

**A Systems Evaluation of Army Civilian Occupational Injuries and Illnesses and  
Recommendations for Change**

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DISSERTATION

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## **DISCLAIMER**

The views expressed are those of the authors and should not be construed to represent the positions of the Department of the Army or Department of Defense.

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## **LIST OF ABBREVIATIONS**

AGAR	Abbreviated Ground Accident Report
AR	Army Regulation
CA	Compensation Act
CDC	Centers for Disease Control and Prevention
CHRA	Civilian Human Resources Agency
COP	Continuation of Pay
CoS	Chief of Staff
CV	Coefficient of Variation
DA	Department of the Army
DA PAM	Department of Army Pamphlet
DCPAS	Defense Civilian Personnel Advisory Service
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoL	Department of Labor
ED	Emergency Department
FECA	Federal Employees' Compensation Act
FOIA	Freedom of Information Act
FR2	Force Risk Reduction
FY	Fiscal Year
GAO	Government Accounting Office
HIPAA	Health Insurance Portability and Accountability Act

HPWS	High Performance Work System
HRO	High Reliability Organization
ICPA	Injury Compensation Program Administrator
ICS	Injury Compensation Specialist
IH	Industrial Hygiene
IRB	Institutional Review Board
LHWCP	Longshore and Harbor Workers' Compensation Program
NAF	Non-Appropriated Fund
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Health and Safety
OH	Occupational Health
OPM	Office of Personnel Management
OSHA	Occupational Safety and Health Administration
OWCP	Office of Workers' Compensation
POWER	Protecting Our Workers and Ensuring Reemployment
SHARE	Safety, Health, and Return-to-Employment
SM	Service Member
SOP	Standard Operating Procedures
UIC	University of Illinois at Chicago
WAMC	Womack Army Medical Center
WG	Working Group

## SUMMARY

This is the first systems-based study of Army civilian employees evaluating best practices and areas of improvement focusing on the reporting and management of occupational injuries. The aim of this study is to assess the current state of the system for reporting and following up on injuries and illnesses in Army medical centers, potential barriers and facilitators to reporting injuries and illnesses, and recommendations for change that may lead to improved reporting and management, and ultimately significant cost-savings for the Army.

High Performance Work Systems (HPWS) was selected a key framework for this study. HPWS is a way of looking at the optimal practices of employees, leadership, information sharing, safety, and other factors within an organization. Using an initial framework of HPWS and literature relevant to occupational injuries and illnesses, several *a priori* themes (communication, data sharing, leadership, teamwork, and training) were examined for their relevance in workers' compensation.

A case study design with a mixed methods approach was used because workers' compensation involves complex issues that require both quantitative and qualitative data from multiple sources and perspectives. The case study focused on two Army installations and incorporated input from higher level organizations. The higher level organizations are groups who support and/or advise the installations through policies and regulations. The quantitative portion consisted of analyzing workers' compensation claim data for total costs and types of injuries at the selected Army installations. The qualitative portion included a document review and semi-structured interviews. For the document review, regulations were identified and their content analyzed based on the research questions. Nineteen semi-structured interviews were conducted with key informants in the workers' compensation process, at the installation or

higher level. In addition to the five *a priori* themes (communication, data sharing, leadership, teamwork, and training), several new concepts emerged in the interviews, including processes, responsibility, and worker-supervisor relationship.

Data were analyzed by evaluating for common themes in general as well as by group (installations and higher level interviews). Data were triangulated by comparing the document reviews, interviews, and any additional field notes (e.g., feedback from the interviews).

Department of Defense workers' compensation claim costs remain high at almost \$590 million in 2013. New workers' compensation costs and claims showed a decrease in the Army and DoD, overall, from 2009 to 2012 and at one of the study installations. Based on the interviews and document analysis, there were several gaps identified. Data sharing, communication, and teamwork were not identified in the documents reviewed. Data were not used in most cases to show change, either in costs or reduction in injuries. The responsibility for reporting of occupational injuries and illnesses is not well-defined. Although training on workers' compensation reporting has been specified on an annual and recurring basis, there was no regular training taking place at these sites. Leadership concepts (e.g., partnering, collaboration) were only identified in higher level documents.

There are relevant implications for public health practice. Systems-level improvements start with leadership's commitment to reducing injuries and illnesses and a safer workplace. Military leadership must be able to prioritize occupational injuries and illnesses among their other important issues. Leaders must also devote the necessary resources (e.g., personnel, funding).

There are several recommendations for change. Training related to workers' compensation is needed but the optimal frequency and mode of training must be determined.

Flowcharts illustrating the occupational injury and illness process should be used. Data should be integrated into all injury prevention initiatives. Epidemiologists should be designated within the installation or by region who can assist with injury prevention initiatives and occupational injury and illness data. In the future, this study should be expanded other Army installations and military services. Future studies should also compare FECA costs related to medical care between military and private physicians. This study established several best practices and areas of improvement and there should be efforts to collaborate with other DoD, federal, and state partners to determine best workers' compensation practices.

## **CHAPTER I: BACKGROUND AND CONTEXT**

### **Study Objectives**

Civilians in the US Army fill a wide array of jobs, many of which expose them to occupational hazards with attendant risk of injury and illness. The mechanism for reporting and caring for these workers and capturing and describing the injuries is not uniform, making it difficult to target work areas and job tasks for preventive action. The purpose of this study is to evaluate the current practices in Army occupational injury and illness reporting and management. In order to understand the context in which these injuries and illnesses occur, a framework describing the movement of cases and related information through the system will be evaluated, starting when the event occurs and is reported at the local level to the final, higher level reporting. Recommendations for Department of Defense (DoD) and Army workers' compensation practices will be highlighted that address the leadership strategies for improvements in initial reporting, information sharing, training, and injury prevention efforts.

### **Introduction**

In a large organization such as the Department of the Army, it is essential to make changes to the workers' compensation process to improve morale among employees, lessen costs, and enhance communication among involved stakeholders (e.g., safety, human resources, emergency department, and medical personnel). The interaction among stakeholders and employees has been explored previously in studies on occupational injuries and illnesses and workers' compensation.<sup>1-3</sup> In a systematic review of qualitative studies on workers' compensation, internationally diverse, most interactions between employees and insurers were negative in nature.<sup>1</sup> According to the study, these "negative" issues were related to difficulty in getting a diagnosis, legitimacy concerns, psychosocial consequences, adversarial relationships,

and the chronicity of the injury (or illness). This systematic review includes 27 qualitative studies related to workers' compensation and interactions with workers' compensation stakeholders. The articles are not merely about the health of the injured worker, they involve qualitative approaches to understanding the interactions of the employees with others (e.g., insurers) involved in the workers' compensation system. Another systematic review of the qualitative literature by MacEachen et al<sup>4</sup> was on the topic of return to work after injury. This review found that returning an employee to work was not merely about the physical functioning of the employee but extended to different players and their beliefs, roles, and perceptions. The co-authors found that there were more players identified in the process than found in one specific study and they also determined that goodwill and trust were key concepts to the success of return to work. These two comprehensive reviews demonstrated the importance of complex interactions among many players and the potential complexities. These reviews did not include any Federal or Department of Defense workers' compensation studies.

This study fills an important gap in the literature. There is a need to further evaluate the relationships and interactions involved in the reporting and management of Army civilian occupational injuries, in the context of improving the federal workers' compensation process.

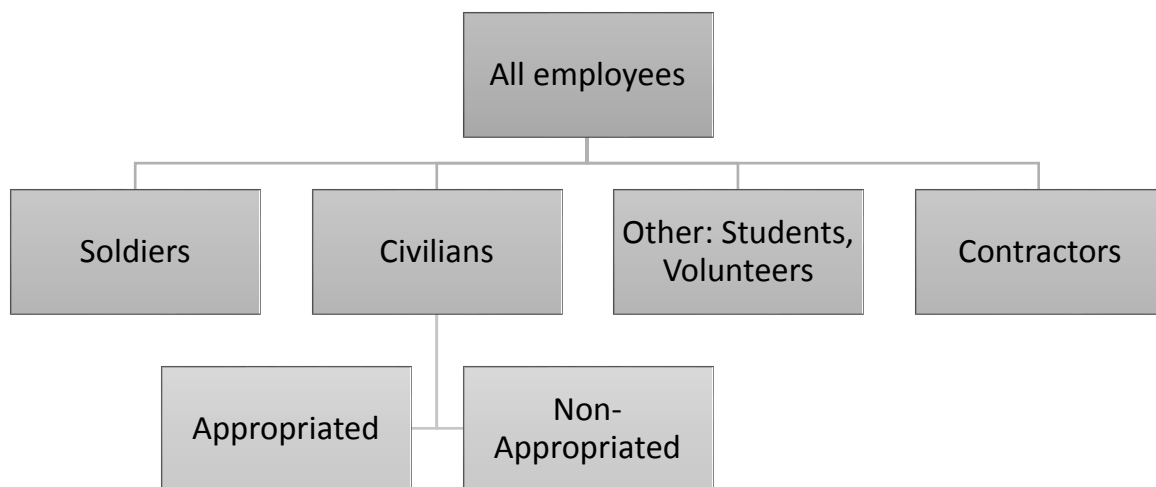
### **Department of the Army Workforce**

In order to understand the Federal workers' compensation process, it is important to understand the different groups within the Department of Army workforce. There are several different groups who work within Department of Defense and Army bases or "installations." These broad groups of personnel include federal employees, military service members, contractors, volunteers, and students (Figure 1). Within the federal employee group, there are appropriated and nonappropriated employees and this difference is significant for workers'



compensation. Appropriated employees comprise the majority of employees within the Department of the Army (DA) and are commonly known as DA Civilians. Appropriated means that the funds to pay for salaries are appropriated from Congress. Nonappropriated funds (NAF) personnel follow completely separate laws, policies, and entitlements.<sup>5</sup> Their salaries are paid by self-generating activities such as bowling alleys, restaurants, and fitness centers.

**FIGURE 1: Army Employees\***



Note: This is a very general depiction for the purposes of this dissertation)

Although each of the groups within the DoD system could be examined in the context of reporting and management of occupational injuries and illness, appropriated civilian (herein called “civilian”) employees were chosen as the focus of this study for several reasons. DoD civilians are a very large group (over 874,000 in 2013).<sup>6</sup> All of the civilian employees are covered under Federal Employees Compensation Act (FECA). Unlike non-appropriated employees, civilian employees are entitled to follow up at military hospitals for most

occupational injuries and illnesses. Non-appropriated fund employees are able to get initial, emergency treatment at military hospitals for their injuries. Contractors are not entitled to routine care at military hospitals but are also able to get emergency treatment. If a contractor is injured, the individual reports to his or her company or contracting representative. Non-military (civilian) students (e.g., university students) can typically get emergency treatment at the military hospital but they require any follow up through their respective schools.

Active and Ready Reserve personnel (service members (SM)) account for the largest proportion of Department of Defense personnel (over 2.5 million in 2013).<sup>6</sup> The reporting, management, and prevention of their injuries differs considerably and warrants further study. Active duty SMs are entitled to care for any illness or injury regardless of being work-related. Unlike civilian employees, SMs are functioning around the clock (“24/7”) in their capacity and it may not be possible to tell if an injury is directly related to work or not (such as a sprained ankle due to running).

### **Federal Employees’ Compensation Act**

Federal Employees’ Compensation Act or FECA is the workers compensation system for most United States government federal employees, including those in the Department of Defense. The Department of Labor Office of Workers’ Compensation Programs (OWCP) administers several disability programs including FECA, the Black Lung Benefits Program, the Energy Employees Occupational Illness Compensation Program, and the Longshore and Harbor Workers’ Compensation Program (LHWCP).<sup>7,8</sup> Non-Appropriated Fund (NAF) employees are covered under LHWCP.

## **Federal Employees' Compensation Act Costs**

The workers' compensation costs are paid by each employee's agency such as the Department of Army or United States Postal Service. The payment process occurs through what is called a "chargeback process." There are approximately 50 chargeback codes in the Army (each 4-digit code corresponding to a different Army Command/organization).<sup>9</sup> The accepted claims are on the chargeback of the respective agency. Benefits are paid through a federal Employees' Compensation Fund, a fund financed through appropriations from Congress used to pay employees' FECA benefits. After the end of each fiscal year (or chargeback year July 1 through June 30), OWCP sends each agency a statement of their FECA costs for the prior year.<sup>10</sup> Each agency then includes in its next budget an appropriation to cover FECA costs for the prior year. Once OWCP is paid, the money is returned to the Employees' Compensation Fund.

There are two main categories of costs paid to an employee (or his or her beneficiary); these are medical and compensation costs. Medical benefits, if authorized by the Department of Labor (DoL) (all documentation is submitted to DoL for approval/authorization), are fully covered through FECA. Compensation benefits are paid if the employee cannot work at all, can work partially, or has to work at a different job (in a lower paying job category).<sup>10,11</sup> Costs covered under FECA only include these specified costs: wages (compensation), medical (including rehabilitation) as well as death benefits and do not include indirect costs such as the hiring and training of replacement workers, overtime for remaining workers who must cover for the absent employee(s), lost productivity, pain and suffering, possible effect on morale, or decrease in quality of the workers' service. Medical costs do not include costs for services that are provided by military medical centers including orthopedic surgery, occupational therapy, physical therapy, laboratory, and radiology services. The military medical center costs are not

included within FECA medical costs and there is no cost to the employee if there is an accepted occupational injury or illness claim.

FECA claims and costs vary by agency within the DoD. The highest costs were paid out in 2003, at \$627 million. In a 13-year period from 2000 to 2012, the total cost of new claims was \$353 million. The number of new claims peaked in 2001 and has continued to decline (as of 2012).<sup>12</sup> There was a rise in submitted claims and costs throughout the 1980's and 1990's in all of the components of the DoD (the annual costs are not available for this dissertation). Costs do not only reflect the year being reported but are cumulative. They reflect compensation and medical costs for workers who have accepted claims as well. For example, a worker may have sustained an injury ten years ago and he or she is still being paid wage replacement costs today. In most cases, workers are returned to duty, either with restrictions or in other jobs that accommodate their medical needs. Case managers and occupational health nurses and physicians have emphasized return to work policies to get workers back to work as early as medically possible, as well as working with employers and supervisors to ensure availability of light duty. For example, if a firefighter is injured and cannot perform his or her regular job, the supervisor can find work that doesn't interfere with the employee's temporary medical condition.

The peer-reviewed literature on workers' compensation is mostly based on private or state workers' compensation versus federal studies. The relevant studies on DoD workers' compensation have been cited within this study.<sup>12-14</sup> In a recent review article, LaDou provides a critique of the FECA system citing the rise in FECA costs over the past few decades<sup>15</sup>. He states that the costs are out of proportion to the number of workers who are eligible for FECA benefits. LaDou also reports that FECA benefits are greater than that provided by state workers'

compensation programs (also described in the GAO report). In the conclusion of the article he states that “the entire FECA program needs to be considered for comprehensive reform.”<sup>15</sup>

### **Federal and State Workers Compensation Comparison**

Costs have been a concern for FECA and the subject of several GAO studies and articles. A GAO Report from 1996 was generated due to concerns that workers under FECA were provided with more benefits than other federal or state workers.<sup>16</sup> FECA, other federal programs and state workers compensation programs have the same types of benefits: wage-loss or compensation benefits and benefits for medical care. At the time of the GAO publication, the following similarities and differences were highlighted. Under FECA, eligible federal workers who sustain traumatic injuries can claim continuation of pay (COP) for a period not to exceed 45 days. The intent of COP is that it can eliminate an interruption in income while the claim is being adjudicated.<sup>10</sup> After the 45<sup>th</sup> day, there is a 3-day waiting period before compensation benefits begin. Under state workers’ compensation programs and other federal program(s), injured workers must be out of work for a 3 to a 7 day waiting period (varies by state) before they are eligible for wage-loss benefits. If the worker continues to be out of work for a certain specified time period, they become eligible for benefits retroactive to the date of injury.

A second difference is that FECA provides claimants with one or more dependents with an additional benefit (8-1/3 percent of salary). Some states do authorize additional dependent benefits but it is based on a fixed amount rather than a salary percentage. These increased benefits for dependents are generally provided when authorized maximum benefit levels are not exceeded.

Thirdly, there are no age limits for receiving FECA benefits. A 2012 GAO Report evaluated the characteristics and compensation costs of long-term FECA beneficiaries and how

they compare with states that limit compensation benefits for state workers at retirement age.<sup>17</sup> In 2010, over half of the total cash benefits were paid to long-term full-time beneficiaries and approximately 34% of them were at retirement age. The report evaluates the experiences of four states that limit compensation benefits (Kentucky, Minnesota, Montana, and Tennessee). In general, each of these states restricts wage-loss benefits upon retirement age if they have a condition preventing return to work. Although the compensation benefits differ by state, states report lowered costs from stopping payment at retirement age.

There are differences even within each state workers' compensation program. The comparison of state and federal workers' compensation is an area for future research because there could be value in examining best practices among state and/or federal programs. The International Association of Industrial Accident Boards and Commissions is a non-profit organization representing governmental organizations on the administration of workers' compensation systems throughout the US, Canada, and other countries.<sup>18</sup> They have performed reviews of various workers' compensation systems, many of which are available to their members only.

### **Federal Employees' Compensation Act Claims Process**

Compensation Act (CA) forms are used for most FECA claim submission. A form CA-1 is submitted for an injury or a Form CA-2 if it is an illness.<sup>10</sup> Whether it is a US post office employee or a DA Civilian, the same form is submitted to the Department of Labor when the injury or illness first occurs. The difference between an occupational injury and illness is that an injury occurs within one "shift."<sup>9</sup> The distinction between an injury and illness may not be clear and sometimes, what may be thought of as an illness is classified as an injury. For example, if a hospital worker knows that he or she was exposed to tuberculosis within a few hour time period

(within one “shift”), this is considered an injury. If the time of exposure is not known, it is considered an illness. There is a three year time limit for filing an occupational injury claim (from the date of the injury occurred). For occupational illness, the three years starts when the employee becomes aware of the illness.

It is the supervisor who is responsible for completing the majority of these forms. The CA-1 has a section for the witness statement and it is the supervisor who is responsible for obtaining this. The supervisor also has the responsibility for the submission of the completed form online. Some Army installations provide supervisor training and these sessions may include information on workers’ compensation (including how to submit CA-1’s and CA-2’s).

The injury compensation specialist (ICS) plays an important role with regard to the reporting of injuries and illnesses and submitted CA forms. This individual serves as the manager of workers’ compensation for the organization. The ICS provides guidance at each step of the workers’ compensation process for employees and supervisors.

All claims are processed and adjudicated by OWCP. Decisions on claims (acceptance or denial) are made by OWCP staff based on documentation submitted by the employee (or claimant) and his or her treating physician.<sup>11</sup> In other words, it is OWCP who ultimately makes decisions and can authorize medical services. For example, when an Army civilian employee is injured, he or she can be seen at the Army Occupational Health Clinic (part of the Preventive Medicine Department – the Army’s version of the local Public Health Department). The appropriate forms are completed, including the CA-1. All Army medical centers require specific forms to be completed in the event of an injury, in addition to the DoL paperwork. If the injury was work-related, then the documentation submitted to DoL should support this. Supervisors are

sometimes trained on the roles of Occupational Health and Department of Labor in the claim process (training requirements depend on location and can vary).

