IWH Research Alert
November 24, 2017

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.

***Van Eerd D and Saunders R. Integrated knowledge transfer and exchange: an organizational approach for stakeholder engagement and communications. Scholarly and Research Communication. 2017; 8(1). http://dx.doi.org/10.22230/src.2017v8n1a274**

***Landsman V, Fillery M, Vernon H, and Bang H. Sample size calculations for blinding assessment. Journal of Biopharmaceutical Statistics. 2017;[Epub ahead of print]. http://dx.doi.org/10.1080/10543406.2017.1399898**
Abstract: Blinding is a critical component in randomized clinical trials along with treatment effect estimation and comparisons between the treatments. Various methods have been proposed for the statistical analyses of blinding-related data, but there is little guidance for determining the sample size for this type of data, especially if blinding assessment is done in pilot studies. In this paper, we try to fill this gap and provide simple methods to address sample size calculations for a "new" study with different research questions and scenarios. The proposed methods are framed in terms of estimation/precision or statistical testing to allow investigators to choose the best suited method for their goals. We illustrate the methods using worked examples with real data

Baron S, Filios MS, Marovich S, Chase D, and Ash JS. Recognition of the relationship between patients' work and health: a qualitative evaluation of the need for clinical decision support (CDS) for worker health in five primary care practices. Journal of Occupational & Environmental Medicine. 2017; 59(11):e245-e250. http://dx.doi.org/10.1097/JOM.0000000000001183

Abstract: OBJECTIVE: The aim of this study was to determine the perceived value and feasibility of increased access to information about workers' health for primary care providers (PCPs) by evaluating the need for clinical decision support (CDS) related to worker health in primary care settings. METHODS: Qualitative methods, including semi-structured interviews and observations, were used to evaluate the value and feasibility of three examples of CDS relating work and health in five primary care settings. RESULTS: PCPs and team members wanted help addressing patients' health in relation to their jobs; the proposed CDS examples were perceived as valuable because they provided useful information, promoted standardization of care, and were considered technically feasible. Barriers included time constraints and a perceived inability to act on the findings. CONCLUSION: PCPs recognize the importance and impact of work on their patients' health but often lack accessible knowledge at the right time. Occupational health providers can play an important role through contributions to the development of CDS that assists PCPs in recognizing and addressing patients' health, as well as through the provision of referral guidelines

Browne RAV, Farias-Junior LF, Freire YA, Schwade D, Macedo GAD, Montenegro VB, Lopes TJA, Dantas FFO, and Costa EC. Sedentary occupation workers who meet the physical activity recommendations have a reduced risk for metabolic syndrome: a cross-sectional study. Journal of Occupational & Environmental Medicine. 2017; 59(11):1029-1033.
http://dx.doi.org/10.1097/JOM.0000000000001104
Abstract: OBJECTIVE: We tested the hypothesis that sedentary occupation workers who meet the physical activity recommendations present a lower risk for metabolic syndrome (MetS) than their nonactive counterparts. METHODS: A cross-sectional study involving 502 sedentary occupation workers. Physical activity level was self-reported. MetS was defined by International Diabetes Federation criteria. RESULTS: The active group showed lower odds for MetS [odds ratio (OR) 0.52, 95% confidence interval (95% CI) 0.27 to 0.98], abdominal obesity (OR 0.36, 95% CI 0.16 to 0.82), elevated blood pressure (OR 0.47, 95% CI 0.26 to 0.84), and reduced high-density lipoprotein cholesterol (OR 0.54, 95% CI 0.31 to 0.93) than the sedentary group after adjustments for age, time in job, body mass index, and tobacco use. CONCLUSIONS: Sedentary occupation workers who meet the physical activity recommendations have a reduced risk for MetS

Dzhambov A and Dimitrova D. Occupational noise exposure and the risk for work-related injury: a systematic review and meta-analysis. Annals of Work Exposures and Health. 2017; 61(9):1037-1053.
http://dx.doi.org/10.1093/annweh/wxx078
Abstract: Objectives: Occupational noise exposure has been linked to work-related injuries. Strategies to control occupational hazards often rely on dose-response relationships needed to inform policy, but quantitative synthesis of the relevant literature has not been done so far. This study aimed to systematically

