IWH Research Alert February 17, 2017

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*Pinsker E, Inrig T, Daniels TR, Warmington K, and Beaton DE. Symptom resolution and patient-perceived recovery following ankle arthroplasty and arthrodesis. Foot & Ankle International. 2016; 37(12):1269-1276. http://dx.doi.org/10.1177/1071100716660820

Abstract: BACKGROUND: Patients' perception of outcomes is not always defined by the absence of limitations/symptoms (resolution), but can also be characterized by behavioral adaptation and cognitive coping arising in cases with residual deficits. Patient-reported outcome measures (PROs) are designed to measure levels of function or symptoms, largely missing whether patients are coping with ongoing limitations. This study aimed to broaden the conventional definition of a "satisfactory" outcome following ankle reconstruction by comparing patient-reported outcomes of patients with and without residual symptoms and limitations. METHODS: The study consisted of a cross-sectional survey of ankle arthroplasty (n = 85) and arthrodesis (n = 15) patients. Outcome measures included the Ankle Osteoarthritis Scale. Short Musculoskeletal Function Assessment, Short Form-12, and EuroQol-5 Dimension. Patients also completed measures of pain (0-10), stiffness (0-10), satisfaction (0-3), and ability to complete activities of daily living (ADL) (0-6). Based on a self-reported question regarding recovery and coping, patients were categorized as "Recovered-Resolved" (better with no symptoms or residual effects), "Recovered, not Resolved" (RNR, better with residual effects), or "Not Recovered" (not better). Recovery groups were compared across measures. RESULTS: Only 15% of patients were categorized Recovered-Resolved. Most were RNR (69%), leaving 14% Not Resolved. Recovered-Resolved experienced lower rates of pain (1.4 +/-2.3), stiffness (1.1 +/- 2.6), and difficulty performing ADLs (0.9 +/- 1.2). Overall, outcome measure scores were high (ie, better health) for Recovered-Resolved

patients, midrange for RNR patients, and low for Not Recovered patients, thus confirming predefined hypotheses. Recovered-Resolved and RNR patients had similarly high satisfaction summary scores (3.0 +/- 0.0 vs 2.6 +/- 0.6). CONCLUSION: Most patients reported positive outcomes, but few (15%) experienced resolution of all symptoms and limitations. Current PROs focus on achieving low levels of symptoms and limitations, but miss an important achievement when patients are brought to a level of residual deficits with which they can cope. Patients' perceptions of satisfactory outcomes were not predicated on the resolution of all limitations; thus, the conventional definition of "satisfactory" outcomes should be expanded accordingly. LEVEL OF EVIDENCE: Level II, prospective cohort study

*Wong IS and Breslin FC. Risk of work injury among adolescent students from single and partnered parent families. American Journal of Industrial Medicine. 2017; 60(3):285-294.

http://dx.doi.org/10.1002/ajim.22684

Abstract: BACKGROUND: Parental involvement in keeping their children safe at work has been examined in a handful of studies, with mixed results. Evidence has suggested that non-work injury risk is higher among children from singleparent families, but little is known about their risk for work-related injuries. METHODS: Five survey cycles of the Canadian Community Health Survey were pooled to create a nationally representative sample of employed 15-19-year old students (N = 16,620). Multivariable logistic regression estimated the association between family status and work injury. RESULTS: Risk of work-related repetitive strains (OR:1.24, 95%CI: 0.69-2.22) did not differ by family type. However, children of single parents were less likely to sustain a work injury receiving immediate medical care (OR:0.43, 95%CI: 0.19-0.96). CONCLUSION: Despite advantages and disadvantages related to family types, there is no evidence that work-related injury risk among adolescents from single parent families is greater than that of partnered-parent families. Am. J. Ind. Med. 60:285-294, 2017. (c) 2017 Wiley Periodicals, Inc

Bunting J, Branche C, Trahan C, and Goldenhar L. A national safety standdown to reduce construction worker falls. Journal of Safety Research. 2017; 60:103-111.

