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Needlestick Injuries in Agriculture Workers and Prevention Programs

Buswell, M. L., Hourigan, M., Nault, A. J., & Bender, J. B. (2016). Needlestick injuries in agriculture workers and prevention programs. *Journal of agromedicine*, 21(1), 82-90.

There are a variety of biologics, vaccines, antibiotics, and hormones used in animal agriculture. Depending upon the procedure or pharmaceutical used, accidental injections or product exposures can result in mild to severe injuries. Needlestick injury (NSI) prevention, research, and education for veterinarians and agriculture workers is limited. The objective of this study was to collect and review published case reports and case series/surveys on human needlestick exposure to veterinary biologics and to summarize needlestick prevention strategies for agricultural workers/veterinarians. A search was conducted of PubMed and Centre for Agriculture Bioscience International (CABI) databases. References were reviewed to identify additional articles. NSI among agricultural workers were primarily included in this review. Thirty articles were applicable to exposures in agricultural settings. Relevant literature consisted of case reports, survey/case series articles, prevention documents, and background articles. Fifty-nine case patients were identified. Most of these cases were associated with exposures to specific vaccines or veterinary products. Injury location was identified from 36 individuals: 24 (67%) NSI to the hands, 10 (28%) injuries to the legs, and 2 to other body locations. Of the 59 cases, 20 (34%) involved oil-adjuvant vaccines. Evidence of hospitalization was recorded for 30 case patients. The length of hospitalization was available from 11 case patients. Median length of hospitalization was 3 days (range: 1–4). Surgical intervention was reported in 25 case patients. Outcome information was available on 30 case patients. Fifteen made a complete recovery within 2 weeks of treatment, 14 had residual sequelae attributed to the injury, and there was 1 reported death. Of the 13 survey/case series articles: 2 focused on oil-adjuvant products, 1 on Brucellosis RB-51 vaccine, 3 on tilmicosin, 1 on Salmonella enteritidis vaccine, 1 on high-pressure injection, and 5 were nonspecific. NSI in agriculture workers and veterinarians can result in significant bodily injury and loss of work. There is a need for varied and comprehensive educational programs for agricultural workers and veterinarians to prevent NSI on livestock operations.

Unintentional Needlestick Injuries in Livestock Production: A Case Series and Review

Jennissen, C., Wallace, J., Donham, K., Rendell, D., & Brumby, S. (2010). Unintentional needlestick injuries in livestock production: a case series and review. *Journal of agromedicine*, 16(1), 58-71. Livestock producers and their employees sometimes experience unintentional needlestick injury (NSI) while vaccinating or injecting medications into animals. There is little published regarding the medical complications that can develop from this occupational exposure. The objectives of this study were to (1) perform a retrospective review of animal-related NSIs treated at a tertiary medical center of a rural state; and (2) review the risks of NSI and measures to decrease their occurrence. Medical records of patients with NSI related to animal injection were identified from the University of Iowa Hospitals and Clinics database from 2002 to 2008 and reviewed. Nine patients received medical care for NSI that occurred while vaccinating farm animals. Most common NSI site was the nondominant hand and most occurred while attempting to inject the animal. Soft tissue infection was common and all nine received oral and/or intravenous antibiotics. Two thirds required hospital admission. Three required surgery and one had a bedside incision and drainage procedure. One patient had a serious inflammatory reaction with necrosis in the leg due to the oil adjuvant in the animal vaccine. Another case had a probable

mycetoma with osteomyelitis and soft tissue infection due to the bacteria *Streptomyces*, which is a NSI complication not previously reported. Although medical complications from farm-related NSIs do not appear to be common, this case series illustrates how these injuries can be debilitating, costly, and lead to loss of work time and productivity. Producers and employees who inject livestock need to be aware of the risks and utilize measures to decrease unintentional NSI.

Needlestick Injuries in Livestock Workers and Prevention Programs

Buswell, M. L., Hourigan, M., Nault, A., & Bender, J. (2014). Needlestick Injuries in Livestock Workers and Prevention Programs. *Journal of Agromedicine*, 19(2), 206-207.

Veterinary medicine and agriculture have historically lacked needlestick injury (NSI) research, education, and mitigation due to the absence of zoonotic blood-borne pathogens and the “perceived” benign nature of the injury. However, depending on the procedure/pharmaceutical used, these injuries may include mild/severe bacterial or fungal infections, lacerations, local inflammation, vaccine/antibiotic reactions, amputation, miscarriage, and death. The objective of this report is to identify published case reports and case series/surveys on human needlestick exposure to veterinary biologics, and to review literature and educational documents describing needlestick prevention strategies for agricultural workers and veterinarians. An electronic database search was conducted using PubMed© and CABI©. Key search terms: PubMed© - “Needlestick Injuries” [MeSH] veterinar*, “Vaccination/veterinary” [MeSH]) AND “Occupational Exposure” [MeSH], “Vaccination/veterinary” [MeSH]) AND “Occupational Exposure” [MeSH]; CABI© - needlestick injuries.sh. Article inclusion criteria were those detailing NSI in agricultural workers only. Abstracts of all search results were read and relevant articles compiled into a RefWorks© database. References cited within articles were examined to locate additional articles. Fifty-six articles were identified. Literature consisted of case reports (n = 14), survey/case series articles (n = 11), prevention guidance documents (n = 6), and background articles (n = 25). Forty-eight cases were found. Twenty-four identified injury location: 13 (54.2%) NSI to the hands: three to the right, eight to the left, and two were not specified. Eight injuries were to the legs (33.3%): five to the right and three were not specified. Of the 48 cases, 11 (22.9%) involved oil-adjuvanted vaccines. The remaining products included: other vaccines, antibiotics, analgesics/sedatives, and hormones. Forty-six (95.8%) of 48 cases reported seeking medical attention. Of the 11 survey/case series articles: two focused on oil-adjuvant products, one on Brucellosis RB51 vaccine, three on tilmicosin, and five were non-specific. General recommendations from guidance documents included: proper animal restraint, avoid recapping needles, do not bend needles, do not put needle caps in your mouth, provide appropriate training, provide sharps containers, report injuries, seek medical attention. NSI in agriculture workers and veterinarians can result in injury and loss of work. It appears that NSI awareness is limited among workers. There is a need for comprehensive programs to prevent NSI on livestock operations.