review the epidemiological literature and to perform meta-analysis of the risk for work-related injury due to occupational noise exposure. Methods: PRISMA and MOOSE guidelines were followed. PubMed, ScienceDirect, and Google Scholar were searched up until 15 December 2016 in English, Russian, and Spanish. Reference lists, grey literature, and expert archives were searched as well. The risk of bias was assessed for each study and incorporated into the meta-analysis weights using the quality effects model. Results: Overall, 21 studies were included at the qualitative review stage: 9 cross-sectional, 6 case-control, 4 cohort, 1 case-crossover, and 1 ecological. Noise exposure was assessed objectively in 13 studies. Information on occupational injuries was elicited from medical records/registry in 13 studies. Meta-analyses showed RR = 1.22 (95% CI: 1.15, 1.29) (n = 59028) per 5 dB increase in noise exposure (Cochran's Q = 27.26, P < 0.001, I2 = 67%) and RR = 2.16 (95% CI: 1.61, 2.90) (n = 96023) in the most exposed group (>90-95 dB) compared with the least exposed group (Cochran's Q = 180.46, P < 0.001, I2 = 90%). Subgroup analysis with meta-regression revealed an overall robust pooled risk per 5 dB. Conclusions: There is a dose-response association between occupational noise exposure and work-related injury risk. However, the quality of evidence is 'very low'; therefore, the magnitude of this association should be interpreted with caution

Goplerud E, Hodge S, and Benham T. A substance use cost calculator for US employers with an emphasis on prescription pain medication misuse. Journal of Occupational & Environmental Medicine. 2017; 59(11):1063-1071. http://dx.doi.org/10.1097/JOM.0000000000001157 [open access]
Abstract: OBJECTIVE: Substance use disorders are among the most common and costly health conditions affecting Americans. Despite estimates of national costs exceeding $400 billion annually, individual companies may not see how substance use impacts their bottom lines through lost productivity and absenteeism, turnover, health care expenses, disability, and workers' compensation. METHODS: Data on employed adults (18 years and older) from 3 years (2012 to 2014) of the National Survey on Drug Use and Health Public Use Data Files were analyzed. RESULTS: The results offer employers an authoritative, free, epidemiologically grounded, and easy-to-use tool that gives specific information about how alcohol, prescription pain medication misuse, and illicit drug use is likely impacting workplaces like theirs. CONCLUSION: Employers have detailed reports of the cost of substance use that can be used to improve workplace policies and health benefits

Khashaba E, El-Helaly M, El-Gilany AH, Motawei SM, and Foda S. Risk factors for non-fatal occupational injuries among construction workers: a case-control study. Toxicology and Industrial Health. 2017; [Epub ahead of print].
http://dx.doi.org/10.1177/0748233717733853
Abstract: BACKGROUND: Substance abuse is a serious problem, because it affects both workers and young people. Prevalence and consequences of

cannabis abuse among construction workers in particular are not well studied in Egypt. OBJECTIVES: To determine the association between non-fatal occupational injuries among construction workers and their demographic and occupational factors and to assess the frequency of cannabis abuse and its relationship to injury severity and workdays lost. SUBJECTS AND METHODS: A case-control study was conducted at Mansoura Emergency Hospital. Cases were 100 acutely injured male workers. A control group of 90 healthy age-matched workers was selected from 8 construction sites. Workers were interviewed, and a questionnaire was completed that included socio-demographic data, full occupational history, and causes and type of injury. Injury outcome measures included lost workdays and the injury severity score (ISS). Cannabis abuse in injured workers was monitored by preliminary testing of urine and confirmatory testing of blood. RESULTS: Logistic regression analysis revealed that the independent predictors of occupational injuries were rural residence, being a carpenter or painter and past history of injuries. The most common accidents were slipping falls (62%). Confirmed cannabis test was positive in 51.1% of the injured workers. Median days away from work were greater among cannabis users than non-users. The ISS was significantly higher among users compared to non-users ($p < 0.05$). CONCLUSION: Cannabis abuse can increase injury severity and prolong workdays lost. Drug testing is recommended for at-risk construction workers with inadequate safety measures