http://dx.doi.org/10.1016/j.jsr.2016.12.005

Abstract: INTRODUCTION: Falls are the leading cause of death and third leading cause of non-fatal injuries in construction. In an effort to combat these numbers, The National Campaign to Prevent Falls in Construction began in April 2012. As the campaign gained momentum, a week called the National Safety Stand-Down to Prevent Falls was launched to draw attention to the campaign and its goals. The purpose of this paper is to examine the reach of the Stand-Down and lessons learned from its implementation. METHODS: The Occupational Safety & Health Administration offered a certificate of participation during the Stand-Down. To print the certificate, respondents provided information about their company and stand-down event. C

Dale AM, Jaegers L, Welch L, Barnidge E, Weaver N, and Evanoff BA. Facilitators and barriers to the adoption of ergonomic solutions in construction. American Journal of Industrial Medicine. 2017; 60(3):295-305. http://dx.doi.org/10.1002/ajim.22693

Abstract: BACKGROUND: Rates of musculoskeletal disorders in construction remain high. Few studies have described barriers and facilitators to the use of available ergonomic solutions. This paper describes these barriers and facilitators and their relationship to the level of adoption. METHODS: Three analysts rated 16 proposed ergonomic solutions from a participatory ergonomics study and assessed the level of adoption, six adoption characteristics, and identified the category of adoption from a theoretical model. RESULTS: Twelve solutions were always or intermittently used and were rated positively for characteristics of relative advantage, compatibility with existing work processes and trialability. Locus of control (worker vs. contractor) was not related to adoption. Simple solutions faced fewer barriers to adoption than those rated as complex. CONCLUSIONS: Specific adoption characteristics can help predict the use of new ergonomic solutions in construction. Adoption of complex solutions must involve multiple stakeholders, more time, and shifts in culture or work systems. Am. J. Ind. Med. 60:295-305, 2017. (c) 2017 Wiley Periodicals, Inc

Fagan KM and Hodgson MJ. Under-recording of work-related injuries and illnesses: an OSHA priority. Journal of Safety Research. 2017; 60:79-83. http://dx.doi.org/10.1016/j.jsr.2016.12.002

Abstract: INTRODUCTION: A 2009 Government Accounting Office (GAO) report, along with numerous published studies, documented that many workplace injuries are not recorded on employers' recordkeeping logs required by the Occupational Safety and Health Administration (OSHA) and consequently are under-reported to the Bureau of Labor Statistics (BLS), resulting in a substantial undercount of occupational injuries in the United States. METHODS: OSHA conducted a Recordkeeping National Emphasis Program (NEP) from 2009 to 2012 to identify the extent and causes of unrecorded and incorrectly recorded occupational injuries and illnesses. RESULTS: OSHA found recordkeeping violations in close to half of all facilities inspected. Employee interviews identified workers' fear of reprisal and employer disciplinary programs as the most important causes of under-reporting. Subsequent inspections in the poultry industry identified employer medical management policies that fostered both under-reporting and under-recording of workplace injuries and illnesses. CONCLUSIONS: OSHA corroborated previous research findings and identified onsite medical units as a potential new cause of both under-reporting and underrecording. Research is needed to better characterize and eliminate obstacles to the compilation of accurate occupational injury and illness data. PRACTICAL APPLICATIONS: Occupational health professionals who work with high hazard

industries where low injury rates are being recorded may wish to scrutinize recordkeeping practices carefully. This work suggests that, although many high-risk establishments manage recordkeeping with integrity, the lower the reported injury rate, the greater the likelihood of under-recording and under-reporting of work-related injuries and illnesses

Haraldsson P, Jonker D, Strengbom E, and Areskoug-Josefsson K. Structured multidisciplinary work evaluation tool: development and validation of a multidisciplinary work questionnaire. Work. 2016; 55(4):883-891.

http://dx.doi.org/10.3233/WOR-162454

Abstract: BACKGROUND: Important success factors for the Occupational Health Service (OHS) include services being based on active participation and risk identification from a multidisciplinary/multifactorial perspective. Despite an extensive search, no questionnaire with this approach was found so a new questionnaire was developed at the OHS. The aim of this study was to develop and validate the new questionnaire named Structured Multidisciplinary work Evaluation Tool (SMET) through action research. METHOD: Communicative and pragmatic validity were tested through the development of the questionnaire using action theory and presented in a descriptive portrayal. The Content Validity Index (CVI) was used to test content validity for each item as well as for the questionnaire as a whole. RESULT: Communicative and pragmatic validity were developed and tested over time in four different periods between 2008 and 2014, in 24 clinics (with a total of approximately 1000 employees) in Region Jonkoping County. The content validity of the SMET questionnaire as a whole was close to excellent and the validity of the questions regarding physically and psychosocially demanding work factors were found to be excellent. The questions regarding environmentally demanding work factors were found to have a lower, but still good, validity. CONCLUSION: The SMET questionnaire has very good content validity. The pervasive work with the SMET questionnaire also shows good pragmatic and communicative validity

