October Update from the Field

Hello all,

Harvest is here for many and we are wishing you good weather and a safe season. The Update from the Field topic for October is hand injuries. Hand and upper extremity injuries in agriculture are primarily associated with machinery, which will see much use in the coming weeks. Stay safe and reach out for questions, comments or requests for full articles.
Best,
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Agricultural Injuries to the Hand and Upper Extremity

Yaffe, Mark Aaron, and Kaplan, F Thomas. "Agricultural Injuries to the Hand and Upper Extremity." *Journal of the American Academy of Orthopaedic Surgeons* 22, no. 10 (2014): 605-13.

Agricultural injuries involving the hand and upper extremity are common, debilitating injuries that reflect the significant occupational hazards associated with the agricultural industry. Farm injuries occur in all age groups and are associated with significant resource utilization and treatment costs. Most of these injuries are associated with machinery, including tractors, power take-off devices, grain augers, hay balers, and combine harvesters. Each piece of machinery produces specific injury patterns and a spectrum of bone and softtissue injuries that are frequently characterized by the loss of a digit or limb, permanent disability, loss of function, and serious complications such as infection. Management of agricultural injuries includes expedient administration of antibiotic and tetanus prophylaxis, aggressive irrigation, serial débridement, consideration of delayed wound closure, and reconstruction or replantation of amputated digits and limbs, if feasible.

Upper Extremity Trauma Resulting from Agricultural Accidents: Mechanism and Severity for Patients with and Without Upper Extremity Injury

Grandizio, Louis C, Wagner, Benjamin, Graham, Jove, and Klena, Joel C. "Upper Extremity Trauma Resulting From Agricultural Accidents: Mechanism and Severity for Patients With and Without Upper Extremity Injury." *Hand (New York, N.Y.)* 13, no. 4 (2017): 384-90.

Background: Farming remains the most dangerous occupation in the United States and upper extremity (UE) injuries occur frequently in agricultural accidents. The purpose of this study is to describe the injury mechanisms, severity, and health care costs of UE injuries resulting from agricultural accidents and to compare patients with and without injuries to the UE. Methods: We performed a 6-year retrospective review of our level I trauma center registry from January 2006 to May 2013, identifying all patients injured in an agricultural accident. Data collection

included baseline demographics, injury type and mechanism, costs and treatment. Patients with UE injuries were compared with those without UE injuries. Results: Ninety-six of 273 patients (35%) sustained an UE injury with fractures of the phalanx and radius/ulna occurring most frequently. Patients with UE injuries were more likely to be injured from table saws (P = .0003) and farm machinery (P < .0001). Twenty-one percent with UE injuries sustained a mangled extremity. Patients with UE injuries were more likely to require surgery (68% vs 36%, P < .0001) and were more likely to be readmitted (17% vs 5%, P = .0007) with risk factors for readmission including age >18 years, falls from height, and surgery. Mean hospital charges were $95147. Conclusions: Patients sustaining agricultural UE injuries have longer lengths of stay and more frequently require surgery despite similar hospital charges compared with non-UE injured patients. Hospital readmissions occur frequently for patients with UE injuries. Understanding injury mechanisms and the epidemiology of these potentially devastating and costly injuries may help guide agricultural injury prevention programs.

Hand safety for specialty crop production workers: A pilot study investigating frequencies of minor open-wound hand injuries and presence of pathogenic bacteria

Pate, Michael L., and Brian Nummer. "Hand safety for specialty crop production workers: A pilot study investigating frequencies of minor open-wound hand injuries and presence of pathogenic bacteria." *Journal of agricultural safety and health* 19, no. 4 (2013): 227-236.

Abstract. The purpose of this study was to quantify the presence of minor open-wound hand injuries in addition to Salmonella, Staphylococcus aureus, coliforms, and Escherichia coli on the hands of farm workers who hand-harvest fruit crops in Utah. Data collection was conducted on four farms without USDA Good Agricultural Practices (GAP) certification and on two farms with GAP certification. This study identified essential safety issues that need to be addressed for improving the effectiveness of safety training for migrant farm workers. Farms that have a food safety audit program in place are less likely to have farm workers exposed to pathogenic bacteria and open-wound injuries to their hands. High frequency of S. aureus may indicate a potentially higher risk for wound infection within this worker population. This could lead to infections that are resistant to the antibiotics commonly used to treat ordinary staph infections, resulting in greater work loss time and medical expenses for these workers. Higher frequencies of bacterial presence on workers' hands on non-certified farms indicate a need to identify essential practices to improve worker hygiene habits and on-farm management practices to promote healthy hygiene. Open-wound injuries to migrant farm workers during hand-harvesting could create additional health problems with the possibility of infection and the spread of diseases. Continued research is needed to understand workers' acceptance of these injuries and barriers to personal protection.