenewold MR, and Lu ML. Frequent exertion and frequent standing at work, by industry and occupation group - United States, 2015. Morbidity and Mortality Weekly Report. 2018; 67(1):1-6.
http://dx.doi.org/10.15585/mmwr.mm6701a1
Abstract: Repeated exposure to occupational ergonomic hazards, such as frequent exertion (repetitive bending or twisting) and frequent standing, can lead to injuries, most commonly musculoskeletal disorders (1). Work-related musculoskeletal disorders have been estimated to cost the United States approximately $2.6 billion in annual direct and indirect costs (2). A recent literature review provided evidence that prolonged standing at work also leads to adverse health outcomes, such as back pain, physical fatigue, and muscle pain (3). To determine which industry and occupation groups currently have the highest prevalence rates of frequent exertion at work and frequent standing at work, CDC analyzed data from the 2015 National Health Interview Survey (NHIS) Occupational Health Supplement (OHS) regarding currently employed adults in the United States. By industry, the highest prevalence of both frequent exertion and frequent standing at work was among those in the agriculture, forestry, fishing, and hunting industry group (70.9%); by occupation, the highest prevalence was among those in the construction and extraction occupation group (76.9%). Large differences among industry and occupation groups were found with regard to these ergonomic hazards, suggesting a need for targeted interventions designed to reduce workplace exposure

Streibelt M, Burger W, Nieuwenhuijsen K, and Bethge M. Effectiveness of graded return to work after multimodal rehabilitation in patients with mental disorders: a propensity score analysis. Journal of Occupational Rehabilitation. 2017; [Epub ahead of print].
http://dx.doi.org/10.1007/s10926-017-9709-y
Abstract: Purpose Graded return to work (GRTW) is a strategy aimed at bringing people gradually back to coping with a full workload after an extended period of sick leave. This study aims to determine the effect of GRTW in addition to a multimodal rehabilitation on longer-term work participation in people with chronic mental disorders (CMDs). Methods Patients filled out questionnaires at the start of a multimodal rehabilitation and 15 months later. Balanced groups (GRTW, no GRTW) were formed by propensity score matching based on 27 covariates. The primary outcome measures were the return to work (RTW) status at follow-up and the number of days on sick leave during follow-up. Results From 1062 data sets (GRTW 508, no GRTW 554), 381 pairs were matched (age: 47.8 years;

78% female; 65% affective disorders, 28% neurotic or somatic disorders). At follow-up, 88% of the GRTW group had returned to work compared to only 73% of the controls (RR = 1.22, 1.13-1.31). The mean sick leave duration during the follow-up period was 7.0 weeks in the GRTW group compared to 13.4 weeks in the control group ($p < 0.001$). Additional explorative analyses showed that these effects were only observed in patients with an unsure or negative subjective RTW prognosis. Conclusions Based on this analysis, GRTW in addition to a multimodal rehabilitation is effective in enhancing successful work participation in people with CMDs. Earlier studies showing larger effects in people with a higher risk of a non-RTW were confirmed

Vasudevan SV. Opioid use for treatment of chronic pain: an overview and treatment guideline for injured workers responses. WMJ. 2017; 116(2):61-63.
http://www.wisconsinmedicalsociety.org/_WMS/publications/wmj/pdf/116/2/61.pdf

Watanabe S, Takahashi T, Takeba J, and Miura H. Factors associated with the prevalence of back pain and work absence in shipyard workers. BMC Musculoskeletal Disorders. 2018; 19(1):12.
http://dx.doi.org/10.1186/s12891-018-1931-z [open access]
Abstract: BACKGROUND: We conducted a questionnaire survey of shipyard workers to identify difficulties experienced due to orthopedic or musculoskeletal disorders. METHODS: The subjects were 375 workers (male, 361; female, 14) who worked for a single shipbuilding company. Questionnaire items covered the working environment, including work environment, working posture, and the weight of objects that the subject dealt with, as well as physical and lifestyle characteristics, namely smoking habits, drinking habits, sleeping hours, medications, exercise habits, and any weight gain of 20 kg or more since the age of 20. Subjects were also asked to indicate if they regularly experienced any of 17 listed difficulties in their daily lives, and to use an illustration of the human body to mark any body parts that were painful or hard to move. RESULTS: The mean age was 41.8 years (19-73 years). The lower and/or upper back was the most frequent site of pain (46.5%), followed by the shoulders (11.4%), knees (9.6%), and neck (5.3%). Maintaining a half-sitting posture was the most problematic activity of daily living. Back pain was less frequent in subjects who exercised regularly, and more common in those who worked with heavy loads or in narrow spaces. A multinomial logistic regression analysis showed that absence from work was more common in subjects with back pain who had gained weight since their youth, who smoked, who used fire while welding metal, or who worked in a lying posture. While 35.4% of subjects had experienced absence from work due to musculoskeletal pain, only 5.1% were permitted by their employer to alter their work content or reduce their workload. CONCLUSIONS: These results indicate that a large number of shipyard workers have difficulties in their work and daily life activities due to back pain. To prevent

worsening of pain and to reduce work absence, it is important to provide appropriate training to minimize the risk factors for back pain that were identified in this study

Weale VP, Wells Y, and Oakman J. Self-reported musculoskeletal disorder pain: the role of job hazards and work-life interaction. American Journal of Industrial Medicine. 2018; 61(2):130-139.
http://dx.doi.org/10.1002/ajim.22793
Abstract: BACKGROUND: Previous research identified an association between work-family conflict and musculoskeletal pain. This study explores how the work-life interface might affect pain experienced by residential aged care staff. METHODS: A cross-sectional survey of 426 employees in residential aged care was analyzed to assess the impacts of workplace hazards, work-family conflict, and work-life balance on self-reported musculoskeletal pain. RESULTS: Work-family conflict acts as a mediator of the relationships between workplace hazards and the total number of body regions at which musculoskeletal pain was experienced. Work-life balance only acts as a mediator for particular hazards and only if work-family conflict is not taken into account. CONCLUSIONS: Addressing work-life interaction, and in particular work-family conflict, warrants further investigation as a legitimate means through which musculoskeletal disorder risk can be reduced. Policies and practices to improve work-life interaction and reduce work-family conflict should be considered as integral components of musculoskeletal disorder risk management strategies

*IWH authored publications.