For a traumatic injury, employees are encouraged to go to the nearest Emergency Department (usually at the Army Installation's hospital or medical center but it could be another outside Emergency Department). Follow-up from the Emergency Department is recommended at the Occupational Health Clinic. Civilian employees have the option of pursuing treatment with a physician of their own choice. Employees can only have one treating physician for their occupational injury or illness, according to Department of Labor rules, and if they decide to switch, they must complete the appropriate paperwork.

Although an employee has the right to choose his or her own physician, occupational health staff in conjunction with others involved in FECA, can encourage the employee to first attend the Occupational Health Clinic. Occupational Health can work with the supervisor on availability of light or modified duty options, for example. Employees still have the right to choose their own physician but there is an opportunity for treatment with local resources (within the military hospital/medical center) first. Many injuries, especially minor ones, resolve within a short amount of time and do not require referral to specialists. Even if referrals are warranted, occupational health staff or the case manager (if available) can communicate with the appropriate specialists (within or outside the military system) for further disposition.

Supervisors or the agency can also controvert a claim.<sup>11</sup> Even if information is submitted to controvert a claim to OWCP, the employee is still paid unless one or more conditions are met. Some of these conditions include that the injury occurred off work premises and not in the course of work-related duties and/or that the injury was the result of the employee's willful misconduct.



Willful misconduct would be knowingly disobeying workplace rules and safety regulations. A complete list of reasons for controversion is available on the Department of Labor website.<sup>10</sup>

If a civilian employee has an accepted claim for a work-related injury or illness, then the employee is entitled to medical services on an Army installation. For example, he or she can get referred to the orthopedic surgeon or the occupational therapist. As previously mentioned, the employee has the option to see his or her own physician. There are reasons why the employees may opt to get care from their own physicians or specialists. In the recent past, even if employees wished to be seen at military hospitals, there were limited opportunities as many of the specialists (such as orthopedic surgeons) were deployed, and therefore there were no orthopedic services on site. Depending on the location of the employee, there may not be a military hospital nearby. Even if there is a military hospital, there may be limited availability of certain medical specialists (e.g., specialized surgeons) or post injury care (e.g., physical or occupational therapy). Commanders are educated, through forums such as safety committees, on the cost benefit of keeping employees within the Army installation for medical care if those resources are available.

There is no known literature on the benefits nor is there literature comparing treatment, restrictions and/or outcomes from employees who were treated by their own physicians versus those treated at military or Army medical centers. Future research needs to examine differences in care provided by private versus military physicians under FECA regarding treatment outcomes including length of time to recover, time of return to duty and resulting permanent disability, as well as costs.

### **Federal Employees' Compensation Act Working Group**

Army installations are required to have a FECA Working Group that meets at least quarterly.<sup>9</sup> The meetings are coordinated by the Injury Compensation Specialist. This may be a

stand-alone meeting or part of an existing meeting, such as a safety meeting. There is published guidance on running these meetings to establish uniformity in procedures. However, there are wide differences on meeting content and process. Trends in injury mechanism among recent cases may be discussed, for example, employees falling back from rolling chairs or slipping on wet surfaces. There may also be a discussion on employees who have been on light duty and cannot return to their usual jobs. There could be discussion on suitable options at the hospital or at the installation-level for employees on light duty. The meeting is typically chaired by leadership from the hospital (Chief of Staff) or installation (Garrison Commander). Major themes are about returning employees to work, reducing costs, and reducing injuries.

### **Training Related to Occupational Injuries and Illnesses**

Civilian Human Resources Agency develops training guidance related to FECA and other human resources/supervisory training for use at the installation level. The availability of the training opportunities for supervisors differs by Command/installation and may depend on need or resources. Many Commands have mandatory initial supervisory training but this may or may not include training on FECA. If a supervisor needs training on FECA, he or she can request it and it is possible it can occur on a one-on-one basis or possibly for an entire section or department. Anecdotally, many supervisors do not obtain training on FECA due to competing training demands, and it is likely that a greater proportion of those who do not attend are military, rather than civilian, because military transition more frequently. These proportions vary based on location/facility. Many supervisors of civilian employees are in fact military and some of them are enlisted soldiers (non-commissioned officers (NCOs)). Many supervisors do not learn the FECA process until one of their employees gets injured or develops a potential work-related illness. If the supervisor does not understand the process and an employee gets injured,

this may lead to a delay in claim submission. The supervisor may not also understand that the employee can follow up with Occupational Health or other military-based medical care. The lack of understanding about the process may lead to further conflicts between the employee and supervisor.

Case managers can be retained in order to provide more efficient and effective care of the injured worker and to limit costs. Case managers are nurses who have training in workers' compensation. Case managers can serve an invaluable role working with Occupational Health, Civilian Personnel, the Emergency Department (where workers are initially seen for their injuries), and their supervisors (for obtaining light duty). Case managers also work with personal physicians to get medical documentation. The training and level of expertise are also important for those who manage and review the cases. A study by Mallon et al<sup>13</sup> found that contract case managers cost \$1.25 million and generated \$4.4 million in savings in a two year period from 2003 to 2004. The case managers implemented strategies to reduce costs and prevent injuries at four installations including finding jobs with modified duties and terminating benefits when a worker refused a job offer (consistent with his or her modified duties).

In a study by Hammett et al<sup>14</sup> preliminary evidence suggested that a physician letter could influence case decisions. In most cases, there are not physician experts who provide input into the claim before it is adjudicated. It is not part of the routine process mostly because there is a lack of physicians who can perform this duty. In cases where there were non-occupational causes of injury or illness, the physician letters might contradict the claimant's personal physician. The article described an example of an employee who experienced knee pain when standing from a chair. The treating physician diagnosed osteoarthritis and meniscal tears. The treating physician in this hypothetical case would state that the meniscal tears are work-related and that workers'

compensation benefits should support surgical repair and rehabilitation, time off for the surgery and rehabilitation, and any possible consequences related to the initial problem. The intervention by a DoD (or in this case, Navy) physician would provide evidence (with supporting literature) that the pain and meniscal tears are not work-related and instead related to the employee's osteoarthritis. If claims are rejected because agency (DoD) physicians provide these evidence-based letters, then this is an important source of cost-savings to the government.

### **Occupational Injury and Illness Data**

After a civilian sustains a work-related injury or illness and a claim is submitted, a longitudinal record of that injury or illness is generated. This contains information from the injury or start of the illness and other valuable information including costs (medical and compensatory). A worker can claim any type of injury or illness (including psychiatric disorders), but in order for the claim to be accepted there must be documentation that the injury occurred at the workplace or the illness is work-related. According to a recent National Institute for Occupational Health and Safety (NIOSH) document,<sup>19</sup> workers' compensation records can have a public health purpose beyond being a vehicle for providing compensation. Unfortunately, Federal workers' compensation data are not publicly available. Data are available on an aggregate basis for policy decisions within the Department of Defense. Certain data are available to installations especially the Injury Compensation Specialists and Safety Officials who need to report on trends and related costs. Ideally, the data can allow evaluation of types and nature of injuries, occupations, severity of injuries, and demographic information. Some of the limitations of workers' compensation records will be mentioned later in this study. In particular, these data are often underestimates of what may be the true occupational injury and illness costs.<sup>20,21</sup>

## **Department of Defense Workers' Compensation Data Systems**

### **Force Risk Reduction**

Force Risk Reduction (FR2) is a DoD web-application that combines multiple data sources within web-based location. Access is limited to select DoD personnel (who register and are accepted to the web-based system). In addition to providing data on military service members (e.g., military casualties, medical evaluation from theater, deployment), FR2 integrates civilian personnel data (e.g., who is at the various installations or commands), payroll data (e.g, lost time data), and workers' compensation claim data in order to support the Protecting Our Workers and Ensuring Reemployment (POWER) Initiative. FR2 has current data as well as the relevant population at risk. FR2 only has costs associated with lost time and does not the costs associated with general workers' compensation claims.

### **Barriers to Reporting**

There may be barriers to reporting occupational injuries although barriers have not been specifically studied within the DoD setting. In Azaroff et al,<sup>20</sup> the authors applied the filter model to different sources of data (Bureau of Labor Statistics and workers' compensation records and documents), physician reporting systems, and other medical records. Filters, as described by Webb et al.<sup>22</sup>, are partial barriers in the workers' compensation system. The barriers are described as partial because some injuries are reported (e.g., the more severe) and others will may not be reported (e.g., may be considered too minor). The authors cite several barriers to reporting occupational injuries and illnesses, some of the barriers referenced in the article include obstacles to informing supervisors about injuries, unfamiliarity with workers' compensation procedures and benefits, delays in receiving medical care, delays in recognition of work-relatedness on the part of medical providers (especially for diseases with long latency periods),

and underreporting on the OSHA logs due to concerns about OSHA inspections and employee evaluations. The co-authors mentioned that clinicians may fail to recognize work-relatedness as many physicians don't have the training in occupational health (mentioned in their 2002 article but still valid today). A 2009 Government Accountability Office (GAO) report found that there were several factors that may discourage employees from reporting work-related injuries and illnesses<sup>23</sup>. Workers may not report injuries due to concern about job loss and employers may fear increasing workers' compensation costs. In a survey of health practitioners, GAO found that over a third of practitioners were subjected to pressure (related to disincentives to reporting injuries and injuries) leading to insufficient medical treatment. There were other factors that affected the accuracy of injury and illness data, including a lack of understanding of OSHA's recordkeeping requirements by those responsible for recording occupational injuries and illnesses.

### **Federal Initiatives**

Since 2004, there have been two federal initiatives to reduce costs, lower injury rates, and/or return workers to work. The two programs were initiated due to rising workers' compensation costs through the 1990's and early into the 21<sup>st</sup> century.

#### **SHARE Initiative**

Under President George Bush, the Safety, Health, and Return-to-Employment (SHARE) Initiative was established and its goals included lowering workplace injury and illness case rates, lowering lost-time injury and illness case rates, timely reporting of injuries and illnesses, and fewer lost days resulting from work injuries and illnesses.<sup>24</sup> According to the Department of Labor website, the federal government exceeded all four goals of the SHARE goals since the SHARE Initiative started in 2004. The program was renewed and continued through FY 2009.

## **POWER Initiative**

The Protecting Our Workers and Ensuring Reemployment (POWER) initiative extended the progress accomplished under SHARE. President Obama established this workplace safety and health initiative in 2010 and was directed to all federal Executive Branch departments and agencies excluding the United States Postal Service.<sup>25</sup> It was a four year plan (FY2011-2014) that set performance goals in seven areas. These goals include reducing total injury and illness case rates; reducing lost time injury and illness case rates; analyzing lost time injury and illness data; increasing the timely filing of workers' compensation claims; increasing the timely filing of wage-loss claims; reducing lost production day rates; and speeding employees' return to work in cases of serious injury or illness. An eighth goal was added in 2012 to measure compliance with electronic submission of Department of Labor forms (e.g., CA-1 and CA-2).

Baseline targets were established for all of the federal agencies in 2009 for each of the eight POWER goals and then agencies were encouraged to set more challenging targets after that point. The DoL website lists whether the established goal has been met (green) or not (red). The website only provides information on the DA level and is not installation specific. The most consistently "red" POWER goal is goal 4, which is to increase the timely filing of workers' compensation notice of injury and illness forms. This is consistent with what has been reported locally at various installations but will be examined through this project.

These are examples of Federal initiatives. Their success depends on actions at regional and local levels but how initiatives are communicated to lower levels is unknown and also not specified.

## **Problem Statement**

Civilian occupational injuries and illnesses are a multi-million dollar annual burden to the Army and the government at large. An example of an occupational injury is tripping over an object at work and sustaining facial trauma with possible injuries to jaw, nose and teeth. An illness can include hearing loss, respiratory conditions (e.g., occupational asthma), poisonings (e.g., carbon monoxide), skin disorders (e.g., contact dermatitis), musculoskeletal disorders (e.g., carpal tunnel syndrome) and other illnesses and disorders such as heat exhaustion. Many injuries can later lead to “illness”: a traumatic injury such as a fall can lead to chronic pain or nerve damage, for example. Occupational injuries and illnesses are also costly to the employees in terms of morbidity, lowered morale, and potential for job loss or relocation to another job due to limitations.

Department of Defense or Department of Army civilians comprise a significant portion of the workforce at Army installations including Army medical centers. The processes for reporting and the follow-ups can be redundant and complicated due to additional paperwork requirements and lack of informed medical personnel. Depending on local requirements and if it is an injury or illness, there may be safety forms or additional forms required (e.g., information required after a needlestick is sustained). An employee can choose to go outside the military system. Although it is preferable to keep the employees within the military medical center due to cost and assured quality of care, many medical providers in the military system are not familiar with workers compensation processes.

The Federal Employee Compensation Act Working Group brings together those experts on workers’ compensation at the local or installation level under the leadership of the installation or hospital commander to review injury trends and discuss cost containment and return to work



strategies. Although causes of injuries may be discussed during this meeting, root cause analyses are typically not performed at this meeting. Root cause analyses are done through the Safety Department often in conjunction with Occupational Health and Industrial Hygiene (often meeting on a regular basis, but depending on location). For example, an employee tripped at work, injured herself and required medical care. An employee should, through her supervisor, initiate Safety paperwork and workers' compensation processes. The Safety Department investigates why the employee tripped and whether something could be done to mitigate the tripping hazard. This process relies on Safety being notified and sometimes, only the FECA paperwork is submitted without reporting to Safety. Improvements in communication and data sharing between the employer and employee, the FECA representative, Safety, and others (e.g., Occupational Health, other medical providers) would logically result in improved health and well-being, enhanced working environments from both an organizational and individual-level perspective, and a potentially significant reduction in costs associated with preventable injuries.

As a result, the current workers' compensation processes do not lead to maximal return to work and cost savings efforts. Some of these processes include insufficient interaction between stakeholders, lack of awareness of and training on the workers' compensation systems, and inadequate injury prevention strategies in consideration of organizational and individual factors. This is the first systems-based study of Army civilian employees evaluating best practices and areas of improvement focusing on the reporting and management of occupational injuries. This study assesses the current state of the system for reporting and following up on civilian occupational injuries and illnesses in Army medical centers, potential barriers and facilitators to reporting injuries and illnesses, and recommendations for change that may lead to improved reporting and management, and ultimately significant cost-savings for the Army.

## Research Questions

Given the study context and problem statement, a set of research questions was developed. The questions below are linked to methods and concepts, as shown in Appendix O. In Chapter 3, specific methods are further detailed to assist in answering these questions.

1. What are the most frequent occupational injuries and illnesses and annual costs locally and at the Army/DoD level?
2. How are occupational injuries and illnesses reported at the installation-level and how does this differ from guidance provided to supervisors and/or employees?
3. Who is responsible for occupational injury and illness reporting and management? How effective is shared accountability?
4. How do the occupational injury and illness policies highlight the roles of leadership, teamwork, and communication? Are these policies derived at the local or DoD level?
5. What metrics are used for occupational injuries, if any, and how are the metrics established? Are these metrics evidence-based? Note, a metric is defined here as a means to measure a quantifiable change with regard to occupational injuries – can be costs, numbers, medical visits, etc.
6. What kind of training is required to report and manage occupational injuries and illnesses on the part of the supervisor? How does this training respond to the needs of the hospital or installation?
7. How can improved communication be used to facilitate reporting of occupational injuries and illnesses?

8. What is the role of the FECA Working Group at the installation level? Are there processes in place for FECA programs to use data for injury prevention through the FECA Working Group?
9. How does leadership provide guidance on data collection or analysis to influence or drive decisions permitting appropriate injury prevention and case management activities?
10. How does leadership act as an agent of change with regard to injury prevention and occupational injuries?

## **CHAPTER II: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW**

This study is investigates civilian occupational injuries and illness in a military (Army) setting. Although the focus is on Department of Army civilians, all types of employees are involved in the reporting and management of these injuries. These injuries and illnesses involve many individuals and areas within, and even outside, the military setting – from the employee who sustains the injury (or illness) to the supervisor who has a critical role in reporting as well as others who are involved in reporting, managing, and preventing further injuries.

Gielen and Sleet state that the “complexity of injury problems demand complementary rather than competitive injury strategies.”<sup>26</sup> The study is not only about injuries (and illnesses) but also about the environment, the military or Department of Defense setting, and the many types and roles of personnel who work in the work environment. It is a study on the broader system of reporting and managing these injuries and illnesses, rather than the technical issues about them (what they are and how to treat them).

Existing frameworks were evaluated that could lead to systems improvements in workers’ compensation. High Performance Work Systems, described below, is highly relevant to occupational injuries and illnesses and entails a discussion on systems-level improvements. TeamSTEPPS™, a training used in medical centers throughout the country, including Army hospitals, has useful and similar themes to this project (such as communication and teamwork).<sup>27</sup> Research has shown that TeamSTEPPS™ leads to an increase in positive attitudes on safety, teamwork, communication, and overall work performance.

### **High Performance Work Systems**

There has been a growing body of literature on High Performance Work Systems (HPWS) and its associated transformations in the workplace. HPWS, with a greater focus on the

system, is in contrast with more control-oriented approaches to human resources in occupational safety and health.<sup>28</sup> Potentially relevant themes with workers' compensation include transformational leadership, proactive training, and team-based working groups. In a HPWS, the employee is viewed as the competitive advantage within the organization. Therefore there is trust and respect toward him or her within the organization. In a study by Zacharatos, Barling, and Iverson<sup>29</sup> on occupational safety, they demonstrated that organizational factors (e.g., transformational leadership, training, information sharing), rather than individual attributes, were associated with promoting safety. Gittell et al<sup>30</sup> showed that high performance work practices, including team meetings and conflict resolution, among medical staff in several hospitals predicted quality and efficient outcomes. In the study by Zacharatos et al,<sup>29</sup> they evaluated such practices as information sharing and extensive training. In the article the authors state that "teams will enhance occupational safety when they promote the sharing of ideas that result in better solutions."<sup>29</sup>

Based on the literature, including from High Performance Work Systems as well as training from TeamSTEPPS™ (described further under teamwork below), several key concepts emerged which were felt to be useful in improving workers' compensation practices. They include communication, data sharing, leadership, teamwork, and training.

### **Conceptual Framework**

The conceptual framework shows five key concepts - communication, data sharing, leadership, teamwork, and training under the Reporting and Management of Civilian Occupational Injuries and Illnesses (Appendix A). The initial framework shows how the concepts were evaluated through the document review (evidence in policies and regulations) and key informant interview within the current state of reporting and management. The process of

gathering information was iterative. The research process was action research based and not a linear process. The research process was iterative: observations from the principle investigator and feedback from the key informants were integrated into findings, recommendations, and next steps. The concepts were evaluated within the context of the overall system. The system is how workers' compensation is currently working within the Army – at the installation level and overall policy level. Based on recommendations for change from this study, the ideal state will be described later in this document (refer to Discussion section).