Jinnett K, Schwatka N, Tenney L, Brockbank CV, and Newman LS. Chronic conditions, workplace safety, and job demands contribute to absenteeism and job performance. Health Affairs. 2017; 36(2):237-244.

http://dx.doi.org/10.1377/hlthaff.2016.1151 [open access]

Abstract: An aging workforce, increased providings of chronic health conditions.

Abstract: An aging workforce, increased prevalence of chronic health conditions, and the potential for longer working lives have both societal and economic implications. We analyzed the combined impact of workplace safety, employee health, and job demands (work task difficulty) on worker absence and job performance. The study sample consisted of 16,926 employees who participated in a worksite wellness program offered by a workers' compensation insurer to their employers-314 large, midsize, and small businesses in Colorado across multiple industries. We found that both workplace safety and employees' chronic health conditions contributed to absenteeism and job performance, but their

impact was influenced by the physical and cognitive difficulty of the job. If employers want to reduce health-related productivity losses, they should take an integrated approach to mitigate job-related injuries, promote employee health, and improve the fit between a worker's duties and abilities

Mani K, Provident I, and Eckel E. Evidence-based ergonomics education: promoting risk factor awareness among office computer workers. Work. 2016; 55(4):913-922.

http://dx.doi.org/10.3233/WOR-162457

Abstract: BACKGROUND: Work-related musculoskeletal disorders (WMSDs) related to computer work have become a serious public health concern. Literature revealed a positive association between computer use and WMSDs. OBJECTIVE: The purpose of this evidence-based pilot project was to provide a series of evidence-based educational sessions on ergonomics to office computer workers to enhance the awareness of risk factors of WMSDs. METHODS: Seventeen office computer workers who work for the National Board of Certification in Occupational Therapy volunteered for this project. Each participant completed a baseline and post-intervention ergonomics questionnaire and attended six educational sessions. The Rapid Office Strain Assessment and an ergonomics questionnaire were used for data collection. RESULTS: The postintervention data revealed that 89% of participants were able to identify a greater number of risk factors and answer more questions correctly in knowledge tests of the ergonomics questionnaire. Pre- and post-intervention comparisons showed changes in work posture and behaviors (taking rest breaks, participating in exercise, adjusting workstation) of participants. CONCLUSIONS: The findings have implications for injury prevention in office settings and suggest that ergonomics education may yield positive knowledge and behavioral changes among computer workers

Ojala B, Nygard CH, and Nikkari ST. Outpatient rehabilitation as an intervention to improve employees' physical capacity. Work. 2016; 55(4):861-871.

http://dx.doi.org/10.3233/WOR-162458

Abstract: BACKGROUND: The aging of the workforce poses new challenges for maintaining work ability. Because of limited information on the effectiveness of vocational rehabilitation performed in traditional inpatient programs, extended interest in outpatient rehabilitation has risen in the past few years. OBJECTIVE: We examined the effects of a new outpatient rehabilitation program where every participant defined their own goals to improve work ability by the aid of a goal-oriented multi-professional team. This report will focus on the employees' physical capacity during a nine-month program. METHODS: A total of 605 municipal employees from different production areas of the City of Tampere took part in the outpatient rehabilitation program, implemented by the occupational health unit. Groups of 12 employees participated in eight one-day sessions at intervals of two to three weeks; the final follow-up was 9 months from the

beginning. Submaximal aerobic capacity was tested by a calibrated cycle ergometer with a commercial program (Aino Fitware pro, Helsinki, Finland). Musculoskeletal tests assessed muscle strength, balance and mobility. RESULTS: During the 9-month follow-up of the rehabilitation program, the employees' physical capacity was improved. The follow-up test scores from a total of 329 employees were significantly higher in the submaximal aerobic capacity test (p < 0.001). Other tests were also improved, such as standing on one foot (p = 0.001), back side bending flexibility test (p < 0.001), dynamic sit up (p = 0.001), upper extremity right (p < 0.001), and knee bending (p = 0.029). About 40% of the participants did not have an adequate health situation to take part in physical capacity tests; however they took part in the intervention. CONCLUSIONS: The new outpatient rehabilitation program organized by the occupational health unit had a positive influence on employees' physical capacity during a nine-month follow up

