American Journal of Emergency Medicine xxx (2018) xxx–xxx

Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/ajem

Emergency department visits for work-related injuries

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ARTICLE INFO

Article history:
Received 29 March 2018
Received in revised form 23 April 2018
Accepted 25 April 2018
Available online xxxx

Keywords:
Worker's compensation
Emergency department
Trauma

ABSTRACT

Background: Work-related injuries are commonly seen in the emergency department (ED). This study sought to analyze characteristics of ED patient visits that were billed under workers' compensation.
Methods: This was a retrospective chart review of visits during 2015 that were billed under workers' compensation at an academic ED. The following variables were collected: age, gender, mechanism of injury/exposure, diagnoses, imaging performed, specialty consultation, operative requirement, follow-up specialty, and ED disposition.
Results: In 2015, 377 patients presented to the ED for work-related injuries. The most common mechanism of injury was fall. Frequent diagnoses included lower extremity injuries and hand/finger injuries. The most common consulting service was orthopedics. Only five patients were referred to occupational medicine for follow up.
Conclusion: Knowledge of the types of occupational injuries and subsequent care required may help guide both workers and employers how to best triage patients within the healthcare system. Alternative settings such as occupational medicine or primary care services may be appropriate for some patients.

1. Introduction

Work-related injuries account for a large percentage of emergency department (ED) visits. Prior literature has demonstrated that about 20% of all adult patients seen in a state's ED system had chief complaints associated with worker's compensation or work related injuries [1]. According to the Bureau of Labor Statistics (BLS), 4836 fatal work injuries were reported in 2015, marking the highest total since the 5214 fatal work injuries in 2008 [2]. Additionally, fatal injury rates were generally lower among younger workers (2.3 per 100,000 workers for those age 25 to 34 years) than older workers (9.4 per 100,000 workers for those age 65 years and older) [2]. In 2015, non-fatal occupational injuries and illnesses were estimated to be at 2.9 million, occurring at a rate of 3.0 cases per 100 equivalent full-time workers [3]. The total number of fatal and non-fatal cases is likely underrepresented by the BLS Survey of Occupational Injuries and Illnesses, as it does not include all employment sectors, such as self-employed individuals, companies with fewer than 10 employees, and the federal government [4]. Although declining unemployment rates place more individuals at risk, efforts from federal organizations, such as the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH), have resulted in a steady annual decrease in incidence of occupational injuries from 5.0 cases per 100 full-time workers in 2003 to 3.0 in 2015 [5]. Investigating the mechanism by which workers are injured, the types of injuries they incur and, the medical services required thereafter may provide further insight into the preventing injuries and subsequent rehabilitation following occupational injuries.

To our knowledge, there is very limited data specifically evaluating patients presenting to an emergency department for work-related injuries. Therefore, the purpose of this study was to evaluate characteristics of patients seen in an ED for work-related injuries.

2. Material & methods

2.1. Study design, setting, and patient selection

This was a retrospective chart review of patients who presented to a tertiary care, academic ED in West Virginia from January 1, 2015 through December 31, 2015. Our ED sees approximately 48,000 patients annually. Medical records were accessed and reviewed through our electronic medical record system. Patients were identified by subsequent billing codes for workers' compensation. Patients were excluded if the visit was not the initial visit for the present illness or injury. This study was approved by our University's Institutional Review Board.

2.2. Data collection and analyses

The following information was abstracted from each patient's medical record by three of the co-authors (AT, SD, JR) using a standardized

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https://doi.org/10.1016/j.ajem.2018.04.058
0735-6757/

data collection form: age, gender, mechanism of injury/exposure, diagnoses, imaging performed, specialty consultation, operative requirement, follow-up specialty clinic recommended, and ED disposition. Descriptive statistics (i.e., frequencies and percentages) were used to describe all study variables.

3. Results

From January 1 to December 31, 2015, there were a total of 377 patient visits to our ED specifically for work-related injuries that were billed to Worker's Compensation. Almost 80% of patients were male. Fig. 1 demonstrates a full breakdown of groups by age and gender.

Injury mechanisms and ED disposition is shown in Table 1. The most common mechanisms of injury were falls ($n = 96$) and crush injuries ($n = 78$). The most common diagnosis was lower extremity injuries ($n = 73$), as seen in Table 2.

Plain X-rays were performed on almost 67% of patients (average of 2.8 X-rays/patient), while CT imaging was obtained on approximately 30% of patients (average of 1.9/patient) (Fig. 2). The most common consulting services were orthopedics and trauma surgery. However, most patients (56%) did not receive any consult in the ED from an outside service (Table 3). Only 13% of patients required surgical intervention.

The majority of patients were discharged from the ED (78.2%). The most common recommended follow up service at discharge was with orthopedics. Only 5 patients were referred to occupational medicine. About 34% of patients received no outpatient referrals upon being discharged from the ED.