## Literature Review

The concepts served as the initial (*a priori*) codes for analyzing the interviews and documents. The concepts are demonstrated in the matrix below. Through the literature, each of the concepts are explored further. If there are studies related to workers' compensation or any type of occupational injury, they are described first. Otherwise, the emphasis is on studies in the healthcare setting as these studies are more relevant to this project, where reporting and management often takes place in a clinic or medical setting.

**TABLE I. Concept Matrix**

Concept	Definition	Related Terms	Literature Review
Communication	Means by which we exchange ideas and connect with each other <sup>31</sup>	Shared decision making	Baldoni (2009); Beaumont (2003); Kripalani et al (2007); Politi & Street (2011); Salas, Wilson, Murphy, et al (2008); Webster et al (2008)

<b>Concept</b>	<b>Definition</b>	<b>Related Terms</b>	<b>Literature Review</b>
Data Sharing	Sharing of informational resources <sup>32</sup> or data	Information sharing; information exchange	Kripalani et al (2007); Mesmer-Magnus & DeChurch (2009); Webster et al (2008); Zacharatos et al (2005)
Teamwork	Set of interrelated knowledge skills, and attitudes that facilitate coordinated, adaptive performance, supporting one's teammates, objectives, and mission <sup>27</sup>	Collaboration; Coordination: Working Groups	Baker (2006); Hallden (2014); Katzenbach & Smith (2005); TeamSTEPPS 2.0 (2014); Xyrichis & Ream (2007)
Training	Developing or acquiring skills or knowledge for specific goals or competencies	Education; development	Burke et al (2006); Salas et al (2012)
Leadership	"...is about vision, people buying in, about empowerment... producing useful change" <sup>33</sup>	Transformational leadership; Command influence	Kotter (2013); Lee (2011); Mullen & Kelloway (2010); Zacharatos et al (2005)

## **Communication**

In this study, one goal was to determine how communication could affect the reporting of injuries, serving as a potential facilitator or barrier. Although there are many ways to define communication, it is defined here as the means by which we exchange ideas and connect with each other. The means of reporting and exchanging information on occupational injuries can occur in many ways. Communication is essential for effective management and processing of the claims. For example, an employee may want to get a referral to a specialist physician for more documentation to support his or her case. Communication, or lack of communication, between occupational health and the primary care provider can delay the claim for an employee.

In an article by Beaumont,<sup>34</sup> he conducted a Delphi study on improving communications between general practitioners and occupational medicine providers, related to disability assessments. The study was performed through telephone interviews and feedback by email among 25 participants who were identified as key informants. The article's conclusion was that improved communication by mutual education and understanding and a team approach was necessary for rehabilitation strategy.<sup>34</sup>

In an article by Kripalani et al<sup>35</sup> deficits in both communications and information transfer affected patient care and had implications for safety. In this systematic review of the literature, the authors examined 55 observational studies evaluating information transfer and communication at discharge and 18 controlled studies evaluating the efficacy of the interventions to improve transfer of information.<sup>35</sup> In their search terms, they used a wide variety of terms potentially related to communication or information transfer. Some of these terms included patient discharge, continuity of patient care, discharge communication, electronic email, hospital records, and inter-professional relations. Although the article did not clearly discern differences between communication and information transfer, the latter was defined by use of discharge letter or summary. The authors found that there were problems with both information transfer and communication. There was infrequent communication between hospital physicians and primary care physicians and they found that the availability of a discharge summary was low at first post-discharge visit. Problems with communication could affect quality of care, safety, and patient satisfaction.

In a review article by Webster et al<sup>36</sup> problems with communication and information flow can lead to medical errors in the outpatient setting. Areas like surgery and the emergency department have traditionally been subject to more scrutiny on patient safety and health care



quality. They report that the outpatient setting is also prone to errors, delays in use of preventive services, and ineffective communication and information flow. The authors further state that these problems would benefit from standardized processes for information handling, structured handoffs (transfer of information), and improved feedback. They reference the TeamSTEPPS™ tools (e.g., structured communication and handoff, closed loop communication, and others) to address these areas of improvement and means to do so.<sup>27</sup> In this article, communication was not differentiated from information flow.

Politi and Street present a communication model in which they frame messages to foster uncertainty tolerance and a shared understanding.<sup>37</sup> Most medical decisions, according to Politi and Street,<sup>37</sup> involve a certain degree of uncertainty. The uncertainty can complicate medical decisions involving patients. Being able to communicate uncertainty about clinical evidence is an important skill and first step in helping patients about a given decision. The communication to achieve a shared mind can range from simple to very complex. In the article, the co-authors provide the example of a clinician explains a specific diagnosis. The clinician's task is to explain the diagnosis using simple and clear language, check for understanding, and provide additional information if there is any misunderstanding. Such a model can assist in managing the inherent uncertainty and communication gaps within the workers' compensation system. For example, the supervisor and the civilian personnel professional can open lines of communication and check for understanding. The different parties should not assume that the others involved understand the potentially complicated processes involved in workers' compensation.

## **Data Sharing**

Data sharing is defined as the sharing of informational resources or data such as safety guidance, training resources, or workers' compensation claims. The sharing of information allows each entity involved in workers' compensation to more efficiently do their job.

There was a paucity of literature on this topic especially in the healthcare environment. There was no known literature related to data sharing within the occupational injury or workers' compensation field. The challenge was one of terminology as there were references to information sharing, information transfer, and data transfer in the literature. Furthermore, in most cases, there was no clear definition of these terms. In the TeamSTEPPS™ Evidence Base section (providing a literature review on teamwork related concepts), communication and information sharing are used interchangeably.<sup>27</sup> It is only through context that one can determine the differences in their definitions.

The Centers for Disease Control (CDC) and NIOSH encourage that data to be shared to the fullest extent possible in order to promote their missions<sup>38</sup> (CDC is the principle disease prevention and health promotion agency for the United States). According to their data sharing policy, CDC recognizes that they must balance being able to release important public health data in a timely manner and being able to maintain privacy, confidentiality, national security, and law enforcement interests.

In the study by Zacharatos et al<sup>29</sup> they contend that sharing information is “equally critical for safety performance.” In a meta-analysis of 72 studies, Mesmer-Magnus and DeChurch<sup>32</sup> demonstrated the importance of information sharing to team performance, decision satisfaction, cohesion, and knowledge integration. The purpose of their study was to evaluate what factors promote and suppress information sharing. In this analysis, they found that

information sharing positively predicated team performance across all moderators.<sup>32</sup> Some of these moderators included the type of discussion (free-form to focused) and cooperation.

Based on this lack of literature and clear definitions, data sharing was defined specifically for its relevance in workers' compensation. In the context of workers' compensation, data can include exposure data (related to workplace hazards), claim submissions, and FECA resources (e.g., information from the FECA Working Group).

## **Leadership**

There are many different definitions of leadership and many types of leadership. Leaders in general must have a vision, motivate others, and be able to lead changes. Leaders can be more top-down or transactional which are more typically associated with the military environment. According to the Army Regulation on Army Leadership (AR 600-100), leadership is defined as “the process of influencing people by providing purpose, direction, and motivation, while operating to accomplish the mission and improve the organization.”<sup>39</sup> This regulation applies to leaders at all levels and includes officers, soldiers, and DA civilians. According to the regulation, leaders must be able to work in a dynamic environment and must be able to communicate and coordinate with a variety of personnel.

Some studies suggest that transformational leadership is associated with decreased workplace injuries.<sup>29,40</sup> There has been increasing evidence to suggest that the leadership style can have an effect on safety and occupational injuries and their prevention.<sup>28</sup> A transformational leader is one who focusing on motivating, inspiring, and influencing the employees around him or her and is able to effect positive change in the organization.<sup>41</sup> A transactional leader typically works through clear structures through clear structures and often uses management by exception.<sup>42</sup>

Both High Performance Work Systems and TeamSTEPPS™ highlight the role of leadership. Two important leadership related factors in a HPWS study were trust in management and perceived safety climate.<sup>29</sup> A study by Kelloway, Mullen, and Francis<sup>41</sup> was the first to compare transformational leadership to a passive leadership style on safety outcomes. Safety-specific transformational leaders (versus passive leaders) are those leaders who take an active approach to safety issues and are good models of safety behavior in the workplace. Safety-specific passive leaders had negative (rather than null) effects on safety consciousness and safety climate. Safety-specific transformational leaders had a positive effect on safety outcomes. In their conclusion, they state that a transformational leader provides a role model for employees, especially in the safety arena. Transformational leadership may not only be a means to reduce and prevent injuries but could be associated with improved reporting and communicating of injuries.

In a theoretical model of safety leadership,<sup>43</sup> findings suggest that active transactional leadership is important in order to ensure compliance with regulations, while transformational leadership is primarily associated with employee participation in safety. The lessons from Kelloway, Mullen, and Francis<sup>41</sup> are important to the military environment and provide evidence that transformational leaders may lead to better safety outcomes. Transformational leadership may also lead to better compliance with certain regulations depending on the involvement of the leader in that discipline. There are future research needs related to the topic of transformational leadership and its benefits on the safety culture especially in the military.

## **Teamwork**

The notion of a team can differ and within a team, one can provide different and valuable perspectives. According to Katzenbach and Smith,<sup>44</sup> “a team is a small number of people with

complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable.” In the hospital environment, there are working groups, committees, and sometimes task forces or councils. The members of these working groups or committees are typically defined through a hospital or installation regulation, including the FECA Committee or Working Group. The FECA Working Group is comprised of the major disciplines involved in occupational injuries and illnesses and has representation of expertise in safety, occupational health, and civilian personnel/FECA. The FECA working groups or committees in themselves don’t foster teamwork unless there is a plan to work together on specific objectives beyond the meeting (e.g., returning an employee back to work or finding causes of recurrent injuries). According to Salas et al,<sup>45</sup> an effective team requires constant interaction.

Salas et al<sup>45</sup> was included as supporting literature in the TeamSTEPPS training. As previously mentioned, TeamSTEPPS is an evidence-based teamwork system to improve patient safety and improve communication and teamwork skills among healthcare professionals.<sup>27</sup> All healthcare professionals within the Army medical system (i.e., who work in Army hospitals) require this training. This training has been implemented in a number of large medical systems outside the military as well. Healthcare providers are expected to use the tools within TeamSTEPPS that are categorized under team structure, communication, leadership, situation monitoring, and mutual support for training purposes. Within team structure, tasks include being able to assemble the team, assigning team member roles and responsibilities, holding team members accountable, and including patients and families (if relevant) as part of the team.

According to an article by Baker et al<sup>46</sup> team members who are committed to KSAs have been shown to outperform those who do not have these attributes. The individual team members

bring their own attributes to the team and they are refined over time within the team-based interaction. Organizations such as hospitals will not achieve high reliability (i.e., existing in environments where the potential for errors is high) unless teams and team members are able to interact effectively.

Salas et al<sup>45</sup> presented several guidelines that can be applied to establishing and enabling teams. The article presents a framework: a three-pronged approach to teamwork in the healthcare setting that includes communication, coordination, and cooperation. Some of the features of his framework include supporting accurate communication through a closed-loop protocol; recognizing functional expertise and evenly distributing workload; building team orientation through increase in trust and cohesion; and providing new learning opportunities for the team that will expose them to feedback and increase their overall efficacy.

In an article by Hallden,<sup>47</sup> the original intention of workers' compensation was based on a team approach and was intended to be more proactive. She further states that too often workers' compensation decisions are based on assumptions and actions tend to be reactive. There should be a proactive approach through the FECA Working Group and the early involvement of Safety. Although FECA Working Group meetings are held, this does not mean that the members work together. There are several factors affecting the outcomes or decisions generated from the FECA Working Group. Some of these factors can be the leadership, the members, and potentially the willingness to work together on joint efforts. Using the guidance from TeamSTEPPS and Salas et al<sup>27,45</sup> there could be ways to improve the effectiveness of the members of these working groups.

Why do some teams work better than others, even if they may not even be in the same location? A study by Woolley et al<sup>48,49</sup> found that some groups worked better than others for

several reasons. Their members allowed equal contribution to the discussion versus letting one or two people dominate the discussion. According to the authors, teamwork is important in today's society because many teams operate over long periods of time and contend with complicated problems and tasks.<sup>48</sup> Hallden reported that there is not a team focus in workers' compensation and the tools reported through the literature could be implemented to improve the overall system.<sup>47</sup>

## **Training**

Training is developing or acquiring skills or knowledge to meet certain goals or competencies. Research has shown that training is effective and that the timing and specificity of training does matter.<sup>50,51</sup> For example, inpatient nurses and other medical staff are prone to injuries from lifting and transferring patients. The availability of mechanical patient lifts and training on their use have been shown to reduce injury rates, lost workdays injury rates, compensation costs, and musculoskeletal symptoms.<sup>52</sup> Much of the safety training is now computer-based and often passive. In a review of worker safety and health training methods, Burke et al<sup>51</sup> found that when training was more engaging and with worker's active participation, there was greater knowledge acquisition. There were also reductions in illnesses and injuries.

Training can be a routine safety measure or it can be reframed as a solution to more common occupational injuries. The solution should be an interdisciplinary, team approach. If there are more common injuries identified, then several parties should be involved in developing the appropriate training and ensuring it is specific to the area. Finally, there should be a follow up evaluation, at multiple levels. In the article by Salas et al,<sup>50</sup> there are evidence-based recommendations for training that should occur before, during and after the identified needs.

This is not just a structural (or technical) fix; rather, it involves communication, teamwork, and leadership.

Due to the increase in online courses for both undergraduate and graduate education, the literature compares various outcomes between traditional and online formats. However, there is limited research on work-based training using online curricula and no known research on occupational health or workers' compensation training not only within the DoD or federal organizations but in state or private-based systems.

### **High Performance Work System within Army Organization**

There are many elements within the HPWS model that are applicable to the civilian occupational injury and illness system. HPWS is not a system currently used within the Army or DoD. There are significant benefits to improving information flow, having a transformational leader, and incorporating extensive training, and having an emphasis on occupational health and safety. Although HPWS emphasizes the value of transformational leadership, the Army traditionally uses a more hierarchical rank-based structure. The question must be asked as to whether the changes suggested within HPWS can happen within the Army environment and more specifically, the environment where occupational injuries are reported and managed.



## **CHAPTER III: METHODS**

### Introduction

A mixed methods approach with both qualitative and quantitative methods was used for this project. Through integrating qualitative and quantitative data, one is able to maximize the strengths and minimize the weaknesses of each type of data.<sup>53</sup> Three main sources of data included in this project were: secondary data (quantitative data), semi-structured interviews (qualitative data), and local and higher level policy documents (qualitative data). Several purposes of mixed methods studies have been identified and include completeness (obtain a more complete picture of the phenomenon), expansion (expanding the understanding of a prior study), compensation (using different methods to compensate for the weaknesses of the other), and diversity (obtain divergent view of same phenomenon).<sup>54</sup> In this project, a mixed methods approach was used to develop a more complete picture of the workers' compensation process although other purposes of mixed methods, compensatory and confirmatory, apply. The quantitative analysis can provide a basis for the qualitative analysis – determining the “what” and then trying to ascertain the “why” and the “how.” The qualitative research components of this study meet the same levels of rigor as the quantitative study, and follow recently established guidelines on evaluating qualitative research.<sup>55</sup> Although the guidelines are meant for qualitative research articles, the content is highly relevant for any qualitative research. For example, in the methods section, it indicates that random sampling is likely not appropriate and the sampling strategy must fit the research question.<sup>55</sup>

The information from the semi-structured interviews with key informants involved in the occupational injury and illness process were triangulated with the findings from the Defense Civilian Personnel Advisory Service (DCPAS) (quantitative) analysis and documents reviewed.

Triangulation assisted in supporting the “completeness” in that it helped to develop convergent evidence in this case study.<sup>56</sup> In this project, the purpose of triangulating the data was to achieve a better understanding of occupational injury and illness reporting and management. It was also used to gain an understanding of the barriers and facilitators of reporting and managing these injuries and illnesses.

## **Design**

This is a descriptive case study of workers’ compensation practices in the US Army, involving two embedded units – bases or installations. According to Yin,<sup>56</sup> the design is Type 2 or single case design with embedded units. This design was deemed the most appropriate because it was a study about workers’ compensation within the Army. Such a design allows in-depth evaluation of a complex phenomenon (e.g., workers’ compensation) and integrates multiple sources of data (quantitative, qualitative, and observation or field notes).<sup>56</sup>

### Site Selection

Two Army installations were selected for this study. These installations were chosen because they are medium to large installations that are associated with medical centers such that IRB approval could be obtained. The installations also had pre-existing contacts to facilitate setting up the interviews. Having some familiarity with these installations was critical to enable establishing and contacting the key informants and locating documents. Based on the missions at each installation, they have different compositions of civilians and skill sets. These installations each have a medical center and care for most injuries could be provided in-house (based on availability as previously described).

The names of the installations are not provided as part of this project, primarily to protect those being interviewed.

## Data Collection

The Data Collection and Analysis sections for each component of the study are detailed separately below. Table II summarizes these components.

**TABLE II: Data Collection and Analysis Plan**

<b>Component</b>	<b>Method</b>	<b>Sample</b>	<b>How Selected</b>	<b>Research Construct</b>
Key informants from Army Installations and Higher Level/Experts	Qualitative – semi-structured interviews	Nineteen interviews at installation and higher/policy level	Key Informants	Concepts related to workers' compensation*
Regulatory documents	Qualitative review	From two installations and higher (DoD/Army) level experts	Obtained from internet and from key informants	Concepts related to workers' compensation*
DoD Occupational Injury Data	Quantitative analysis	DoD (Army) and installation level	Based on DoD component and years	Costs; conditions; occupations
Field Notes	Qualitative Review	Observations and feedback related to all components above	Detailed above	Concepts related to workers' compensation*

\**A priori* concepts include communication, data sharing, leadership, teamwork, and training

## Quantitative Data

De-identified data for the quantitative analysis were obtained through a data sharing agreement from DCPAS. These de-identified data (and variables described in Table III) were specifically provided for this project.

Data provided were from fiscal years (FY) 2001 through 2013 (the FY run from July 1 through June 30). Data were from the DoD level and contain many of the elements derived from a DA civilian injury or illness claim. Data provided do not contain any identifiable information and data elements are provided in separate password protected Microsoft Excel spreadsheets to further prevent possible identification. A listing of the variables along with a brief description is shown in Table III below. Not all of the variables provided were used in the analyses. Final decisions were based on completeness of the particular variable, data quality, and the goals of this study. Data were sorted to determine ranges and if necessary, any outliers were filtered and/or removed (e.g., rejected claims or claims with no associated costs). Once data were sorted, then the data were analyzed. All data remained in the Microsoft Excel worksheets for analysis.

Denominator data for the two sites were obtained separately. An application was submitted to the Defense Manpower Data Center (DMDC) to access civilian population data through the DMDC Data Request System (DMDCRS). DMDC is the main archive for Department of Defense manpower, personnel, training, and other databases.<sup>57</sup> Once the request was granted, civilian statistics at the installation level were obtained. These data are only available from 2009 through 2015 and only for selected months during that time period.