Persson E, Eklund M, Lexell J, and Rivano-Fischer M. Psychosocial coping profiles after pain rehabilitation: associations with occupational performance and patient characteristics. Disability and Rehabilitation. 2017; 39(3):251-260.

http://dx.doi.org/10.3109/09638288.2016.1141243

Abstract: Purpose The aims of the present study were to assess: (i) changes in coping by use of Multidimensional Pain Inventory profiles from baseline to followup, (ii) associations between Adaptive Coper (AC) profiles at follow-up and improvements in occupational performance (by Canadian Occupational Performance Measure COPM) and (iii) ability to predict AC profiles at follow-up by participants' baseline characteristics. Method Data at baseline, discharge and follow-up from 525 participants in a pain rehabilitation program were analyzed with multivariate statistics. Results AC profiles increased and Dysfunctional (DYS) profiles decreased at follow-up. Clinically relevant improvements on COPM were associated with having an AC profile at follow-up. Being Nordic born, having longer education, an AC profile and higher baseline scores on satisfaction with performance predicted an AC profile at follow-up. Conclusions Pain rehabilitation seems to result in sustainable and favourable coping strategies at follow-up, and improved occupational performance is associated with favourable coping at follow-up. Outcomes need to be measured independently of improved coping strategies and improvements of participant's individual goals such as difficulties to perform their most meaningful occupations. Patients at risk for unfavourable coping strategies may need modified interventions. Implications for Rehabilitation More participants reported a beneficial coping, MPI profile, in a long-term perspective after a pain rehabilitation program. Improvements on occupational performance prioritized as meaningful by each of the participants are related to adequate coping strategies at follow-up. The associations between improved occupational performance and beneficial coping profiles need to be better understood. Patients with worse initial occupational performance may need modified pain rehabilitation interventions to improve their coping strategies

Pfortner TK and Schmidt-Catran AW. In-work poverty and self-rated health in a cohort of working Germans: a hybrid approach for decomposing within-person and between-persons estimates of in-work poverty status. American Journal of Epidemiology. 2017; 185(4):274-282. http://dx.doi.org/10.1093/aie/kww218

Abstract: In this study, we investigated whether self-rated health (SRH) can be predicted by in-work poverty and how between-persons and within-person differences in the poverty status of people who are working contribute to this relationship. We used a logistic random-effects model designed to test withinperson and between-persons differences with data from a nationally representative German sample with 19 waves of data collection (1995-2013) to estimate effects of between-persons and within-person differences in working poverty status on poor SRH. Interactions by age and sex were tested, and models controlled for sociodemographic, socioeconomic, and work-related characteristics. We found significant differences in SRH between individuals with different working poverty status but no evidence that within-person differences in working poverty status are associated with poor SRH. The association between in-work poverty and SRH was significantly stronger for women but did not differ significantly by age. All findings were robust when including sociodemographic, socioeconomic, and working characteristics. In this sample of German adults, we found a polarization of poor SRH between the working nonpoor and the working poor but no causal association of within-person differences in working poverty status with SRH

Porru S, Calza S, and Arici C. Prevention of occupational injuries: evidence for effective good practices in foundries. Journal of Safety Research. 2017; 60:53-69.

http://dx.doi.org/10.1016/j.jsr.2016.11.007

Abstract: INTRODUCTION: Occupational injuries are a relevant research and practical issue. However, intervention studies evaluating the effectiveness of workplace injury prevention programs are seldom performed. METHOD: The effectiveness of a multifaceted intervention aimed at reducing occupational injury rates (incidence/employment-based=IR, frequency/hours-based=FR, severity=SR) was evaluated between 2008 and 2013 in 29 Italian foundries (22 ferrous; 7 non-ferrous; 3,460 male blue collar workers/year) of varying sizes. Each foundry established an internal multidisciplinary prevention team for risk assessment, monitoring and prevention of occupational injuries, involving employers, occupational physicians, safety personnel, workers' representatives, supervisors. Targets of intervention were workers, equipment, organization, workplace, job tasks. An interrupted time series (ITS) design was applied. RESULTS: 4,604 occupational injuries and 83,156 lost workdays were registered between 2003 and 2013. Statistical analysis showed, after intervention, a