Kowalski-McGraw M, Green-McKenzie J, Pandalai SP, and Schulte PA. Characterizing the interrelationships of prescription opioid and benzodiazepine drugs with worker health and workplace hazards. Journal of Occupational & Environmental Medicine. 2017; 59(11):1114-1126. http://dx.doi.org/10.1097/JOM.0000000000001154
Abstract: OBJECTIVE: Prescription opioid and benzodiazepine drug use, which has risen significantly, can affect worker health. Exploration of the scientific literature assessed (1) interrelationships of such drug use, occupational risk factors, and illness and injury, and (2) occupational and personal risk factor combinations that can affect their use. METHODS: The scientific literature from 2000 to 2015 was searched to determine any interrelationships. RESULTS: Evidence for eight conceptual models emerged based on the search yield of 133 articles. These models summarize interrelationships among prescription opioid and benzodiazepine use with occupational injury and illness. Factors associated with the use of these drugs included fatigue, impaired cognition, falls, motor vehicle crashes, and the use of multiple providers. CONCLUSION: Prescription opioid and benzodiazepine drugs may be both a personal risk factor for work-related injury and a consequence of workplace exposures

Marmot M. The health gap: doctors and the social determinants of health. Scandinavian Journal of Work, Environment & Health. 2017; 45(7):686-693. http://dx.doi.org/10.1177/1403494817717448
Abstract: The social gradient in health has the clear implication that action to

improve health and reduce inequalities has to take place at social level, not simply depending on individual changes. Individuals' ability to change is constrained by social circumstances. The evidence that the magnitude of the gradient varies between countries, and can change within a country over time, suggests that conscious strategies to change it can be successful. In my review of evidence in Britain, the Marmot Review, we made recommendations in six domains: give every child the best start in life; education and life-long learning; employment and working conditions; ensure that everyone has at least the minimum income necessary to lead a health life; healthy and sustainable places; taking a social determinants approach to prevention. A big question is the role of health professionals in action on social determinants of health. We have identified five actions in implementing recommendations: education and training; seeing the patient in broader perspective; the health service as employer; working in partnership; advocacy. The evidence is encouraging that health professionals can make a big difference in advancing the cause of health equity

McLellan RK, Haas NS, Kownacki RP, Pransky GS, Talmage JB, and Dreger M. Using electronic health records and clinical decision support to provide return-to-work guidance for primary care practitioners for patients with low back pain. Journal of Occupational & Environmental Medicine. 2017; 59(11):e240-e244.
http://dx.doi.org/10.1097/JOM.0000000000001180
Abstract: OBJECTIVE: The aim of this study was to describe the process by which a group of subject matter experts in the area of return to work developed a resource tool to provide clinical decision support (CDS) for primary care clinicians. METHODS: A common musculoskeletal disorder, low back pain (LBP), was selected, pertinent literature reviewed, and specific recommendations for action in the clinical setting developed. RESULTS: Primary care practitioners (PCPs) are routinely expected to create work activity prescriptions. The knowledge base for a CDS tool that could be embedded in electronic health records has been developed. CONCLUSION: Improved clinical support should help prevent and manage work limitations associated with LBP not caused by work. The proposed decision support should reduce administrative burden and stimulate PCPs to explore the role of occupation and its demands on patients

Messacar D. Intra-household labor income responses to changes in tax rates among older workers. Analytical studies branch research paper series. [Statistics Canada Catalogue, no. 11F0019M - No. 400]. Ottawa: Statistics Canada; 2017.
http://www.statcan.gc.ca/pub/11f0019m/11f0019m2017400-eng.pdf

Michie S and Johnston M. Optimising the value of the evidence generated in implementation science: the use of ontologies to address the challenges. Implementation Science. 2017; 12(1):131.
http://dx.doi.org/10.1186/s13012-017-0660-2 [open access]
Abstract: Implementing research findings into healthcare practice and policy is a

complex process occurring in diverse contexts; it invariably depends on changing human behaviour in many parts of an intricate implementation system. Questions asked with the aim of improving implementation are multifarious variants of 'What works, compared with what, how well, with what exposure, with what behaviours (for how long), for whom, in what setting and why?'. Relevant evidence is being published at a high rate, but its quantity, complexity and lack of shared terminologies present challenges. The achievement of efficient, effective and timely synthesis of evidence is facilitated by using 'ontologies' to systematically structure and organise the evidence about constructs and their relationships, using a controlled, well-defined vocabulary

Moreno P, Rodriguez-Poo J, and Cantarero D. A new approach to understanding labour supply of disabled people. Applied Economics. 2017; [Epub ahead of print].
http://dx.doi.org/10.1080/00036846.2017.1392000