**TABLE III. Department of Defense Data Set Variables**

<b>Variable</b>	<b>Brief definition</b>
Control Number	Same control number for each case, allowing tracking of costs over the years of data
Gender	Self-explanatory
Age	Age when data run for project

<b>Variable</b>	<b>Brief definition</b>
DoD component	Army, Air Force, Navy, National Guard, Defense Agencies
Geographical Location Code	Codes for specific locations
Medical Costs	Direct medical costs
Compensation Costs	Lost wages
Total Costs	Sum of medical and compensation
Chargeback Code	Code can change because of changing commands (on part of organization or worker)
Date of Injury	Self-explanatory
Nature of Injury	Code indicates type and nature of injury (e.g., “chemical,” “food poisoning,” “headaches”)
Cause of Injury	Causes from 00-99 (From Department of Labor) (e.g., 65: “Fall on Stairway or Steps”)
Anatomical Location	Body Part Affected (codes for location)
Job Series Code	Federal job series code (group codes)
Accepted Conditions	ICD-9 codes; up to 6 conditions can be listed

### Document Review

All of the higher level documents are published on the Department of the Army G1 Human Resources website (<http://cpol.army.mil/library/benefits/acwci/>) and were searched for their value in informing the research questions in this study. Local documents were obtained from the installation intranet. Interview participants were asked about local or installation-level documents. Several participants were asked about local documents to ensure that none were missed. In addition to documents related to workers’ compensation, safety regulations were also included due to their role in the occupational injury process.

### Semi-structured interviews

This component included development of the interview questions, the selection of the interview participants, and contacting and conducting the interviews.

### Interview Selection

This study used purposive sampling. Purposive sampling reflects the objectives of the study and allows the interviewees to assist in answering the relevant research questions. Semi-structured interviews included key informants at each of the Army installations. A copy of the interview script is provided in Appendix E. Key informants represented those involved in injury reporting and data management and are the experts in their discipline. They also represent those whose employees are primarily affected by injuries or illness such as nursing. Invited key informants included representatives from the following areas or departments:

Installation Level:

1. Emergency Department
2. Safety
3. Infection Control
4. Occupational Health
5. Industrial Hygiene
6. Workers' Compensation Personnel (including Injury Compensation Specialist and Case Manager)
7. Hospital and/or Installation Leadership
8. Nursing
9. Security/Police or Firefighters
10. Union

Representatives of the areas above were contacted and interviewed, except for the union or employee representative. There were also individuals at the DoD policy level who were interviewed. These individuals represented different Army or DoD Commands (or organizations) and work in the areas of human resources, occupational medicine, and workers' compensation. There were 19 individuals who participated in interviews out of 32 who were invited or 59.4 percent. Overall, the individuals who did participate reflected a wide range of job areas as shown above. In most cases, individuals who did not participate did not respond with a reason why not. There were some instances whereby an individual was too new or was not available due to extended absence. There were two additional individuals who did not participate but provided limited input. They were contacted about the study but could not participate formally.

#### Interview Questions

The interview questions were aligned with the research questions (Appendix O). The interview questions were reviewed and discussed with two individuals who have Army experience in occupational medicine and civilian personnel. They made corrections such that the questions were appropriate to government personnel and those working in the field of workers' compensation. The civilian personnel representative, in particular, ensured that the language was appropriate to the federal work force. The occupational medicine and civilian personnel representatives' feedback was incorporated into the interview instrument. The order of the final instrument was also adjusted such that questions were grouped by topic.

Interviews were not audio-recorded but instead the responses were directly transcribed (typed into interview templates on a government laptop). This was done for two reasons. It was thought that audio-recording would make the participants feel uncomfortable about what they are saying. Because identifiers would not be recorded in the project, it would have been more

challenging to erase any identifiers from an audio-recording than merely omit them from written transcripts. During the interview, all responses were recorded. If the interviewee spoke too fast, he or she was asked to repeat and the response was captured. It is not likely that any information or concepts were missed.

Names and locations were also omitted from the interviews (that may have been said inadvertently during the course of the interview). Not all who were invited to participate in this study chose to participate. As a result, it was possible that only one in a particular specialty in a location may have participated in the study. To protect the rights of the individuals in the study, identifiers were omitted so that participants could speak more freely without being concerned about the consequences.

Because there were no names (including the name of the installation) on the interview form, a code was used which was matched to a listing on a master key. This was done to ensure that an appropriate mix of participants was contacted and interviewed. The list was destroyed after the interviews were completed. Notes from the interviews were recorded in electronic form (notes taken on a laptop). The study was determined to be exempt under the IRB and therefore the notes did not contain any identifiable information and therefore were not subject to any specific regulations (e.g., HIPAA). The data (interview notes) will be destroyed after all analyses are finalized (including interpretation of results).

### Interview Procedures

Approximately 10-12 key informants at each site were invited to participate (plus the experts at the higher level) and the goal was to have a minimum of 6-8 interviews per site. Interviews were voluntary and therefore each individual had to be willing to participate and also be available to do so.



For each interview, the potential participant was contacted by email. The information sheet (Appendix F) was attached to the email. In some cases, more information was requested either by the participant or organization. In those cases, a memorandum was composed expanding upon the information sheet and the research protocol approval was also provided. In the event that an individual responded yes, additional email correspondence was sent to determine the date and time convenient to the participant. In some cases, an email had to be sent to a supervisor and in others the email recipient referred the email to another person. This happened when the email was sent to find out the name of the appropriate person.

At the start of each interview, a brief verbal explanation of the study was provided along with a copy of the study information sheet. The interviewee was informed that participation in the study was voluntary and that he or she could opt out of any question and that no identifiable information would be recorded. Typically, the interview was conducted face-to-face if the participant was local or by phone if the interview was conducted with a participant at another installation or distant location. There was one interviewer for all of the interviews. The interview questions with prompts were asked. If the questions did not pertain, the participant indicated so and any remaining questions were answered. However, if an interview participant provided a response that was general and may indicate that he or she did not know the response, no further prompting (outside of the interview script) was done.

Information provided to key informants stated the approximate time of the interviews but it was anticipated that the interview would take approximately 30 minutes, but the length depended on how many questions were answered. In some cases, the interview took almost an hour. Overall, most interviews took about 45 minutes but the length of the interview was not recorded.

After the interview, an email was sent to each individual thanking him or her for participation.

### Field Notes

Field notes were incorporated as notes resulting from the three types of data above (quantitative, documents, or interviews). They could be reflections on the interview by the researcher. They could be additional documentation provided by a key informant after the interview was completed. For example, some interview participants provided additional comments and documents after the actual interview has been completed. The emails were saved in a separate folder. The field notes were not structured. In other words, they were not collected in a formal spreadsheet.

## **Analysis Plan**

### Quantitative Data

Descriptive data were calculated for the DoD and installation-level data, including total costs, range (minimum and maximum), mean, median, mode, and standard deviation (including relative standard deviation). The relative standard error (or percent coefficient of variation (CV)) is a way to compare the variability of different datasets (such as variability of costs between two locations). Costs were rounded to the nearest dollar. Frequencies were calculated for the injuries (nature of injury), job series code (occupational group) by DoD component and by geographical location. Of note, only the occupational series codes (2-digit) were available in these data versus specific job codes (4-digit). The four digit occupational code data were not available because it was felt that these data, along with the other variables, could potentially identify one of the claimants. The DoD component was also not provided in the 2013 dataset and therefore was not available for analysis. The occupational series such as 03xx corresponds to “general

administrative, clerical, and office services” and this information may not be very valuable in the context of occupational injuries because these groups are too general and inclusive. For the two sites, the appropriate geographical code(s) were selected corresponding to the installation. These codes correspond to the location of injury (but may not correspond to the civilian’s workplace). The main analyses focused on the costs (medical and compensation) for all claims and for new claims. All new claims are those occurring within the same year of the claim data. For example, for 2013 data, claims within July 1, 2012 through June 30, 2013 were selected for analysis.

Costs were adjusted to 2015 costs using the consumer price index calculator (<http://www.bls.gov/data/#calculators>) to account for inflation with the exception of the 2013 description tables (overall and new claims). The purpose of these tables was to show difference between the installations and DoD and also between new and older claims. The analyses were done by DoD, Army, and/or at the installation level. The new claims were also adjusted by the denominators for the specific installations.

### Document Review

A document review (e.g., regulations, policies) template was created to facilitate the review process. The review was based on the study’s research questions so that the document review corresponded to the research questions. However, there were some questions that were unique to the document review, including “who is the author or proponent of the document?” Key elements from the document review were included in the research question matrix (Appendix O). The template was created in a Microsoft Excel spreadsheet for easier completion. A separate worksheet was created for each site and the document results were summarized (Appendix G).

The review of the documents was performed twice by the primary investigator to ensure that no concepts were missed. The search function was also used within Microsoft word as another check. For example, for a question related to leadership, a search was done on all variations on leadership, command, and supervisor. The table of contents were also viewed to evaluate for any topics related to leadership. Information regarding differences with the Safety documents are specified in the text accompanying the tables in the Results sections. If there is no document to answer a given question, “not available” is indicated.

### Semi-structured Interviews

There were several steps involved in analyzing the semi-structured interviews, from developing a coding dictionary, to coding test interviews, coding all of the real interviews, and finally analyzing the interviews.

### Interview Coding

Each interview was coded using one of several *a priori* codes: communication, data sharing, leadership, teamwork, and training. These codes were also consistent with the elements described in the review of the literature and high performance work systems. After the interviews were reviewed, additional codes emerged and were added, and included large overarching (large-bucket) codes and sub-codes.

A coding protocol was developed to ensure the reliability of this component of the qualitative analysis. This included the *a priori* codes and having two individuals code the document. A third person was designated as an auditor in case of any disputes but there were none. In advance, it was agreed that no less than one sentence would be coded. In other words, there would be no coding of phrases or words alone. It was also later agreed upon that if there was important context for the given sentence, it should be coded as well. For example, if the

given sentence or paragraph could not stand alone without the context, then that additional context was necessary.

An undergraduate student in clinical research planning to attend a joint Doctor of Pharmacy and Master of Public Health program was selected to serve as a quality control measure in the coding process. The student was part of an existing internship program between his university and Womack Army Medical Center. This secondary coder was added to the research protocol through an amendment. The amendment was acknowledged through Womack Army Medical Center and approved through UIC. The secondary coder had access to interview transcripts only and was not involved in the interviews themselves (and therefore did not know names, locations, or other identifiable information). NVivo® Version 10 (QSR International Pty Ltd., 2012) was used for this dissertation and used specifically for analyzing the interviews. Both the investigator and secondary coder learned NVivo® basics through hands-on training (exploring NVivo®), watching training videos, reading an instructional book, and reviewing other material posted on the NVivo® website.

Each coder set up a user profile on NVivo®. The user profile tracked work by each team member and it was critical for coding comparisons. By creating the user profiles, the coding by each study member or coder could be tracked and later compared. A test questionnaire was created using the actual study questions but the responses were not real (although they reflected many of the same themes as the true questionnaires). This questionnaire was used to practice applying the *a priori* codes and to ensure that there was consistency between the two coders. After the test questionnaire was discussed and both coders were comfortable using NVivo®, the first four questionnaires were coded using *a priori* codes only. The questionnaires coded with *a priori* codes were compared. A coding comparison query was established in NVivo®. The

coding comparison was done on the “Query” tab. Both users were selected to allow comparisons. Any or all nodes (codes) could be selected for comparison but for this study, all codes were chosen for comparison. “Run” executes the query and displays the Kappa coefficient during the code comparison process.

The Kappa coefficient (also known as the Kappa statistic) shows the level of agreement between the two users. It is based on the difference between how much agreement is present (“observed”) compared to how much would be expected to be present by chance alone (“expected”).<sup>58</sup> Landis and Koch proposed the following as standards for strength of agreement for the kappa coefficient<sup>59</sup>: 0=poor, 0.01-0.02=slight, 0.21-0.4=fair, 0.41-0.6=moderate, 0.61-0.8=substantial, and 0.81-1.0=almost perfect. For this study, a minimum of “substantial” ( $\geq 0.61$ ) coder agreement was desired.

Memos were inserted when the coder had a suggestion regarding the new code or sub-code. The contents of the memos were discussed as possible new codes or sub-codes. The codes were conceived within the context of the project, as challenges or facilitators to reporting or managing occupational injuries and illness. The process of discussing new codes and reviewing the initial or test questionnaire was iterative. When the new codes were added, it resulted in an overall Kappa below the desired level (0.61).

In order to reach a level of acceptable agreement a working definition for each code and sub-code was required to alleviate many of the discrepancies. The definitions were grounded in the information collected through the study’s literature review and reinforced through discussion between the primary and secondary coders. The first four interviews were beneficial for prompting discussion about *a priori* and new codes. After establishing definitions for the codes and sub-codes the initial four interviews were coded again according to the established

definitions. It was found that these definitions allowed for a much higher level of agreement. Any kappa coefficient that remained below the threshold of 0.61 was discussed to remove discrepancies, thus increasing all kappa coefficients to above 0.61. The table below lists the *a priori* codes (those developed before data were examined) and inductive codes\* (developed after examining the data). For some of the codes, sub-codes were created and they are also listed in the table. Definitions and examples for all of these codes and sub-codes are provided in the coding guide in Appendix C.

**TABLE IV. *A priori* and Inductive Codes**

<b><i>A priori</i> and inductive codes*</b>	<b>Sub-Codes</b>
<i>Communication</i>	Barriers; Facilitators
<i>Data sharing</i>	Barriers; Facilitators
Injury Prevention*	N/A
<i>Leadership</i>	Command-Driven; Initiative-based
Processes*	Negative; Positive; Lack of
Recommendations*	N/A
Responsibility*	Fulfillment; Lack of Fulfillment
Safety*	N/A
<i>Teamwork</i>	Coordination; Lack of Teamwork; Working Group
<i>Training</i>	Face-to-Face; Initial; Lack of training; On the Job; Online; Refresher
Worker-Supervisor Relationship*	Negative; Positive

### Interview Analysis

All of the interviews were entered into NVivo® qualitative analysis software for text coding. The codes were organized into overarching or large bucket codes and any sub-codes within the software. Analyses were performed within each “group” (installation or higher level/expert groups) and also between them using NVivo® and Microsoft Excel®.

For each research question, the frequencies of the responses are shown within the tables in the Results section. For example, out of the seven individuals who represent Installation A, five individuals responded that their training was adequate. The numbers are reflected within the table. The data are explained further in the text accompanying the tables. Frequencies from all three groups (or “sites”) are shown, with the third group (indicated by “C”), representing those at the policy or higher levels. Some questions could not be answered by certain participants. For example, those in higher level/expert positions could not answer most questions related to installation practice. For example, one of the questions asked about local injury prevention initiatives and those who are not physically at the installation or local level may not know about local initiatives. Therefore, “not applicable” was indicated.

When performing analyses through NVivo® for contents within the interviews, the introduction and interview questions were removed. This was done to ensure that the content of the introduction and questions did not influence the analysis.

The interviews were individually evaluated with the coding stripes (refer to Appendix D) to detect early trends with nodes (or codes). This is a quick way to visualize the different codes used within an interview and how they could potentially overlap with other codes.

To determine the frequencies of occurrence for each node found within each set a matrix coding query was generated. The rows were established as each set (A, B, and C [“Higher



Level”]), corresponding to the Groups (or Sites) A, B, and C. The columns were established as each code and sub-code. The query generated a frequency for the number of times each code appeared within each set. This allowed detection of common themes within each set. Once the query was generated, the results were exported to Microsoft Excel<sup>®</sup>. A bar chart was created to display the node frequencies among the different installations (or sites). NVivo<sup>®</sup> allowed for a similar chart to be created locally, however it did not allow the ability for side-by-side comparison of each node by installation.

To demonstrate coding relationships, matrix coding queries were generated for each set. The rows were established as each code and sub-code. The columns were also established as each code and sub-code. Therefore, once the code was run, frequencies of when an overlap occurred amongst nodes would be displayed. The results from queries ran for each set was exported to Microsoft Excel<sup>®</sup>. The frequencies were then converted to percentages to accommodate for differences in total sets. Overlapping between similar nodes was excluded from analysis (e.g. responsibility crossed with responsibility, lack of responsibility, etc.). This information was extrapolated and then sorted into one table sorted by highest percentage of overlapping nodes for each site. Duplicates of data points were removed from the table. These duplicates were generated because of the redundancy that cross-referencing a matrix-coding query inevitably generates (i.e. processes-data sharing; data sharing-processes). This table allowed for the analysis of the most common correlations among each set.

#### Field Notes (Algorithm and Interview Feedback)

The analysis of the field notes consisted of two elements: the flowchart (algorithm) and the interview feedback.

### Occupational Injury and Illness Algorithm

A basic algorithm was created to depict the reporting of an injury or illness (Appendix B). This algorithm starts from the actual work-related injury or reporting of an illness. It then proceeds through supervisor notification and first aid or medical care. The algorithm includes reporting through FECA and Safety channels, which must both occur but have different processes. Based on the document review, interviews, and additional feedback from the interview participants, the algorithm was revised to reflect the actual state of reporting (refer to Discussion section, Appendix J). The results of the algorithm feedback and revisions are included in the Results chapter under Question 2 (Occupational Injury and Illness Reporting).

### Interview Feedback

There were two sources of feedback. Some of the interview participants provided feedback without prompting. They emailed more information after the interview was done such as information about training presentations. These comments were retained as part of this feedback or the field notes section. After the results were obtained, a brief summary of those results were sent to those participating in the interviews. The summary consisted of major results derived from the research questions and in particular, areas where triangulation was noted between the document review and interview analysis. For example, if the review of the documents states that training should be done on a regular basis but the participants report otherwise, then such results would be confirmed by a sub-set of participants. This summary also included an updated version of the algorithm. The goal was to obtain feedback on the results from at least two per group (both installations and policy level). The purpose of obtaining the feedback was to ensure that the results accurately reflected the views of the participants and add any new information as necessary.

## **Data Management**

Tracking and organization of data were critical to the success of this study. Data included the three components described previously as well as feedback from committee members and field notes. The manner in which this was done evolved over the project and it was based on the complexity of the various aspects of the study. For example, the project was initially written using Microsoft Word<sup>®</sup> documents but as the study progressed, different tools were utilized. Scrivener<sup>®</sup> was first used to capture journal notes and sections of the dissertation proposal. Evernote<sup>®</sup> was then used instead of Scrivener<sup>®</sup> as it provided more capabilities, including capturing links from the web, checklists, and others in addition to documenting memos and word documents. Most of the feedback received from committee members was copied into Evernote<sup>®</sup> as “dissertation feedback” notes. Trello<sup>®</sup> was used to capture ideas and tasks. Refworks<sup>®</sup> was used to keep track of references. NVivo<sup>®</sup>, a qualitative software program, was used not only to analyze the interviews but also as another tool for organizing the dissertation. It was a means to write comments on relevant websites, references, and other sources. NVivo<sup>®</sup> served as a repository for data, a means to organize various sources, and a way to analyze the sources of data.