reduction of all injury rates (-26% IR, -15% FR, -18% SR) in ferrous foundries and of SR (-4%) in non-ferrous foundries. A significant (p=0.021) 'step-effect' was shown for IR in ferrous foundries, independent of secular trends (p<0.001). Sector-specific benchmarks for all injury rates were developed separately for ferrous and non-ferrous foundries. CONCLUSIONS: Strengths of the study were: ITS design, according to standardized quality criteria (i.e., at least three data points before and three data points after intervention; clearly defined intervention point); pragmatic approach, with good external validity; promotion of effective good practices. Main limitations were the non-randomized nature and a medium length post-intervention period. In conclusion, a multifaceted, pragmatic and accountable intervention is effective in reducing the burden of occupational injuries in small-, medium- and large-sized foundries. Practical Applications: The study poses the basis for feasible good practice guidelines to be implemented to prevent occupational injuries, by means of sector-specific numerical benchmarks, with potentially relevant impacts on workers, companies, occupational health professionals and society at large

Qaseem A, Wilt TJ, McLean RM, and Forciea MA. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians. Annals of Internal Medicine. 2017; [epub ahead of print].

http://dx.doi.org/10.7326/M16-2367 [open access]

Abstract: Description: The American College of Physicians (ACP) developed this guideline to present the evidence and provide clinical recommendations on noninvasive treatment of low back pain. Methods: Using the ACP grading system, the committee based these recommendations on a systematic review of randomized, controlled trials and systematic reviews published through April 2015 on noninvasive pharmacologic and nonpharmacologic treatments for low back pain. Updated searches were performed through November 2016. Clinical outcomes evaluated included reduction or elimination of low back pain, improvement in back-specific and overall function, improvement in health-related quality of life, reduction in work disability and return to work, global improvement, number of back pain episodes or time between episodes, patient satisfaction, and adverse effects. Target Audience and Patient Population: The target audience for this guideline includes all clinicians, and the target patient population includes adults with acute, subacute, or chronic low back pain. Recommendation 1: Given that most patients with acute or subacute low back pain improve over time regardless of treatment, clinicians and patients should select nonpharmacologic treatment with superficial heat (moderate-quality evidence), massage, acupuncture, or spinal manipulation (low-quality evidence). If pharmacologic treatment is desired, clinicians and patients should select nonsteroidal anti-inflammatory drugs or skeletal muscle relaxants (moderatequality evidence). (Grade: strong recommendation). Recommendation 2: For patients with chronic low back pain, clinicians and patients should initially select nonpharmacologic treatment with exercise, multidisciplinary rehabilitation,

acupuncture, mindfulness-based stress reduction (moderate-quality evidence), tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavioral therapy, or spinal manipulation (low-quality evidence). (Grade: strong recommendation). Recommendation 3: In patients with chronic low back pain who have had an inadequate response to nonpharmacologic therapy, clinicians and patients should consider pharmacologic treatment with nonsteroidal anti-inflammatory drugs as first-line therapy, or tramadol or duloxetine as second-line therapy. Clinicians should only consider opioids as an option in patients who have failed the aforementioned treatments and only if the potential benefits outweigh the risks for individual patients and after a discussion of known risks and realistic benefits with patients. (Grade: weak recommendation, moderate-quality evidence)

Riddell MF, Gallagher KM, McKinnon CD, and Callaghan JP. Influence of input device, work surface angle, and task on spine kinematics. Work. 2016; 55(4):773-782.

