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Work-Related Amputation Surveillance: Methods, Obstacles, Successes

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BACKGROUND: An amputation is one of the most debilitating injuries that can occur at work. Injured workers may be forced to make significant physical and psychological adjustments both in the workplace and their personal lives. Michigan has been conducting work-related amputation surveillance – including case referral to the state's OSHA program for inspection - since 2006. Given this experience, many lessons have been learned about the strengths and limitations of the system.

METHODS: Cases are identified through a review of medical records for patients treated at Michigan acute care hospitals. A work-related amputation case is defined as a patient for whom the medical record: a) contains an amputation diagnosis; and b) documents that the injury was work-related. For each case, data are collected on patient demographics, a description of the nature and cause of injury, and the employer. For 2012, detailed information on the injury and subsequent surgery was collected. Cases meeting certain criteria are referred to MIOSHA for worksite inspection. These cases are tracked through final resolution and information is ascertained on citations and penalties assessed. Work-related amputation data are also obtained from the state's workers' compensation agency and subsequently linked to the medical record database.

RESULTS: During the period 2006-2012, the surveillance system identified 4,125 Michigan residents who sustained a work-related amputation. This count exceeded the Bureau of Labor Statistics estimate by 133%. The system referred 497 worksites to MIOSHA resulting in 175 inspections, 1,737 citations and $700,000 in fines. Agriculture had the highest amputation rate by industry (40/100,000), exceeding the next highest industry (Manufacturing) by 37%. Rates for males were more than six times the rates for females. The leading causes of amputations were power saws and presses. In 2012, 59% of injuries were described as complete or near-complete amputations or resulted in amputation revision surgery. Since its inception, the system has become timelier by requesting hospitals to submit medical records quarterly rather than annually. The system is flexible: certain data items found to be less useful are no longer collected while other areas of interest have been added.

CONCLUSIONS: Michigan's work-related amputation surveillance system is useful for both monitoring the incidence and characteristics of cases and for leading to effective interventions. Over the seven-year period, the system has improved, but some challenges remain including accurate coding of NAICS, work-relatedness for the self-employed, and specific identification of the cause of injury.

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