## **Data Analysis Summary and Triangulation**

Although data collection, management, and analytic plan have been described separately for the different components of the project, they all contribute to the same overarching study objective. As previously mentioned, a mixed methods approach achieves a more complete picture by using several types of data (quantitative data, documents, and interviews) and analyses (for each type of data, one or more methods to analyze the data was used).

Each research question was evaluated using the methods described in the Research Question matrix (Appendix O). Tables were created for each method and in many cases, several tables were required. A summary table was also created for each question, combining the various methods. This table represents evaluation for patterns among the data and possible convergence of results – or triangulation. A final summary table is also shown at the end of the results section that highlights areas of similarity and difference among the various research questions.

### **Validity and Reliability**

#### **Internal validity**

There are different threats to the validity of the study and each may differentially affect the qualitative or quantitative aspects of the study. Bias is one of the main threats to the internal validity of a study. Bias is generally defined as systematic error that can affect a research or scientific investigation.<sup>60</sup> Bias can be random or systematic and both are considered within this study.<sup>60</sup> Some categories of bias can be minimized and others can be mitigated completely but understanding the types and categories of bias and their potential effect on the study is critical. In this project, bias can be minimized or mitigated at different phases of the study, including the design of the study, data collection, and data analysis. Although this is a case study and not a study seeking to establish causality, minimizing the threats to validity is still important.

The potential categories of bias for this study are shown in Table V below. Response or reporting bias is the largest threat to validity in the semi-structured interviews. There are four possible factors involved in this type of bias: memory, motivation, communication, and knowledge.<sup>61</sup> Because the interview questions have been thoroughly reviewed, lack of understanding about the content was considered a low risk. In terms of motivation, it is a greater risk that respondents will want to respond more favorably than hide any information (for fear of

any consequences) however, it was likely that there was still some hesitancy in responding. This could also be referred to as social desirability bias. Respondents are more likely to provide favorable or admirable behaviors.<sup>62</sup>

TABLE V. Potential Bias in Case Study and Mitigation Plan

Potential Bias	Mitigation Plan	Phase of Study
Information bias	Can only acknowledge limitations of data	Quantitative analysis
Interviewer bias	Acknowledge inherent subjectivity – adhere to interview question	Semi-structured interviews
Measurement error	Appropriate question wording, question order of interviews; review quantitative variables for outliers	Semi-structured interviews; quantitative data analysis
Reporting (Response) Bias	Information preceding interviews (including information sheet); honest answers anticipated given that information was de-identified	Semi-structured interviews
Sampling bias	Interviewees represent experts in workers' compensation at the given locations; all relevant documents were gathered	Overall case analysis; document review

Because this is primarily a descriptive study and because of the opportunity to triangulate findings, some types of bias will not be considered threats to the validity. Similarly, confounding is also unlikely to be a threat. There could be alternative explanations to the original study questions and this was considered throughout the study.

### External Validity

The emphasis has traditionally been on internal validity. According to a recent article in the American Journal of Public Health by Steckler and McLeroy,<sup>63</sup> for public health practice, external validity is as important if not more important. The article identifies four areas to strengthen external validity. The areas that are most applicable to this study are the level and consistency of implementation across program components, long-term effects on outcomes, and program sustainability. Results that are consistent across the two installations and policy level will be emphasized in the Discussion section, along with recommendations that are generalizable to other Army installations. The limitations are also acknowledged in that the cases may not be representative of other installations or the workers' compensation practices at those installations.

### Reliability

According to Yin, reliability is one of the key case study tactics and is demonstrated through repeating the same study procedures with the same results.<sup>56</sup> As indicated previously, documents were reviewed twice. The interviews were recorded in writing. As the interviewee responded, the responses were recorded electronically. If the responses were given too fast or there may have been misinterpretation, the interviewee was asked to repeat. There was little likelihood that a different response was recorded (and more likely that minor words were omitted that did not affect the context). All interviews were evaluated with a second coder and used a coding protocol to ensure consistency. The kappa statistic was a specific outcome to monitor intercoder reliability.

### **Institutional Review Board (IRB) Approval**

Approval was sought from both the military and from UIC for conducting this study. The approval was first obtained through the military sites and then through UIC. Both approved the

study as an exempt determination (Appendices L and M). Names of installations were redacted within the approval letters because the locations are meant to be anonymous sites. A research protocol is also required for an exempt protocol. One member of the Institutional Review Board typically approves exempt studies (versus the full board). The member ensures that the research study falls within one or more categories of exemption established by federal regulations. Approval was also obtained in writing at each site where the study took place.

All three components: interviews, document review, and quantitative analysis were reviewed as part of one research protocol versus each separately. The quantitative study and the document review do not include any identifiable information and therefore they did not meet the criteria of human subjects' research. Although there is no personally identifiable information in the DCPAS data, the same protections were used as for any identifiable data. The data were maintained in password protected files and stored on a common access card enabled computer. Furthermore, the data were only accessible to the individuals on the data sharing agreement. These are provisions specified in the data sharing agreement as well.

In the Interview component, there were minimal risks to subjects because sound research principals were employed. Any risks were reasonable in relation to the benefits of the study. The selection of the subjects was equitable and no individual or groups were excluded without proper justification. In this project, the selection of subjects was predetermined and not random. The selection was based on those who have key positions in civilian injury or illness reporting or management. However, among these individuals no one was excluded without justification.

Principles of privacy and confidentiality were respected. In terms of privacy, interviews were all done one-on-one (versus in a group format). Data obtained from the interviews were kept confidential. Specific names were not released. Only aggregate information were disclosed

as part of the study. A master key was kept separately to track those who participated but only positions and initials were recorded. The key was kept on a government computer on a protected shared drive. This key was destroyed after the data were analyzed.

There was no requirement for a signed consent form for the study interviews because the study met criteria for an exempt determination. An information sheet was provided to the key informants in advance. Participation in the interviews was completely voluntary and the individuals being interviewed were reminded that they could withdraw from participation at any time. Those invited to participate in the interviews were considered experts in their respective areas. Some of them were Department of Army civilian employees and others were military. It was stated in the information sheet that honest answers were encouraged. If there was concern about the rank of the interviewer and possible undue influence and that they could not provide honest answers, then the key informant would be instructed to decline from participating. These individuals were not coerced to participate. Participation in the interviews would not affect their jobs in any way. In the information sheet, the individuals were provided with contact information (for the local research office) should they feel that there was any undue influence or coercion.

### Organizational Support

Leadership at each site (those with the authority to approve decisions for particular location) was involved to ensure the smooth implementation of the study (particularly, conducting interviews with staff). Leadership was also informed that no funding or additional resources were required for this project. The exception was the student intern who served as the secondary coder. This student's involvement was part of a research internship between his school and Womack Army Medical Center. He worked on this project primarily in the area of coding but was also involved in other un-related projects to fulfill the requirements of his internship.



When agencies outside the medical center were contacted for participation, they were informed that this was an IRB approved study (with approval attached) and a memo was also provided if more information was requested. The memo summarized the study, stating that the study was voluntary and data obtained would be de-identified. In at least one case, additional documentation was requested before approval was granted to proceed with the interview(s).

## CHAPTER IV: RESULTS

The results are shown by research question. Within each research question, sub-questions are shown as applicable. The research question matrix (Appendix O) indicates the questions and their corresponding methodology. If there are two relevant methods, e.g., document review and interview analysis, the results are shown separately (for each installation and higher/expert level) and then summarized to show any similarities or discrepancies between the results (i.e., triangulation). The research matrix also indicated the relevant *a priori* concepts. During analysis, other themes (concepts) emerged and they are indicated within each of the research questions. At the end of each of the research questions, a summary is provided by site and across the sites. At the end of the Results section, the triangulation table summarizes the results by each of the concepts, including both the *a priori* concepts and the new, inductive concepts.

### **Costs of Occupational Injuries and Illnesses**

Research Question 1: What are the most frequent civilian occupational injuries and illnesses and annual costs locally and at the DoD (Army) level?

The calculations in this section are derived from the DoD Workers' Compensation Data. In 2013, there was almost \$590 million in workers' compensation claims for the Department of Defense. There were over 400 claims submitted at Site A totaling almost \$2.3 million.

Approximately 43 percent of these claims had no associated costs, meaning they were rejected or were submitted with no lost time or medical costs. If the individual continued to have medical costs related to the occupational injury or illness and/or was unable to perform his or her job (even if only partially), he or she would continue to get medical or compensation costs through FECA. Those costs are reflected in the subsequent year's data. At Site B, a smaller site, there

were just over 130 claims submitted amounting to almost \$740,000 in 2013. Over half of these had no associated costs.

Table VI shows workers' compensation claims that are new (occurred in 2013) or on-going (occurred in an earlier year and the employee is still getting medical treatment and/or wage compensation). All three groups (sites and DoD) showed a wide range of costs from as low as \$1 per year to as high as almost one million dollars. The mean is higher than the median because there are some very high compensation costs. Site A had the lowest median (\$1,369) and mean (\$9,569) costs compared to Site B (\$2,336) and (\$11,357) and the DoD (\$3,203) and (\$14,005). All three sites had the same mode (\$100). The "\$100" is a medical cost and may be a medical appointment or treatment cost. The relative standard deviation was somewhat higher for Site A but was fairly similar among the three groups (between 1.5 and 2.0), demonstrating the same level of variability among costs.

**TABLE VI. Workers' Compensation Costs Paid in 2013: Comparison of Two Installations and the Department of Defense**

<b>Claims Paid in FY2013</b>	<b>Site A N = 237</b>	<b>Site B N = 65</b>	<b>DoD N = 41,855</b>
Total Costs	\$2,268,064	\$738,207	\$586,193,547
Minimum Cost	\$10	\$37	\$1
Maximum Cost	\$104,421	\$76,663	\$963,430
Mean	\$9,569	\$11,357	\$14,005
Median	\$1,369	\$2,336	\$3,203
Mode	\$100	\$100	\$100
Standard Deviation	\$17,677	\$17,417	\$22,000

<b>Claims Paid in FY2013</b>	<b>Site A N = 237</b>	<b>Site B N = 65</b>	<b>DoD N = 41,855</b>
Relative Standard Deviation or %CV	1.85	1.53	1.57

Table VII shows only new injuries and illnesses sustained in 2013 and claimed under FECA. The difference between Tables VI and VII is that Table VII excludes injuries or illnesses that were claimed in past years. With return to work efforts, there should be fewer workers who are completely out of work (and therefore decrease in compensation costs). With an emphasis on safety, there should be decreases in both medical and compensation costs.

The mean were lowest for Site A (\$1,657) and the highest for Site B (\$3,291). The DoD had a large range in costs from a low of \$1 to a high of almost \$144,000. The DoD had the highest variability, measured by % CV at 2.8.

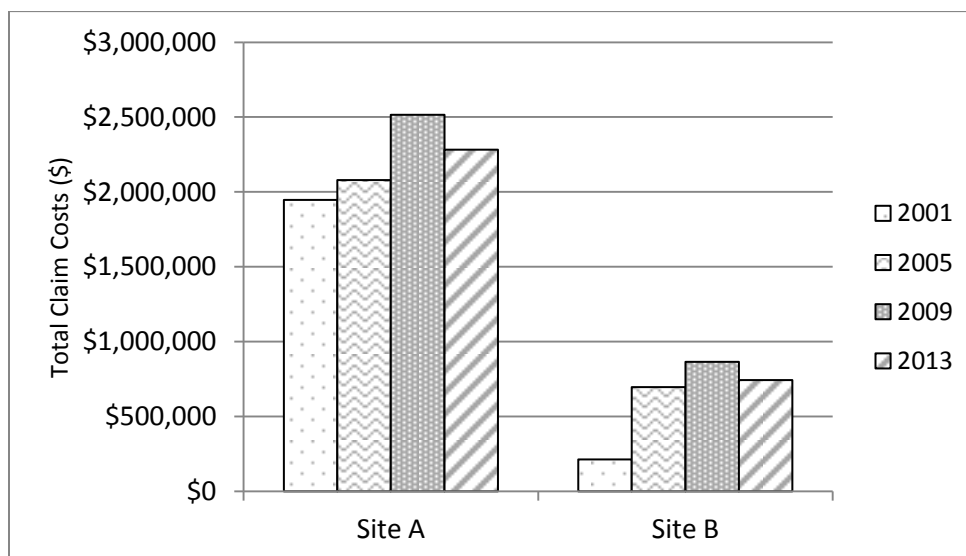
**TABLE VII. Workers Compensation Costs Paid for Injuries or Illness Sustained in 2013 at Two Installations and the Department of Defense**

<b>FY2013 Claims for New Injuries/Illnesses</b>	<b>Site A N = 61</b>	<b>Site B N = 16</b>	<b>DoD N = 8,097</b>
Total Costs	\$101,054	\$52,651	\$20,812,593
Minimum Cost	\$10	\$100	\$1.61
Maximum Cost	\$13,769	\$18,698	\$143,844
Mean	\$1,657	\$3,291	\$2,570
Median	\$420	\$973	\$568
Mode	\$100	\$100	\$100
Standard Deviation	\$2,762	\$5,684	\$7,142

<b>FY2013 Claims for New Injuries/Illnesses</b>	<b>Site A N = 61</b>	<b>Site B N = 16</b>	<b>DoD N = 8,097</b>
Relative Standard Deviation or %CV	1.67	1.73	2.78

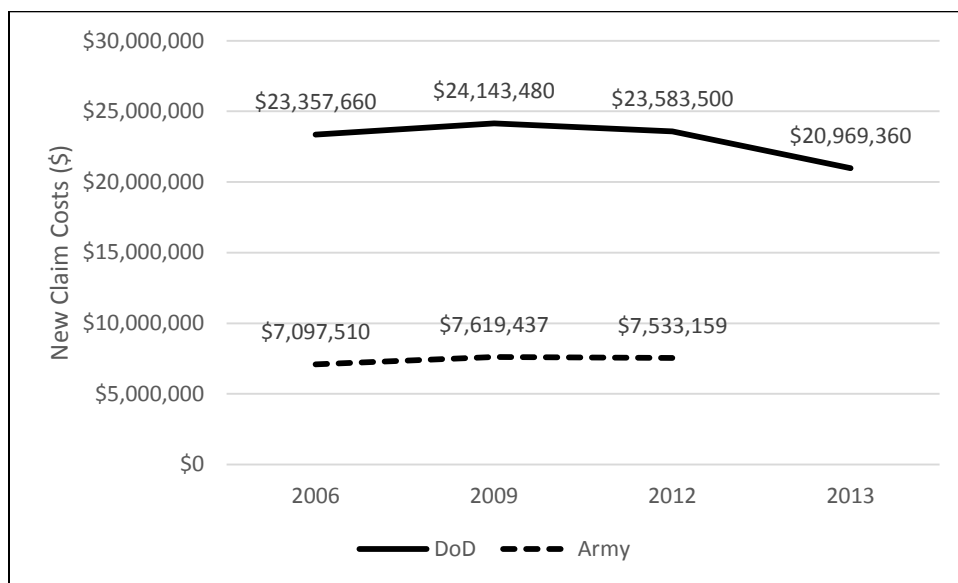
The total costs from 2001 to 2013 (adjusted to 2015 dollars) are shown in the chart below. The claims in the chart below reflect new and previously submitted claims, as long as claims are still being paid in the given year (e.g. 2001, 2005, etc). The total costs (on the y-axis) are shown in every four year increments. The costs (medical and compensation) increase at both sites from 2001 to 2009 and then decrease in 2013. At site B, there is a large increase in costs from 2001 to 2005.

**FIGURE 2. All Claims 2001-2013**



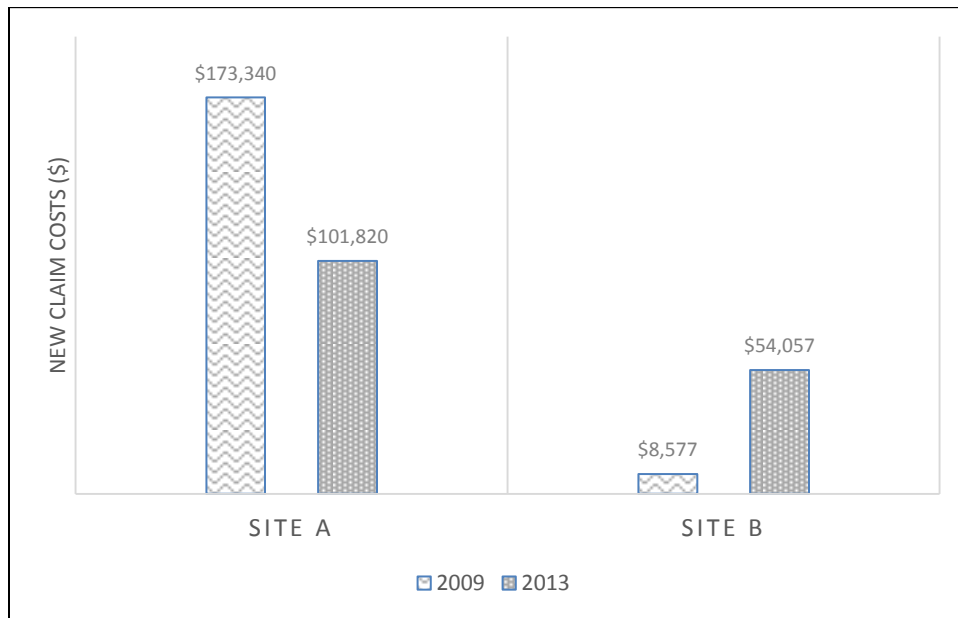
While the previous chart reflects all claims, the charts below (Figures 3 and 4) contains only newly submitted claims for that fiscal year. Figure 3 shows the costs of newly submitted claims for the Army and Department of Defense for 2006, 2009, 2012 and 2013 (for DoD only). New workers' compensation initiatives are likely to have more impact on new claims rather than older ones. For example, if a worker was injured 20 years ago and has been unable to work in his or her former job since that time, it is not likely that any changes will occur. In Figure 3, there is an increase in costs from 2006 through 2009 for both the DoD and Army. For the Army, there is a trend toward decreasing costs through 2012 as well as a decrease in costs for the DoD into 2012 and 2013.