http://dx.doi.org/10.3233/WOR-162452

Abstract: BACKGROUND: With the increase of tablet usage in both office and industrial workplaces, it is critical to investigate the influence of tablet usage on spine posture and movement. OBJECTIVE: To quantify spine kinematics while participants interacted with a tablet or desktop computer. METHODS: Fourteen participants volunteered for this study. Marker clusters were fixed onto body regions to analyze cervical and lumbar spine posture and sampled at 32 Hz (Optotrak Certus, NDI, Waterloo, Canada). Participants sat for one hour in total. Cervical and lumbar median angles and range of motion (10th to 90th % ile angles) were extracted from amplitude probability distribution functions performed on the angle data. RESULTS: Using a sloped desk surface at 15 degrees, compared to a flat desk, influenced cervical flexion (p = 0.0228). Completing the form fill task resulted in the highest degree of cervical flexion (p = 0.0008) compared to the other tasks completed with cervical angles between 6.1 degrees -8.5 degrees higher than emailing and reading respectively. An interaction between device and task (p = 0.0061) was found for relative lumbar median spine angles. CONCLUSIONS: Increased lumbar flexion was recorded when using a computer versus a tablet to complete various tasks. Task influenced both cervical and lumbar spine posture with the highest cervical flexion occurring while completing a simulated data entry task. A work surface slope of 15 degrees decreased cervical spine flexion compared to a horizontal work surface slope

Schoenfisch AL, Lipscomb H, Sinyai C, and Adams D. Effectiveness of OSHA outreach training on carpenters' work-related injury rates, Washington state 2000-2008. American Journal of Industrial Medicine. 2017; 60(1):45-57.

http://dx.doi.org/10.1002/ajim.22665



Abstract: INTRODUCTION: Despite the size and breadth of OSHA's Outreach Training program for construction, information on its impact on work-related injury rates is limited. METHODS: In a 9-year dynamic cohort of 17,106 union carpenters in Washington State, the effectiveness of OSHA Outreach Training on workers' compensation claims rate was explored. Injury rates were calculated by training status overall and by carpenters' demographic and work characteristics using Poisson regression. RESULTS: OSHA Outreach Training resulted in a 13% non-significant reduction in injury claims rates overall. The protective effect was more pronounced for carpenters in their apprenticeship years, drywall installers, and with increasing time since training. CONCLUSIONS: In line with these observed effects and prior research, it is unrealistic to expect OSHA Outreach Training alone to have large effects on union construction workers' injury rates. Standard construction industry practice should include hazard awareness and protection training, coupled with more efficient approaches to injury control. Am. J. Ind. Med. 60:45-57, 2017. (c) 2016 Wiley Periodicals, Inc

Seabury SA, Terp S, and Boden LI. Racial and ethnic differences in the frequency of workplace injuries and prevalence of work-related disability. Health Affairs. 2017; 36(2):266-273.

http://dx.doi.org/10.1377/hlthaff.2016.1185

Abstract: Occupational injuries and illnesses lead to significant health care costs and productivity losses for millions of workers each year. This study used national survey data to test for differences between members of minority groups and non-Hispanic white workers in the risk of workplace injuries and the prevalence of work-related disabilities. Non-Hispanic black workers and foreign-born Hispanic workers worked in jobs with the highest injury risk, on average, even after adjustment for education and sex. These elevated levels of workplace injury risk led to a significant increase in the prevalence of work-related disabilities for non-Hispanic black and foreign-born Hispanic workers. These findings suggest that disparities in economic opportunities expose members of minority groups to increased risk of workplace injury and disability

Wuellner SE, Adams DA, and Bonauto DK. Workers' compensation claims not reported in the Survey of Occupational Injuries and Illnesses: injury and claim characteristics. American Journal of Industrial Medicine. 2017; 60(3):264-275.

http://dx.doi.org/10.1002/ajim.22685

Abstract: BACKGROUND: Underreporting in the nation's primary source of non-fatal occupational injury and illness data are well documented, but worker-level characteristics of unreported cases have not been fully explored. METHODS: Bureau of Labor Statistics' Survey of Occupational Injuries and Illnesses (SOII) data were linked to Washington workers' compensation claims to identify injury and claim characteristics associated with unreported cases. Workers' compensation administrative date data were used to characterize timing of disability and SOII case eligibility. RESULTS: Based on claim date data, one in

five lost time claims with an injury date in the survey year were likely ineligible for SOII case reporting during the survey year. Among SOII-eligible claims, those involving sprains or strains, employer protests, and those not eligible for work disability payments until months after the initial injury were least likely to be reported in SOII. CONCLUSIONS: SOII case capture is limited both by its cross sectional survey design and employer underreporting. Am. J. Ind. Med. 60:264-275, 2017. (c) 2017 Wiley Periodicals, Inc

*IWH authored publications.