Pedersen J and Bjorner JB. Worklife expectancy in a cohort of Danish employees aged 55-65 years - comparing a multi-state Cox proportional hazard approach with conventional multi-state life tables. BMC Public Health. 2017; 17(1):879.
http://dx.doi.org/10.1186/s12889-017-4890-7 [open access]
Abstract: BACKGROUND: Work life expectancy (WLE) expresses the expected time a person will remain in the labor market until he or she retires. This paper compares a life table approach to estimating WLE to an approach based on multi-state proportional hazards models. The two methods are used to estimate WLE in Danish members and non-members of an early retirement pensioning (ERP) scheme according to levels of health. METHODS: In 2008, data on self-rated health (SRH) was collected from 5212 employees 55-65 years of age. Data on previous and subsequent long-term sickness absence, unemployment, returning to work, and disability pension was collected from national registers. WLE was estimated from multi-state life tables and through multi-state models. RESULTS: Results from the multi-state model approach agreed with the life table approach but provided narrower confidence intervals for small groups. The shortest WLE was seen for employees with poor SRH and ERP membership while the longest WLE was seen for those with good SRH and no ERP membership. Employees aged 55-56 years with poor SRH but no ERP membership had shorter WLE than employees with good SRH and ERP membership. Relative WLE reversed for the two groups after age 57. At age 55, employees with poor SRH could be expected to spend approximately 12 months on long-term sick leave and 9-10 months unemployed before they retired - regardless of ERP membership. ERP members with poor SRH could be expected to spend 4.6 years working, while non-members could be expected to spend 7.1 years working. CONCLUSION: WLE estimated through multi-state models provided an effective way to summarize complex data on labor market affiliation. WLE differed noticeably between members and non-members of the

ERP scheme. It has been hypothesized that while ERP membership would prompt some employees to retire earlier than they would have done otherwise, this effect would be partly offset by reduced time spent on long-term sick leave or unemployment. Our data showed no indication of such an effect, but this could be due to residual confounding and self-selection of people with poor health into the ERP scheme

Sarkies MN, Bowles KA, Skinner EH, Haas R, Lane H, and Haines TP. The effectiveness of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare: a systematic review. Implementation Science. 2017; 12(1):132. http://dx.doi.org/10.1186/s13012-017-0662-0 [open access]
Abstract: BACKGROUND: It is widely acknowledged that health policy and management decisions rarely reflect research evidence. Therefore, it is important to determine how to improve evidence-informed decision-making. The primary aim of this systematic review was to evaluate the effectiveness of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare. The secondary aim of the review was to describe factors perceived to be associated with effective strategies and the inter-relationship between these factors. METHODS: An electronic search was developed to identify studies published between January 01, 2000, and February 02, 2016. This was supplemented by checking the reference list of included articles, systematic reviews, and hand-searching publication lists from prominent authors. Two reviewers independently screened studies for inclusion, assessed methodological quality, and extracted data. RESULTS: After duplicate removal, the search strategy identified 3830 titles. Following title and abstract screening, 96 full-text articles were reviewed, of which 19 studies (21 articles) met all inclusion criteria. Three studies were included in the narrative synthesis, finding policy briefs including expert opinion might affect intended actions, and intentions persisting to actions for public health policy in developing nations. Workshops, ongoing technical assistance, and distribution of instructional digital materials may improve knowledge and skills around evidence-informed decision-making in US public health departments. Tailored, targeted messages were more effective in increasing public health policies and programs in Canadian public health departments compared to messages and a knowledge broker. Sixteen studies (18 articles) were included in the thematic synthesis, leading to a conceptualisation of inter-relating factors perceived to be associated with effective research implementation strategies. A unidirectional, hierarchal flow was described from (1) establishing an imperative for practice change, (2) building trust between implementation stakeholders and (3) developing a shared vision, to (4) actioning change mechanisms. This was underpinned by the (5) employment of effective communication strategies and (6) provision of resources to support change. CONCLUSIONS: Evidence is developing to support the use of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare. The design of future implementation

strategies should be based on the inter-relating factors perceived to be associated with effective strategies. TRIAL REGISTRATION: This systematic review was registered with Prospero (record number: 42016032947)