**FIGURE 3. New Occupational Injury Claims (DoD and Army)**



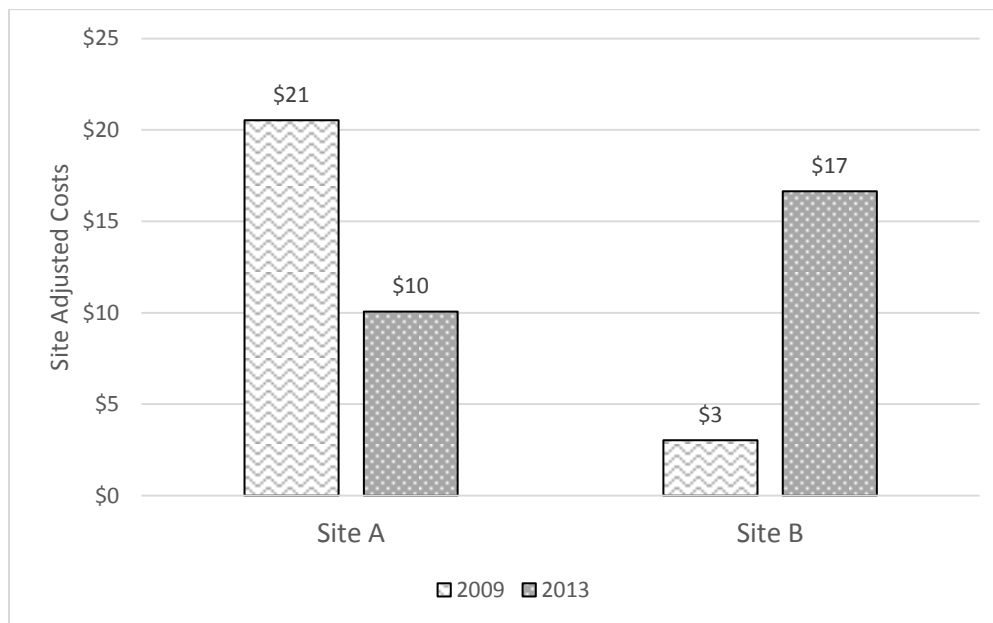
In Figure 4, new claims are shown over two years, 2009 and 2013, for sites A and B. There is a decrease in costs associated with new claims at Site A and an increase at Site B.

**FIGURE 4. New Occupational Injury Claims: 2009 and 2013**



Because the denominator at each site may impact the findings, the costs have been adjusted by the installation population (approximately 9,500 in 2009 and 10,100 in 2013 for site A and 3,200 in both years for site B). The years 2009 and 2013 were selected because there was installation-level population data available. In Figure 5, the workers' compensation costs at Site A decreased while Site B's costs increased.

**FIGURE 5. Costs of Claims at 2 Military Installations**  
**Per Total Population at Risk (2009 and 2013)**



In Table VIII below, the most frequent occupational injuries in 2013 are shown for sites A and B. These injuries reflect the nature of injury. At site A, contusions comprise approximately 19% of injuries. However, the most frequent injury including anatomic location at site A is lower back sprain. At site B, sprains and strains comprise one-fourth of the new injuries.

The occupations that most frequently submitted a new claim in 2013 at the two installations were medical and dental occupations. The occupational series includes jobs such as nurses and nursing assistants, dental hygienists, and physicians. The specific job codes were not provided as part of the data set and therefore the specific jobs within the job series could not be determined.



**TABLE VIII. Most Frequent Occupational Injuries in 2013 at Sites A and B\***

Site A	Site B
Site A (N = 207) number (percent)	Site B (N = 79) number (percent)
Contusion 39 (19%)	Sprain/Strain 20 (25%)
Sprain/Strain 32 (15%)	Back Sprain/Strain 12 (15%)
Back Sprain/Strain 31 (15%)	Contusion 12 (15%)
Sum total = 49%	Sum total = 55%

\*Based on new submitted claims regardless of acceptance or associated costs or compensation

### Site Summary

The workers' compensation claims were shown for Sites A and B from 2001 to 2013 by four year increments. For both sites, there was an increase in costs from 2001 to 2009 and then a decrease from 2009 into 2013. The average cost of new claims in 2013 was lower for Site A compared to Site B (\$1,657 versus \$3,291). Site B has about one-third the population of Site A. When the costs were adjusted by the denominators, workers' compensation costs were lower at Site A and higher at Site B. The most frequent injuries at the two sites were similar but in a different order.

### **Reporting of Occupational Injuries and Illnesses**

Research Question 2: How are occupational injuries and illnesses reported at the installation-level and how does this differ from guidance provided to supervisors and/or employees?

This question was analyzed using three types of data: documents, interviews, and the algorithm. The initial concepts felt to be important for this question were communication and

data sharing. The document review evaluated two specific sub-questions, both pertaining to the use of a flow chart. The interviews asked for more detail, in particular, how the injuries are reported and what policies were used for guidance. Prior to starting any of the document reviews, or interviews, a simple algorithm was created to reflect the flow of a reported injury in the system (Appendix B). It was sent to interview participants for their input.

The document review (Table IX) focused on the occupational injury and illness reporting. In other words, how are the steps of the reporting process conveyed to those who need to use them (e.g, algorithm, SOP, listing of steps)? The responsibility of the reporting is addressed in a separate question. In particular, does the document include an algorithm or something similar which details the steps in reporting an occupational injury? Based on the review of both medical center and higher level documents, there was no systematic process included. A review was also performed of bloodborne pathogen exposure regulations. Such an exposure would include an injury such as a needlestick (despite safer devices, a still fairly common injury in many medical centers). The medical center documents did include steps and/or an algorithm. These algorithms were easy to follow, starting with injury and taking it through obtaining medical care. There were no algorithms in the higher level documents. The higher level documents apply to broad audiences and their guidance may not be appropriate to all types of organizations and the most frequent injuries (e.g., differences between medical centers and aviation operations).

**TABLE IX. Document Review: Reporting of Occupational Injuries and Illnesses**

<b>Reporting Sub-Questions</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Is a reporting algorithm available?	No general occupational injury and illness reporting algorithm available	No general occupational injury and illness reporting algorithm available	No algorithms with the higher level documents
Is a reporting algorithm available for specific injuries?	An algorithm is available for bloodborne pathogen exposures	An algorithm is available for bloodborne pathogen exposures	No injury specific algorithms within the higher level documents

During the interviews on reporting (Table X), many acronyms were used by the participants. These acronyms are listed below the table. Overall, there were many different answers in terms of “how” injuries and illnesses are reported, ranging from safety being notified to the compensation act (CA) form being used. Although each discipline had slightly different responses on the reporting and resources used, there were general themes. The supervisor was involved in most of the responses. As one participant mentioned: “They go to the supervisor. Supervisor enters the claim online.” Another participant added that “If requires further medical attention, employee can get medical attention through their own doctor or through the organization.”

In terms of resources, a variety of responses were provided and included Federal, DoL, DoD, Army, and local policies. In some cases, it was not clear how the particular directive was linked to occupational injury reporting. Some may have relevance in other aspects of occupational injuries or may have no relevance.

**TABLE X. Interviews: Reporting of Occupational Injuries and Illnesses**

<b>Interviews: Reporting of Occupational Injuries and Illnesses</b>			
<b>Reporting Sub-Questions</b>	<b>Site A (n=7)</b>	<b>Site B (n=6)</b>	<b>DoD Higher Level Experts (n=6)</b>
How are occupational injuries and illnesses reported within the organization? (Multiple responses recorded)	<ul style="list-style-type: none"> <li>▪ AGARs (n=1)</li> <li>▪ CA Form (n=4)</li> <li>▪ Information to Safety and OH → Employee organization (n=2)</li> <li>▪ OSHA 301 (n=1)</li> <li>▪ Supervisor (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ CA Form (n=2)</li> <li>▪ ED Evaluation (n=2)</li> <li>▪ ICS/ICPA (n=1)</li> <li>▪ OH (n=3)</li> <li>▪ Safety Notified (n=3)</li> <li>▪ Supervisor (n=4)</li> </ul>	<ul style="list-style-type: none"> <li>▪ AGAR → IC (n=1)</li> <li>▪ CA Form (n=1)</li> <li>▪ CHRA Office → DoL (n=2)</li> <li>▪ OH (n=1)</li> <li>▪ Safety 300 Log (n=1)</li> <li>▪ Supervisor (n=2)</li> </ul>
How do you know what directives are you aware of? (Multiple responses recorded)	<ul style="list-style-type: none"> <li>▪ DoDI 6065.1 (n=1)</li> <li>▪ DoD, DA policies (n=1)</li> <li>▪ OSHA Requirements (n=1)</li> <li>▪ Supervisor (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Army and Local Policy (n=1)</li> <li>▪ DoDI 6055 (n=1)</li> <li>▪ DoL (n=1)</li> <li>▪ NFPA 1582 (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ AR 40-5 (n=2)</li> <li>▪ DA PAM 40-11 (n=2)</li> <li>▪ DoD, DoL (n=2)</li> <li>▪ OPM Regulations 1400.25 (n=1)</li> <li>▪ No response/not applicable (n=1)</li> </ul>

Abbreviated Ground Accident Report (AGAR)

Army Regulation (AR) 40-5 (Preventive Medicine)

Civilian Human Resources Agency (CHRA)

Compensation Act (CA)

Department of Army Pamphlet (DA PAM) 40-11 (Preventive Medicine)

Department of Defense Instruction 6055.1 (DoD Safety and Occupational Health)

Department of Defense Instruction 1400.25-V810 (DoD Civilian Personnel Management System: Injury Compensation)

Department of Labor

Emergency Department (ED)

Injury Compensation Program Administrator (ICPA)

Injury Compensation Specialist (ICS)

National Fire Protection Administration (NFPA)

Office of Personnel Management (OPM)

The top three codes that overlapped with communication (Table XI) were predominantly process-related concepts. The process coding was used for procedures and goals. In one interview from Site A, “whenever there is a spike in injuries. The committee has asked why this has happened. How can we correct it. They ask for feedback...” There is communication through feedback from the committee. The processes relate to the committee meetings and their response to the spike in injuries. At another site, this individual stated: “We are supposed to be notified by the supervisor. We also get near misses. We have a form for that....We also screen emergency room logs that were not reported to us.” This indicates where better processes could overcome some of the communication gaps. In this case, they screen logs as a back-up plan. Leadership concepts were mostly seen with the higher level interviews, in relation to communication (also refer to Figure 6 below).

**TABLE XI. Overlapping Codes with Communication**

<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Processes (4.37%)	Processes (4.66%)	Processes (5.35%)
Positive Process (1.92%)	Positive Processes (1.17%)	Leadership (1.34%)
Negative Process (1.75%)	Negative Process (1.17%)	Initiative-Based Leadership (1.34%)

Overall, in terms of the reporting of occupational injuries and illnesses, most of the detailed reporting occurred in the context of blood-borne pathogen exposures. It was mentioned in some of the other documents but not in a clear step-by-step manner. There were bloodborne pathogen exposure algorithms available in each of the installation/medical center documents.

There were no algorithms for general occupational injuries or illnesses in any of the documents reviewed. The interview question was about the general reporting of occupational injuries and illnesses and did not specifically ask about algorithms. None of the interviewees mentioned an algorithm in their responses. The interview responses about injury and illness reporting were simple (and did not reflect the complicated nature of occupational injury reporting) and/or specific to certain areas.

### Site Summary

Neither of the sites had a general occupational injury and illness reporting algorithm available. Both sites had bloodborne pathogen exposure algorithms within their documents. When asked about how injuries and illnesses are reported, both sites provided a similar variety of responses (including responses that reflected reporting through the supervisor, Safety, FECA, Occupational Health). Site B mentioned the “ED (“Emergency Department”) Evaluation” on two occasions and this was not included by Site A. If a civilian sustains a traumatic injury, he or she typically reports to the ED first and therefore the ED is an important component of the occupational injury reporting process.

The interview participants were also asked about directives or policies they used in workers’ compensation. Certainly it is challenging to remember the exact names of regulations. However, there were very few names of policies or regulations provided. They were general, such as “Army and Local Policy” or “OSHA Requirement.” None of the Sites mentioned the *Implementing Guidance for Workers’ Compensation* – which is a very inclusive guide on Workers’ Compensation updated in 2015.

**TABLE XII. Summary: Reporting of Occupational Injuries and Illnesses**

<b>Reporting Sub-Questions</b>	<b>Document Review</b>	<b>Interviews</b>
Is a reporting algorithm available?	Algorithms for blood-borne pathogens at the installation-level; none for general occupational injuries	There were no questions about reporting algorithms nor were they mentioned in any of the responses
How are occupational injuries and illnesses reported within the organization?	Reporting process detailed for blood-borne pathogens; process explained in other documents but not through flowchart or algorithm	Key informants reported the process relevant to their specific area (i.e., it was discipline specific)

### **Responsibility for Reporting Occupational Injuries and Illnesses**

Research Question 3: Who is responsible for occupational injury and illness reporting and management? How effective is shared accountability?

The methods used for this question were document review and the analysis of the interviews. The original concepts identified as being important for this question were teamwork, communication, and data sharing. A few methods were used to determine if other concepts are related to this question. Using NVivo<sup>®</sup>, codes that overlapped with “responsibility” were evaluated in the interviews. The specific questions on responsibility for reporting were also analyzed and compared within each site and across them.

The documents reviewed (Table XIII) showed that the employee should notify the supervisor once an injury occurs at Sites A and B. The policy level defined responsibilities by discipline. The document at Site A mentioned several, specific disciplines that participated in the occupational injury and illness processes while Site B did not have a comparable policy (and therefore was deemed not applicable). The Site A document listed several groups who have “responsibility” in the workers’ compensation process. The groups or individuals include the

Medical Center Commander, Civilian Employees, the Emergency Department, the Injury Compensation Specialist, Occupational Health Service, and Occupational Health Nurse Consultant. According to the Site A document, the Emergency Department provides urgent care to employees who claim a work-related injury. The Emergency Department also refers civilian claimants to Occupational Health for return to work evaluations.

The higher level includes many areas (groups) from the Commanders to Supervisors to the Employees. Within one of the higher level documents (*Implementing Guidance*),<sup>9</sup> their roles are defined. For example, an employee must report all hazards to the local Safety Office until local processes. The employee must also report all occupational injuries or illnesses to the supervisor. The employee must report for medical examination or treatment (as required) and the employee may choose his or her own physician. Medical documentation is required no later than 10 days after the injury occurred (for injuries only – not illnesses). The employee is also required to advise the treating physician of any light duty options (i.e., the employee is able to perform his or her job but with limitations or restrictions). If the employee has been away from work (because of the inability to work due to injury), he or she must advise the supervisor and injury compensation specialist when released for light duty. The employee must keep the supervisor informed of any changes in duty status.



**TABLE XIII. Document Review: Occupational Injury and Illness Reporting Responsibility**

<b>Responsibility Sub-Questions</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Is the responsibility defined for reporting occupational injuries and illnesses?	Employee should notify supervisor	Employee should notify supervisor	Responsibilities clearly defined by discipline
Which disciplines (individuals) participate in occupational injury and illness processes?	Commander, Civilian Employees, Emergency Department, Injury Compensation Specialist, Occupational Health, Occupational Health Nurse Consultant	Not comparable/not applicable (there was no document at this site)	Commanders/Directors, Safety Officer, Occupational Health, FECA (Compensation Specialist), Supervisors, Military Treatment Facility Physicians, Civilian Employees

The responses to the questions on reporting responsibilities are shown in Table XIV below. There were a number of responses stating that the employee is responsible for initiating the reporting but the supervisor ultimately has the responsibility for the process. There were also some who said that the process starts with the supervisor. Several participants stated that it is a higher level leadership responsibility (Command or Commander). Others felt it was a partnership and there is a shared responsibility in the reporting process. One participant stated: “The supervisor has the responsibility...All employees are supposed to report to [the] supervisor and then report to safety.” There were a wide variety of disciplines involved, reflecting the flow of the reporting process and the numerous people potentially involved including the ICS.

**TABLE XIV. Interviews: Occupational Injury and Illness Reporting Responsibility**

<b>Responsibility Sub-Questions</b>	<b>Site A (n=7)</b>	<b>Site B (n=6)</b>	<b>DoD Higher Level Experts (n=6)</b>
<p>Is the responsibility defined for reporting occupational injuries and illnesses?</p> <p><i>Note: Multiple responses recorded</i></p>	<ul style="list-style-type: none"> <li>▪ Partnership (n=2)</li> <li>▪ Supervisor (n=1)</li> <li>▪ Commander (n=1)</li> <li>▪ Each group has their own responsibility (n=1)</li> <li>▪ Management should be training workers (n=1)</li> <li>▪ No response/not applicable (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Starts with supervisor (n=2)</li> <li>▪ Employee to report to supervisor (n=1)</li> <li>▪ Employee to report to safety (n=1)</li> <li>▪ Employee responsible to report but supervisor responsible for paperwork (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Starts with employee (n=2)</li> <li>▪ Supervisor responsible (n=3)</li> <li>▪ Command (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>
<p>Which disciplines participate in occupational injury and illness processes?</p> <p><i>Note: Multiple responses recorded</i></p>	<ul style="list-style-type: none"> <li>▪ DoL (n=1)</li> <li>▪ IH (n=2)</li> <li>▪ OH (n=2)</li> <li>▪ Safety (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ ED (n=2)</li> <li>▪ ICS/ICPA (n=2)</li> <li>▪ OH (n=4)</li> <li>▪ Safety (n=5)</li> </ul>	<ul style="list-style-type: none"> <li>▪ DoL (n=2)</li> <li>▪ ICS/ICPA (n=3)</li> <li>▪ OH (n=1)</li> <li>▪ CHRA Office (n=1)</li> <li>▪ Safety (n=2)</li> </ul>

Civilian Human Resources Agency (CHRA)

Department of Labor (DoL)

Emergency Department (ED)

Industrial Hygiene (IH)

Injury Compensation Program Administrator (ICPA)

Injury Compensation Specialist (ICS)

Occupational Health (OH)

In Table XV below, the top three codes that overlapped with responsibility are shown. Responsibility overlapped most frequently with processes and this reflects the step by step procedures detailed in these sections. Other overlapping codes included communication (sites A and B) and data sharing (sites A and B).

**TABLE XV. Overlapping Codes: Responsibility**

<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Processes (1.75%)	Processes (3.50%)	Processes (1.34%)
Communication (1.57%)	Positive Processes (1.40%)	Data Sharing (1.00%)
Data Sharing (1.57%)	Communication (1.17%)	Training (0.67%)

The results are summarized for reporting responsibility in Table XVI below. There are responsibilities defined for both the employee and supervisor. There were a wide variety of disciplines mentioned in the document and interviews, from the employees and supervisors to Civilian Personnel, Safety, Occupational Health, and Industrial Hygiene.

#### Site Summary

Site B did not have a document related to general occupational injuries and illnesses. Information for Site B was extracted from a document related to bloodborne pathogen exposures. Site A listed a wide variety of groups and individuals who have responsibilities in the workers' compensation process or processes. With regard to the interview responses, the Sites were similar. Both mentioned the responsibilities of the employee and supervisor in the process. Site A, however, had several unique responses. There were two individuals who mentioned a type of

partnership in terms of reporting responsibilities. One individual stated that the Commander is responsible.

**TABLE XVI. Summary: Occupational Injury and Illness Reporting Responsibility**

<b>Responsibility Sub-Questions</b>	<b>Document Review</b>	<b>Interviews</b>
Is the responsibility defined for reporting occupational injuries and illnesses?	Employee should notify supervisor; responsibilities defined at each level of reporting (Site A only for general occupational injuries and illnesses)	Employee, supervisor, and others have reporting responsibilities (responsibilities were specific and did not include all relevant groups)
Which disciplines participate in occupational injury and illness processes?	Commanders/Directors, Safety Officer, Occupational Health, FECA (Compensation Specialist), Supervisors, Military Treatment Facility Physicians, Emergency Department, Civilian Employees	Employees, supervisors, Safety, Occupational Health, Industrial Hygiene, FECA/Civilian Personnel (Human Resources)

### **Roles of Leadership, Teamwork, and Communication**

Research Question 4: How do the occupational injury and illness policies highlight the roles of leadership, teamwork, and communication? Are these policies derived at the local or DoD level?