Table 1
Mechanisms of injury versus ED disposition.

	Admit	Discharge	Deceased	Total
Abdominal pain	0	1	0	1
Allergic reaction	0	1	0	1
Animal exposure	0	4	0	4
Arm pain	0	1	0	1
Assault	0	5	0	5
Back pain	0	3	0	3
Bee sting	0	1	0	1
Blast injury	0	2	0	2
Body fluid exposure	0	8	0	8
Chemical exposure	0	10	0	10
Chest pain	1	1	0	2
Crush injury	18	60	0	78
Electrical injury	4	1	1	6
Eye injury	1	15	0	16
Fall	30	66	0	96
Foot pain	0	1	0	1
Foreign body	0	3	0	3
Head injury	1	22	0	23
Heavy lifting	1	16	0	17
Hit in the face	1	10	0	11
Hit in the leg	0	2	0	2
Knee injury	0	1	0	1
Laceration	0	31	0	31
Leg injury	0	1	0	1
Leg pain	0	2	0	2
Puncture wound	0	4	0	4
Shoulder injury	1	2	0	3
Smoke inhalation	0	1	0	1
Strain to arm	0	1	0	1
Syncope	0	2	0	2
Vehicle crash	21	19	0	40

4. Discussion

Despite the dramatic decline in work related injuries over the past century, occupational accidents continue to be a potentially preventable cause of morbidity and mortality. Multiple studies have shown that implementation of safety measures can be successful in reducing risk and improving workplace safety. A comprehensive study revealed a clinically significant reduction in workers' compensation injury claims after implementation of fall prevention regulations for carpenters [6]. An additional study suggested a reduction in mortality from falls and electrocutions with implementation of the NIOSH Fatality Assessment and Control Evaluation (FACE) program [7]. Since the introduction of NIOSH and OSHA in the 1970s, workplace injuries, illnesses, and fatalities have been drastically reduced, despite the near doubling of U.S. employment. This suggests that preventative measures can be developed and implemented successfully.

Examining work-related injuries facilitates the development and integration of appropriate safety measures. The current study had a higher male predominance compared to prior literature looking at work-related ED visits [8]. Consistent with prior studies, the current study found that falls and crush injuries were among the most common work-related injuries, with the extremities being most commonly affected [8]. Although a study by Bhandari found that the hand was the

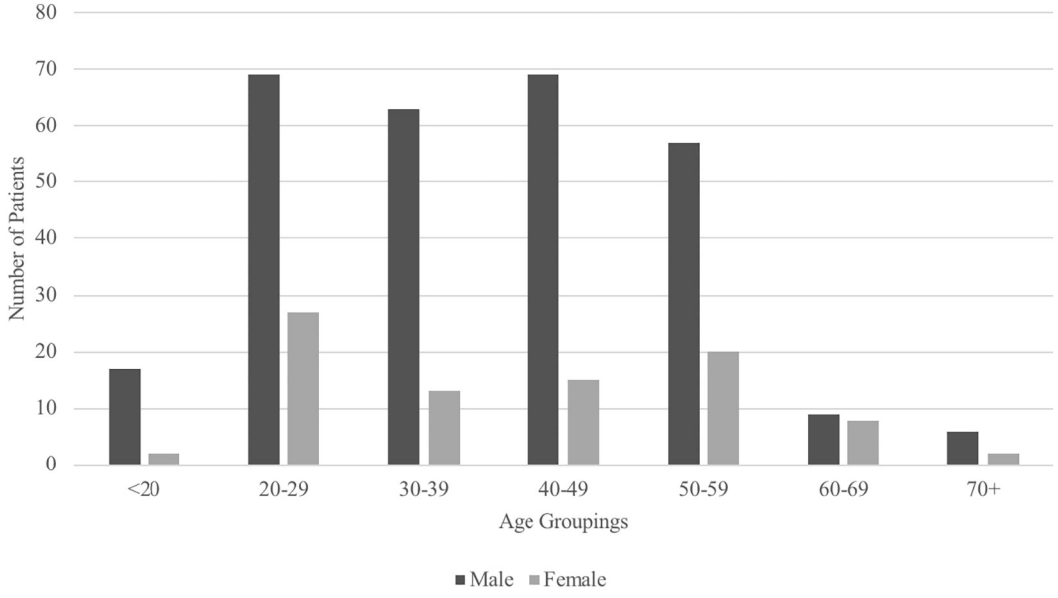

Fig. 1. Age and gender categorical breakdown for work-related injuries and illnesses.

Please cite this article as: Tadros A, et al, Emergency department visits for work-related injuries, American Journal of Emergency Medicine (2018), https://doi.org/10.1016/j.ajem.2018.04.058