Setchell J, Costa N, Ferreira M, Makovey J, Nielsen M, and Hodges PW. Individuals' explanations for their persistent or recurrent low back pain: a cross-sectional survey. BMC Musculoskeletal Disorders. 2017; 18(1):466. http://dx.doi.org/10.1186/s12891-017-1831-7 [open access]
Abstract: BACKGROUND: Most people experience low back pain (LBP), and it is often ongoing or recurrent. Contemporary research knowledge indicates individual's pain beliefs have a strong effect on their pain experience and management. This study's primary aim was to determine the discourses (patterns of thinking) underlying people's beliefs about what causes their LBP to persist. The secondary aim was to investigate what they believed was the source of this thinking. METHODS: We used a primarily qualitative survey design: 130 participants answered questions about what caused their LBP to persist, and where they learned about these causes. We analysed responses about what caused their LBP using discourse analysis (primary aim), and mixed methods involving content analysis and descriptive statistics to analyse responses indicating where participants learnt these beliefs (secondary aim). RESULTS: We found that individuals discussed persistent LBP as 1) due to the body being like a 'broken machine', 2) permanent/immutable, 3) complex, and 4) very negative. Most participants indicated that they learnt these beliefs from health professionals (116, 89%). CONCLUSIONS: We concluded that despite continuing attempts to shift pain beliefs to more complex biopsychosocial factors, most people with LBP adhere to the traditional biomedical perspective of anatomical/biomechanical causes. Relatedly, they often see their condition as very negative. Contrary to current "best practice" guidelines for LBP management, a potential consequence of such beliefs is an avoidance of physical activities, which is likely to result in increased morbidity. That health professionals may be the most pervasive source of this thinking is a cause for concern. A small number of people attributed non-physical, unknown or complex causes to their persistent

Shuval K, Li Q, Gabriel KP, and Tchernis R. Income, physical activity, sedentary behavior, and the 'weekend warrior' among U.S. adults. Preventive Medicine. 2017; 103:91-97. http://dx.doi.org/10.1016/j.ypmed.2017.07.033
Abstract: The present study examines the association between income and physical activity intensity along the entire continuum using accelerometry in a nationally representative sample of U.S. adults. Specifically, we assessed the relationship between annual household income, sedentary behavior, light, and moderate-vigorous intensity physical activity, and meeting physical activity guidelines over a brief, 2-day period ('weekend warrior'), and during the entire week. The sample consisted of 5206 National Health and Examination Survey

adult participants (2003-2006) who wore accelerometers and completed pertinent survey questions. Ordinary Least Square models were computed to examine the relationship between income and the dependent variables (sedentary behavior, light, and moderate to vigorous intensity activity) adjusting for covariates. Logistic regression was employed to examine the association between income and meeting physical activity guidelines during a 2-day and 7-day time-period. Results indicate that individuals with an annual income of >/=$75,000 engaged in 4.6 more daily minutes of moderate to vigorous activity (p-value<0.01), in comparison to the reference group (<$20,000 annual income). Those in the high-income strata were 1.6 and 1.9 times more likely to meet physical activity guidelines during a 2 and 7-day period (respectively) than their lower income counterparts (p<0.05 for both). Further, those in the high-income strata spent 11.8 more minutes daily being sedentary than their lower income counterparts (p-value<0.01). In conclusion, higher annual household income is related to more intense, less frequent (per week) patterns of physical activity and more daily sedentary time

Wallmann-Sperlich B, Chau JY, and Froboese I. Self-reported actual and desired proportion of sitting, standing, walking and physically demanding tasks of office employees in the workplace setting: do they fit together? BMC Research Notes. 2017; 10(1):504.
http://dx.doi.org/10.1186/s13104-017-2829-9 [open access]
Abstract: OBJECTIVE: Occupational sitting time in white-collar workers represents a prominent contributor to overall daily sitting time, which is associated with various health risks. Workplace interventions intending to reduce sitting time during work typically focus on replacing sitting with standing. The aim was to investigate and compare actual and desired proportions of time spent sitting, standing, walking, and doing physically demanding tasks at work reported by desk-based workers. Cross-sectional data were collected from German desk-based workers (n = 614; 53.3% men; 40.9 +/- 13.5 years). All were interviewed about their self-reported actual and desired level of sitting, standing, walking and physically demanding tasks at work. RESULTS: Desk-based workers reported to sit 73.0%, stand 10.2%, walk 12.9% and do physically demanding tasks 3.9% of their working hours. However, the individuals desire to sit, stand, walk and do physically demand tasks significantly different [53.8% sit, 15.8% stand, 22.8% walk, physically demanding tasks (7.7%), p < 0.001]. The present data revealed greatest mismatch between the desk-based workers' actual and desired time for sitting and walking. Health promotion programs should offer not only options for more standing but also opportunities for more walking within the workplace setting to better match workers' desires

*IWH authored publications.