This question was evaluated through the document review and interviews. The purpose was to assess if these concepts were found within the local or higher level policies. For the interview analysis, concepts were analyzed that overlapped with each of the three: leadership, teamwork, and communication. These three codes were hypothesized to be associated with

several of the research questions. Each of the three concepts was evaluated to determine the percentage coverage in the interview text by that code. Examples are shown from several of the interviews, including overlapping codes.

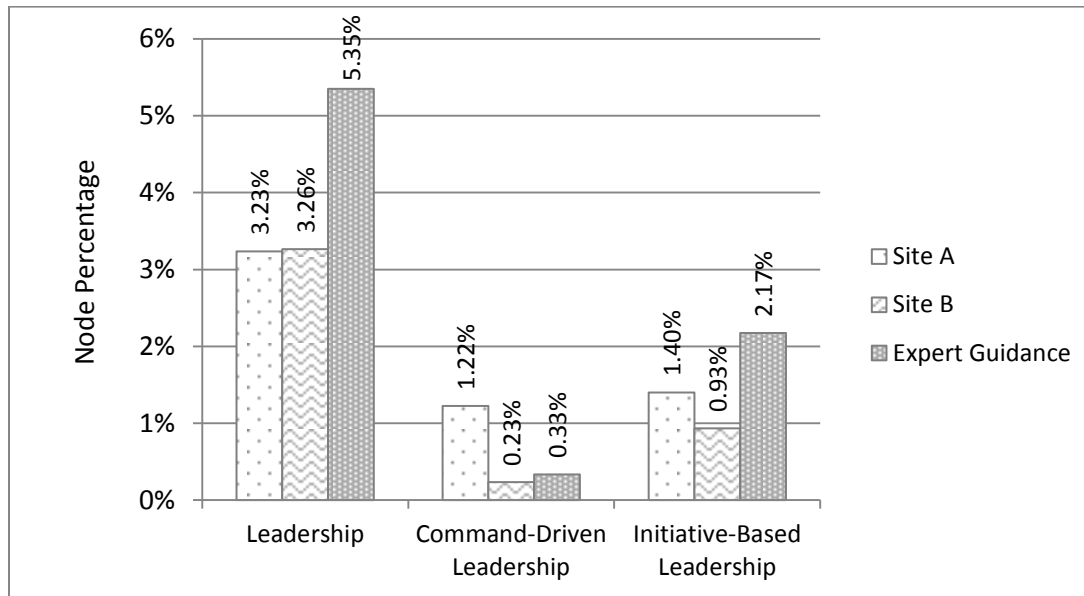
In the document review related to the roles of leadership, teamwork, and communication (Table XVII) below, none of the installation site documents reviewed referred to these concepts. Site A had a section on the Commander responsibilities and his or her responsibility to create a culture of safety. This is the only possible reference to any leadership principles. The higher level documents, however, referred to leadership and partnering. For example, the Memorandum on Reduction of Civilian Occupational Injuries and Illnesses includes the following statement: “Safety, occupational health, and workers’ compensation management are basic leadership tasks and must be effectively integrated into all that we do.” Although teamwork was not specifically mentioned, partnering was used in one document: “We urge cross-command partnering as a collaborative means of bringing previously injured and recuperating claimants back to work.” Only the safety regulation mentioned communication in the context of access to information.

**TABLE XVII. Document Review: Roles of Leadership, Teamwork, and Communication**

<b>Leadership, Teamwork, and Communication Sub-Questions</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
In what context is leadership mentioned?	The workers' compensation document refers to the Commander's safety culture (likely part of his vision)	No mention of leadership or any related or similar concepts	Leadership mentioned in several places: in reference to leadership responsibility to mitigate risks of injury, documents addressed to leaders at all levels, etc
In what context is teamwork mentioned?	No mention of teamwork or any related or similar concepts (e.g., partner, coordination)	No mention of teamwork or any related or similar concepts (e.g., partner, coordination)	"Partnering" and Working Groups (no mention of teamwork)
In what context is communication mentioned?	No mention of communication or any related or similar concepts (e.g., information sharing, shared decision-making)	No mention of communication or any related or similar concepts (e.g., information sharing, shared decision-making)	Occupational Health/Injury documents don't include. Safety regulations reference access to information

Leadership, teamwork, and communication are best visualized in Appendices H and I as well as in Figure 6 below (to illustrate Leadership codes). The chart demonstrates that, overall, there were more leadership concepts within the higher level interviews compared to those at the installation level. There were also more initiative-based leadership concepts found in the higher level interviews. In regard to leadership within the interviews, some mentioned the importance of Command emphasis: "...but it is different now. Now, command is very supportive. If command doesn't support safety, it will die on the vine. Command is crucial."

**FIGURE 6. Distribution of Leadership Concepts**



Teamwork was found more among the Site B interviews but was a highly coded concept among the Sites. One individual stated: “OH and Safety work with the supervisors and compensation specialists. There needs to be a team effort.”

There was not much difference in the communication codes by site. As mentioned earlier, communication did overlap with leadership for DoD Higher Level only. One participant said “I saw a significant change when VPP went into place. I saw a strong empowerment by the employees. I saw it make a difference. I think having committee where workers are empowered...it seems to disseminate [the] word.”

In summary, only the higher level documents referenced leadership concepts and to a lesser degree, teamwork and communication. The interview questions did not ask specifically about these concepts but they were all included in the coding. According to the analysis of the individual codes, leadership appeared more frequently among the higher level interviews while

communication was more equally distributed. Teamwork was referenced by some but not all of the interview participants.

### Site Summary

Site A has a document related to Workers' Compensation (and Site B does not). In that document, there was a reference to the Commander's safety culture – which is related to leadership. Otherwise, there was no other mention of leadership in the Site documents. Leadership principles related to both Command-driven leadership and Initiative-based leadership were mentioned more often by Site A compared to Site B. Teamwork, however, was mentioned more often by Site B compared to Site A (both the overarching code Teamwork as well as the sub-code Working Group). There were some Site differences for the Communication codes – Site A had a higher percentage of the overarching Communication and Communication Barrier sub-code and Site B had a higher percentage of the overarching Communication Facilitator code. A follow-on study would be necessary to evaluate

the differences in these leadership-based concepts at the two Sites given the small sample size.

**TABLE XVIII. Summary: Roles of Leadership, Teamwork, and Communication**

<b>Leadership, Teamwork, and Communication Sub-Questions</b>	<b>Document Review</b>	<b>Interviews</b>
How are the roles of leadership, teamwork, and communication defined?	Leadership and partnering used in several higher level documents. Communication referenced in Safety document only.	Leadership used more frequently in the higher level interviews. Communication and teamwork found to the same level.



## **Occupational Injury and Illness Data**

Research Question 5: What metrics are used for occupational injuries, if any, and how are the metrics established? Are these metrics evidence-based? Should any changes be made to facilitate evaluation of these data?

Because of the costs involved with FECA, metrics are important. As described in Chapter 1, metrics are the means or measurement to quantify change with regard to occupational injuries. Metrics could include cost determinations on medical care within the medical center versus an outside provider. It could also include year over year cost savings based on return to work (i.e. getting employees back to work as soon as they are medically able). However, it was unknown to what extent they were used at the local or policy levels. If any metrics were in place, how were they created and/or what evidence was provided in the document?

The review of the documents (Table XIX) found that only the higher level documents referred to metrics. The installation documents contained no reference to metrics or any efforts to collect data/monitor for trends. One of the Army higher level documents (Reductions in Civilian Occupational Injuries and Illnesses and Workers' Compensations Costs) refers to "program metrics" in general terms.<sup>64</sup> In addition to the Department of Labor memorandum establishing the POWER initiative,<sup>25</sup> the *Implementing Guidance to Workers' Compensation* provides an overview of POWER as well as other data sharing efforts.<sup>9</sup>

**TABLE XIX. Document Review: Evidence-Based Metrics for Occupational Injuries and Illnesses**

<b>Metrics Sub-Questions</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Are metrics defined in any of the documents?	No reference to metrics, data collection or monitoring trends regarding civilian occupational injuries and illnesses	No reference to metrics, data collection or monitoring trends regarding civilian occupational injuries and illnesses	Metrics are mentioned and the POWER goals are defined
If metrics are defined, describe and are they evidence-based?	N/A	N/A	Yes: POWER No evidence listed in documents. Baseline and Annual Targets are listed.

Many of those interviewed at the installation level review or collect data. However, the interview participants are not experts in data analysis or epidemiology. Those involved with data vary by installation or site and depended on one's role. Those in Safety or in policy positions are more likely to use data than healthcare providers and/or those at the local level. One participant reported using data trends to guide where to focus the training. Another individual emphasized using data to be proactive. This individual spoke about an evidence-based injury prevention campaign and data collected as part of this effort. For this campaign, metrics were established from the start (using both injury trends and survey data). He warned that "You have to be careful about collecting too much data... You need someone who can think and target – and solicit feedback about collecting data." Another participant came up with a spreadsheet to track variables and reports the ability to show a reduction in costs. One person noted that data-related

changes are in the works: “We work with an automation expert... The feedback that we are asking from the commands and connecting to the POWER goals. We are asking 4 POWER goals.” Despite the advantages of data, there were a number of comments related to limitations with the available data. Data are not timely. There is not one central database where relevant data can be found (e.g., looking at the POWER goals).

**TABLE XX. Interviews: Evidence-Based Metrics for Occupational Injuries and Illnesses**

<b>Metrics Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
Do you regularly review data for trends?	<ul style="list-style-type: none"> <li>▪ Yes (n=3)</li> <li>▪ No (n=4)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes (n=5)</li> <li>▪ No (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes (n=4)</li> <li>▪ No/no response (n=2)</li> </ul>
Have you made any changes as a result of the data?	2 of the 3 reported making changes	3 of the 5 reported making changes	No/not applicable

The interview and documents are summarized in Table XXI below. The only metrics defined in the documents reviewed are POWER goals. A few of the interview participants referred to the POWER goals but were at the policy level. Those at the installation level seem to understand the value in using data but use it to a limited extent.

#### Site Summary

There was no reference to metrics or data analysis in either of the Site documents. None of the key informants at the two Sites referred to metrics. There are individuals at Sites A or B who review data and also use that data to guide or make changes related to occupational injuries

and illnesses. The interview questions did not elaborate on what data were reviewed or what specific changes were made based on the data.

**TABLE XXI. Summary: Evidence-Based Metrics for Occupational Injuries and Illnesses**

<b>Metrics Sub-Questions</b>	<b>Document Review</b>	<b>Interviews</b>
Are metrics used?	POWER defined in certain, higher level documents	POWER only referred to by some policy interviewees; installations use cost savings and trends; Safety uses data to show trends in injuries
Are data leading to any change?	Changes defined in POWER goals	Local level sees value in data analysis

### **Training Required for Reporting/Managing Occupational Injuries and Illnesses**

Research Question 6: What kind of training is required to report and manage occupational injuries and illnesses on the part of the supervisor? How does this training respond to the needs of the hospital or installation?

The document reviews and interviews evaluated training requirements for occupational injuries and illnesses. Specifically, the questions were about the need for training, how often the training should be conducted, and in what mode.

In Table XXII In one of the higher level documents, the training requirements are specified for supervisors and for FECA/compensation specialists. According to the Guidance document, the supervisor should attend the training initially (when becoming a supervisor) and participate in refresher training.<sup>9</sup> There is no indication on how often training should be done or in what mode (e.g., face to face, online, etc.). The training should include an overview on the

supervisor's role in the FECA process, what to do when an injury occurs, the steps in the claim process, and how to return an employee/claimant to productivity. The two higher level Safety documents reviewed mentioned initial and refresher training in reference to managing workplace risks. Only the documents related to Bloodborne Pathogen Exposure Reporting specified the frequency of training (initial and refresher/annual) at the two sites. The mode of training is specified for this training (online and face-to-face or other training). However, none of the site documents specified the frequency or mode for general workers' compensation training.

**TABLE XXII. Document Review: Training for Occupational Injuries and Illnesses**

<b>Training Sub-Questions</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Does the document indicate the need for training?	For bloodborne pathogen exposure reporting only	For bloodborne pathogen exposure reporting only	Yes, for supervisors, roles in FECA, compensation specialists (provides information on training goals)
Does the document mention how often the training should be conducted and in what mode?	Initial and annual training for bloodborne pathogen reporting. Online and face to face training.	Initial and annual training for bloodborne pathogen reporting. Online and other training as needed.	Initial and refresher training for supervisors

According to the Table below, individuals had training in a variety of ways and often in combination. Those at the higher level (experts) received training on the job compared to those at the installation. At all three sites, some individuals learned it through mentorship (on the job): "I

had a great workers' comp person and I learned so much from her." Most received some type of training at all of the sites.

There were many suggestions with regard to the optimal type of training for workers' compensation. These comments included: "They don't need to know everything. They need to know the POC's." "You can have a blog that you can go for question and answer. It would be a huge help." Several individuals remarked about why training was needed: "Military don't know the system. They are not being trained on it. They don't know what they do." "When you don't get the training, it can be costly."

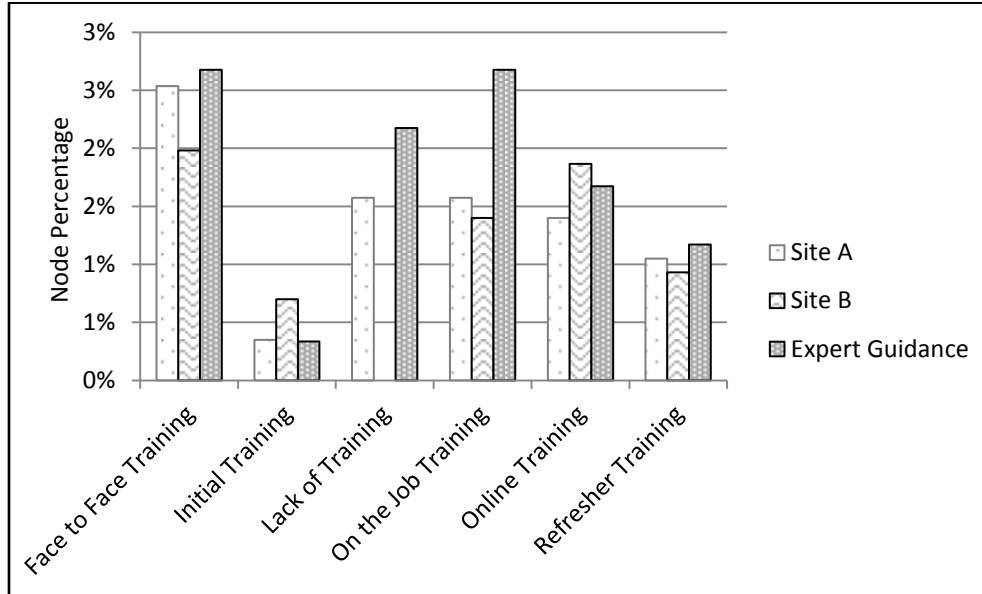
**TABLE XXIII. Interviews: Training for Occupational Injuries and Illnesses**

<b>Training Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
How did you receive training for your role in reporting and management?	<ul style="list-style-type: none"> <li>▪ Face to Face (n=2)</li> <li>▪ Online and Face to Face (n=2)</li> <li>▪ On the job (n=1)</li> <li>▪ No training (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Face to face (n=2)</li> <li>▪ Online, Face to Face, and on the job (n=1)</li> <li>▪ On the job (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ On the job (n=3)</li> <li>▪ On the job and online (n=1)</li> <li>▪ Face to face (n=1)</li> <li>▪ Not applicable/no training (n=1)</li> </ul>
Do you feel that the training adequately prepared you for your role in reporting and management?	<ul style="list-style-type: none"> <li>▪ Yes (n=5)</li> <li>▪ Partially yes (n=1)</li> <li>▪ No training (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes (n=3)</li> <li>▪ No (n=1)</li> <li>▪ No Response (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes (n=3)</li> <li>▪ No (n=2)</li> <li>▪ No Response (n=1)</li> </ul>

<b>Training Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
What kind of training would be most useful?	<ul style="list-style-type: none"> <li>▪ Face to Face (n=3)</li> <li>▪ Online and working group (n=1)</li> <li>▪ Incorporated into supervisory course (n=1)</li> <li>▪ Multifold process (n=1)</li> <li>▪ No response (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Online and face to face (n=2)</li> <li>▪ Online (n=2)</li> <li>▪ No response (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Face to Face (n=3)</li> <li>▪ Online and Face to face (n=1)</li> <li>▪ Online (n=1)</li> <li>▪ No response (n=1)</li> </ul>

In Appendix H and in the Figure below, all of the training-related codes by sites are shown. As seen in the Appendix, training was among the most coded nodes. Of note, there was a higher percentage of “on the job” training coded among DoD Higher Level as well as lack of training. At Site B, there was more coding related to online training compared to the other sites and less on face-to-face training.

**FIGURE 7. Distribution of Training Sub-Codes**



In summary, according to the document review, most occupational injury training is required initially and on a periodic basis (annual for specific injuries such as bloodborne pathogen exposures). The mode of training is not included in the documents. According to the interviews, most felt that training was important and should be done initially and on a regular basis. There are fiscal constraints with face-to-face training but this is ideal. It can be done in conjunction with online training.

### Site Summary

The Site documents do not specific the need for training related to occupational injuries and illnesses. The exception is training related to bloodborne pathogen exposures (e.g., needlesticks). However, this is a just a small subset of occupational injuries. Some of the key informants received training related to occupational injuries and illnesses (although some did not receive any training). It is important to note that many of the key informants are the experts in



workers' compensation and having adequate training should be an essential part of their job.

There were no notable differences between the two Sites in terms of how training was received (face to face, online, etc) although there were two key informants from Site A who received no training.

**TABLE XXIV. Summary: Training for Reporting Occupational Injuries and Illnesses**

<b>Training Sub-Questions</b>	<b>Document Review</b>	<b>Interviews</b>
How often is training required?	Initial and refresher for supervisors (according to higher level documents); initial and annual for bloodborne pathogen exposure reporting (installations); no information on frequency or mode of training from the two installations	It should be required initially and refresher
How is training offered (what mode)?	Not indicated	Combination online and face-to-face

### **Communication and Data Sharing**

Research Question 7: How can improved communication and data sharing be used to facilitate reporting of occupational injuries and illnesses?

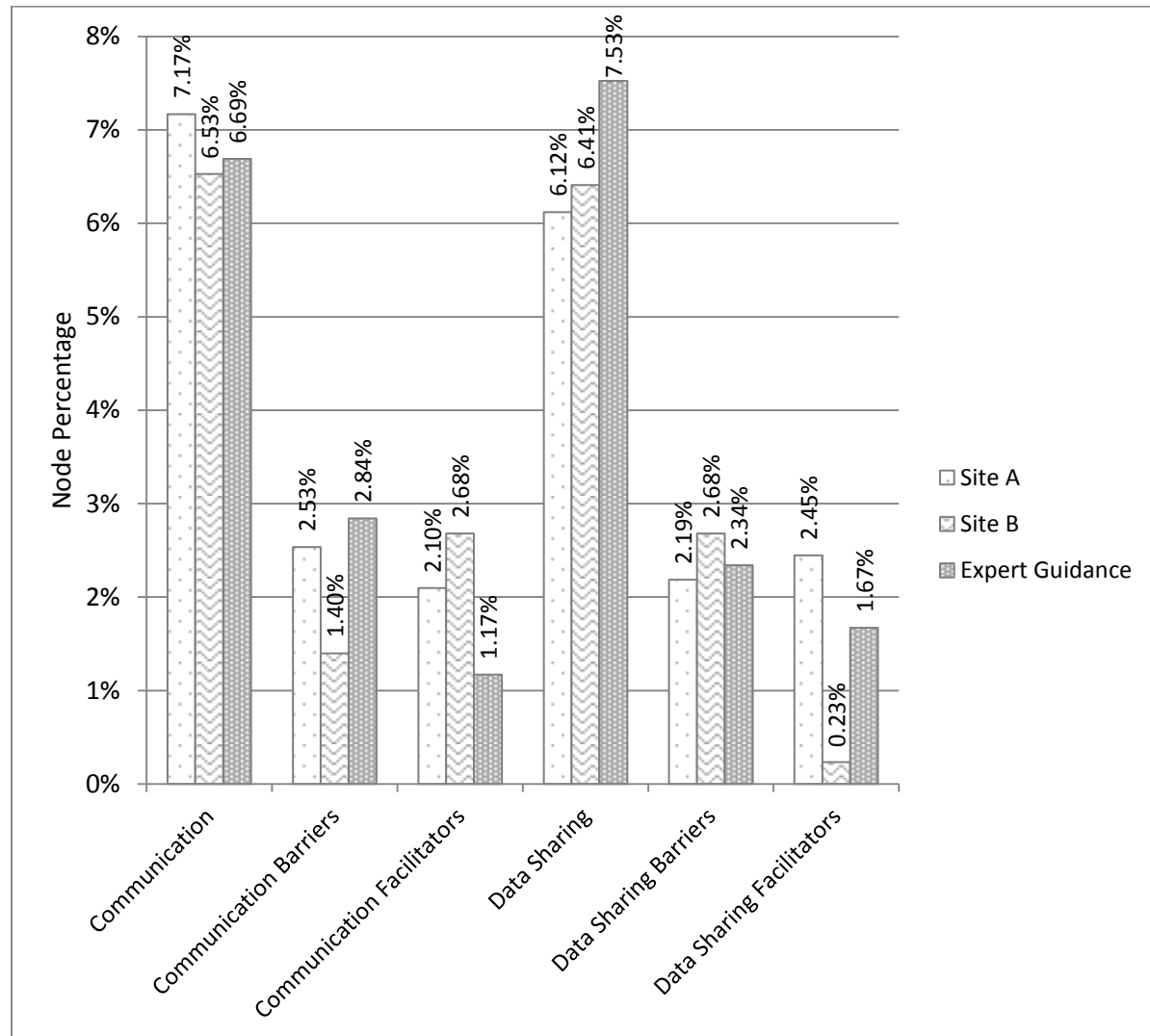
Improving communication and data sharing were hypothesized to lead to better reporting of occupational injuries and illnesses. In the document review below (Table XXV), data sharing was not mentioned at all. As previously described, communication was only mentioned in Safety documents.

**TABLE XXV. Document Review: Communication and Data Sharing**

<b>Communication and Data Sharing Sub-Questions</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
How do the documents discuss data sharing, information or communication issues?	Data sharing or communication (or similar concepts) were not mentioned	Data sharing or communication (or similar concepts) were not mentioned	No mention of data sharing; safety regulations mention communication (access to information)

In Figure 8 below, the distribution of the communication and data sharing codes by site are shown. There was little difference in the communication overarching code but Site B had more facilitator concepts compared to barriers. DoD Higher Level had a higher percentage of codes related to data sharing and Site B had more barriers.

**FIGURE 8. Distribution of Communication and Data Sharing Concepts**



In the interview questions related to reporting (Table XXVI), there was a variety of challenges mentioned. Timeliness and lack of familiarity with the process were the most common challenges for both the employee and section levels. Unique challenges for the employee included distrust, stigma, potential loss of job, lack of knowledge about what to report, and problems related to the supervisor (e.g., workload, experience). Challenges at the section or

departmental level include bureaucracy (levels of approval), understaffing, military transitions, not understanding process, and finding positions for return to duty. In regard to the challenges, one participant stated: “Communicating better with the employee – that we are trying to help them not just getting them back to work.” Making their work environment better. “It is how you talk with the individuals.”

**TABLE XXVI. Interviews: Communication and Data Sharing**

<b>Communication and Data-Sharing Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
What are some of the challenges that an employee faces in reporting?	<ul style="list-style-type: none"> <li>▪ Timeliness in reporting by supervisor (n=1)</li> <li>▪ Supervisor may be distrustful (n=1)</li> <li>▪ Stigma in reporting (n=1)</li> <li>▪ May lose job (n=1)</li> <li>▪ Time and may not report minor injuries (n=1)</li> <li>▪ No barriers (n=1)</li> <li>▪ No response (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Supervisor workload (n=1)</li> <li>▪ Not all injuries reported (n=1)</li> <li>▪ Lack of understanding about process (n=1)</li> <li>▪ Contingent on supervisor doing job (n=1)</li> <li>▪ Laziness (n=1)</li> <li>▪ No response (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Getting seen at MTF (n=2)</li> <li>▪ Don’t know where to get information (n=1)</li> <li>▪ Not familiar with computers (n=1)</li> <li>▪ No response (n=2)</li> </ul>

<b>Communication and Data-Sharing Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
What are some of the challenges your department or section faces?	<ul style="list-style-type: none"> <li>▪ Delayed reporting and failure to report near misses (n=1)</li> <li>▪ Absence of baseline exposure data (n=1)</li> <li>▪ Multiple layers of approval and inconsistent supervisors (n=1)</li> <li>▪ Outdated guidance (n=1)</li> <li>▪ Finding positions for return to work (n=1)</li> <li>▪ Short staffed (n=1)</li> <li>▪ Problems with online system (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Time it takes (n=1)</li> <li>▪ Return to duty and getting seen by MD (n=1)</li> <li>▪ Assistance completing form (n=1)</li> <li>▪ No response (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lack of supervisor experience (n=1)</li> <li>▪ Military transitions (n=1)</li> <li>▪ Paperwork and timeliness (n=1)</li> <li>▪ Not familiar with process (n=1)</li> <li>▪ No response (n=2)</li> </ul>

<b>Communication and Data-Sharing Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
What are some of the discrepancies between what is happening and what is supposed to happen in terms of reporting?	<ul style="list-style-type: none"> <li>▪ Failure of supervisors to inform adequately (n=1)</li> <li>▪ Supervisor and employee responsibilities (n=1)</li> <li>▪ Timeliness of AGARs (n=1)</li> <li>▪ Dependent on manager's knowledge (n=1)</li> <li>▪ Breakdown in communication with supervisor (n=1)</li> <li>▪ Figuring out who supervisor is – always changing (n=1)</li> <li>▪ Closing loop with other departments (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not all are reported; supervisor doesn't want to do paperwork (n=1)</li> <li>▪ Inadequate training (n=1)</li> <li>▪ Getting better with safety involvement (n=1)</li> <li>▪ Timeliness of reporting (n=1)</li> <li>▪ No response (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Timeliness and getting people seen for follow up</li> <li>▪ Underreporting and complications with reporting illnesses (n=1)</li> <li>▪ No response (n=4)</li> </ul>

### Site Summary

Communication or data sharing related concepts were not mentioned in Site A or B documents. There were some differences in the communication and data sharing codes and sub-codes extracted from the interview responses. There was a slight difference in the overarching communication code with Site A having a higher percentage of codes compared to Site B. Site B, on the other hand, had just a slight edge over Site B with regard to the overarching data sharing code. There were differences by site for the communication and data sharing barriers and

facilitators. Given the small sample size, it is not possible to determine why Site A's responses may have contained a higher percentage of codes related to communication barriers as well as data sharing facilitators.

### **Role of FECA Working Group**

Research Question 8: What is the role of the FECA Working Group at the installation level? Are there processes in place for FECA programs to use data for injury prevention through the FECA Working Group?

Through the document review and interviews, the role of the FECA Working Group was evaluated. The major concept related to the FECA Working Group was teamwork and a secondary one was data sharing. These two concepts (and their overlapping codes) were evaluated under previous research questions. Relevant quotes from the interviews are provided below.

There were two documents that had clear descriptions of the FECA Working Group role. The roles are provided within the table below and are similar (analyzing trends, reviewing cost data, evaluating light duty assignments). One was a medical center document (Site A) and the other was the *Implementing Guidance for Workers' Compensation under Federal Employees' Compensation Act*. The Implementing Guidance was released by the Office of the Assistant G-1 for Army Civilian Personnel with a recent update in 2015. This Guidance provides information on the meeting membership and deliberations. The Army Civilian Personnel website (<http://cpol.army.mil/library/benefits/acwci/>) also has other useful documents including instructions for the FECA Working Group and a template for the FECA Working Group minutes. The role of the FECA Working Group was not defined in Site B's documentation.

**TABLE XXVII. Document Review: Role of FECA Working Group**

<b>FECA Working Group Question</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Is the role of the FECA Working Group (WG) defined in the regulation?	Yes, role is defined: Serve as installation level effort to prevent and mitigate injuries. The FECA WG also reviews and analyzes injury trends, causes of injuries, light duty assignments, case management activities and FECA costs.	Role not defined in any document or guidance	Yes, role is defined. <i>Implementing Guidance</i> clearly defines WG <sup>9</sup> : the FECA WG will analyze costs, trends, and plans, and develop cost containment initiatives. It will assist in return to work efforts.

The responses to the questions on the FECA Working Group (Table XXVIII below) varied but most found that the WG was useful. The roles of the WG varied from getting people back to work to monitoring trends to advising leadership (i.e., those who are leaders of the installation or medical center). Most who responded felt that the WG used the expertise of the members. One person said that they ask for feedback. There were differences between Sites A and B. There were more individuals at Site A who did not respond to the first question (about the role of the FECA Working Group) compared to Site B. The responses to the second and third sub-questions were similar. On the other hand, another person noted that it “is reviewing data and people shaking heads.” Those at the policy/higher level do not attend FECA Working Groups but some of the participants had pertinent comments related to these questions. One person at the higher level noted that those at the installation level don’t see the value of the FECA WG. The higher level experts do not attend the FECA working groups and therefore their comments are based on either past experience or reports from installations. Based on the input of



the interviews, the role of the FECA WG does not include root cause analysis. It is the role of Safety. One stated: “We do [it] in conjunction with the safety office...If there is a cause, we look for a process to see how it is contributing and how to resolve it.”

**TABLE XXVIII. Interviews: Role of FECA Working Group**

<b>FECA Working Group Sub-Questions</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
How do you define the role of the WG?	<ul style="list-style-type: none"> <li>▪ Lessons learned (n=1)</li> <li>▪ Advise decision-makers (n=1)</li> <li>▪ Not a working group (n=1)</li> <li>▪ Bring people back to work (n=1)</li> <li>▪ No response/not applicable (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Getting people back to work (n=1)</li> <li>▪ Stay informed (n=1)</li> <li>▪ Save money (n=1)</li> <li>▪ Reduce claims (n=1)</li> <li>▪ Monitor trends (n=1)</li> <li>▪ No response/not applicable (n=1)</li> </ul>	Not applicable
Does the WG use the expertise of the members in setting goals?	<ul style="list-style-type: none"> <li>▪ Yes (n=3)</li> <li>▪ Could be better (n=1)</li> <li>▪ No response/not applicable (n=2)</li> <li>▪ Don't know (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes (n=3)</li> <li>▪ Could be better (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	Not applicable
Do the members of the FECA WG engage in injury root cause analysis?	<ul style="list-style-type: none"> <li>▪ Safety's role (n=2)</li> <li>▪ Up to others (n=1)</li> <li>▪ Not done/no (n=2)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Safety's role (n=2)</li> <li>▪ Not done (n=2)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	Not applicable

The responses to the FECA Working Group questions were hypothesized to focus on teamwork and data sharing. However, the concepts linked to the responses were consistent with the responses in the table and were predominantly processes, positive processes, and leadership. Safety and injury prevention were also noted as themes within several of the responses related to the FECA Working Group. Teamwork was only coded in the context that the Working Group occurred and not that members worked as a team. One interview participant noted that “it is not a working group by definition.” Another participant (from a different installation) stated “Feedback is solicited from everyone...we all brainstorm the different cases.” The leadership themes were prominent in several of the interviews: one stating: “you need to empower people” and another: “the role of the committee is to advise decision-makers.” It was clear from this latter interview that one role of the WG (or committee) was to inform or advise military leadership (at the installation level) on the relevant and key issues surrounding FECA.

In summary, there were several documents that clearly defined the roles of the FECA Working Group but not all did. The documents reviewed for Site B did not contain any mention of the role of the FECA Working Group. The understanding of the role of the FECA Working Group differed widely although these roles may reflect the diversity of individuals who attend and/or are involved in workers’ compensation. Root cause analysis is a function of Safety and not defined as part of the role of the FECA Working Group. Depending on the composition of the Working Group (i.e., if Safety plays a predominant role), injury prevention initiatives and root cause analysis may be incorporated into the WG but are not formally defined.

#### Site Summary

Only Site A’s document defined the role of the FECA Working Group. The documents reviewed for Site B did not contain any mention of the FECA Working Group or its role. The

interview participants at both Sites shared different aspects of the roles of the Working Group. All of these responses reflected the overall role of the Working Group, from reporting trends to sharing information. One individual from Site A noted that it is not a Working Group by definition. Many of these members do not work together outside of the quarterly meeting (or FECA Working Group). However, sub-sets of the group collaborate for specific purposes (e.g., returning an employee to work).

**TABLE XXIX. Summary: Role of FECA Working Group**

<b>FECA Working Group Sub-Questions</b>	<b>Document Review</b>	<b>Interviews</b>
How is the role of the WG defined?	FECA WG's role clearly defined in several documents (one of the sites and higher level documents)	Cost saving; monitor trends; provide information; return to work; advise decision-makers
Does the WG incorporate injury prevention through root cause analysis?	Injury prevention or root cause analysis not defined as part of the FECA WG in any document	Indicated as Safety's role not inherently part of the FECA WG (based on Safety regulation)

### **Guidance on Injury Prevention**

Research Question 9: How does leadership provide guidance on data collection or analysis to influence or drive decisions permitting appropriate injury prevention and case management activities?

This question is about leadership guidance in the context of injury prevention and case management. If there are injury prevention programs or an active case management system, how does leadership use data in order to establish their priorities and goals?

Table XXX below demonstrates the injury prevention and data collection sub-questions. None of the site documents reviewed included injury prevention (or injury prevention program) or data collection related to injury prevention.

**TABLE XXX. Document Review: Guidance on Injury Prevention**

<b>Sub-Questions on Injury Prevention</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Does the document mention injury prevention?	No mention of injury prevention within occupational health or safety documents	No mention of injury prevention within occupational health or safety documents	No mention of injury prevention within occupational health or safety documents
Does it mention data collection related to injury prevention?	No mention of data collection or data outcomes related to injury prevention or injury prevention initiatives	No mention of data collection or data outcomes related to injury prevention or injury prevention initiatives	No mention of data collection or data outcomes related to injury prevention or injury prevention initiatives

The responses to the interviews (Table XXXI, below) included a variety of responses especially for the question related to awareness of occupational injury prevention initiatives. Of note, there were few responses to either question among the policy/higher level participants because they don't work at the installation level. The initiatives ranges from those done within the medical center (e.g., needlestick campaigns or use of hospital stretchers) to those that are more general and applicable to all such as weather related initiatives (e.g., preparation for snow and ice). According to one participant: "Right now, we are in our winter campaign. We have targeted campaigns." When asked if the prevention programs led to any reduction in injuries, there were few responses. One participant remarked: "We just started the campaign so it is too

soon to say. There may be more reporting and people may report more. Are there less because people are being more careful?”

**TABLE XXXI. Interviews: Injury Prevention**

<b>Sub-Questions on Injury Prevention</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level Experts</b>
<p>Are you aware of any occupational injury prevention initiatives that have been done?</p> <p><i>Note: Multiple responses recorded</i></p>	<ul style="list-style-type: none"> <li>▪ Accident free days (n=1)</li> <li>▪ Notifications (n=1)</li> <li>▪ Training emphasis (n=1)</li> <li>▪ Weather related initiatives (n=1)</li> <li>▪ 100 days of summer (n=1)</li> <li>▪ Rules related to use of hospital stretchers (n=1)</li> <li>▪ Measures to minimize needlesticks (n=1)</li> <li>▪ Signs for wet floors (n=1)</li> <li>▪ No responses (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Needlestick prevention campaign (n=3)</li> <li>▪ Education (n=1)</li> <li>▪ Involve more employees at user level (n=1)</li> <li>▪ No/no response (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Focus on safety checks (n=1)</li> <li>▪ Supervisor training needed (n=1)</li> <li>▪ Efforts related to animal care workers (n=1)</li> <li>▪ Need to be aware of them (n=1)</li> <li>▪ No response/not applicable (n=3)</li> </ul>

<b>Sub-Questions on Injury Prevention</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level Experts</b>
<p>Have any of the initiatives led to reduction in injuries or significant cost savings?</p> <p><i>Note: Multiple responses recorded</i></p>	<ul style="list-style-type: none"> <li>▪ Getting people back to work (n=1)</li> <li>▪ Can't tie it in because accident rate continues to decrease (n=1)</li> <li>▪ Saw decrease in injuries after initiative (n=2)</li> <li>▪ No response/not applicable (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Decrease in needlesticks (n=2)</li> <li>▪ Too soon to say (n=1)</li> <li>▪ No response/not applicable (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ No response/not applicable (n=6)</li> </ul>

In summary, the Table below shows that the documents reviewed did not describe injury prevention in the context of occupational injuries. The documents also did not describe use of data during such programs. The interviews did discuss some injury prevention programs. At least one of the initiatives used data to evaluate the effectiveness of the program.

#### Site Summary

In the documents reviews, neither of the Sites mentioned injury prevention programs or specific initiatives. When the interview participants were asked about injury prevention initiatives, Site A responses were diverse and included initiatives related to the Army installation (weather-related or seasonal) and hospital-focused (e.g., needlesticks or rules related to stretchers). Most of the responses from Site B were related to needlesticks. Respondents from both Sites felt that there was a decrease in injuries. However, neither Site had data to support the decrease in injuries (e.g., incidence of a specific injury before the program compared to incidence after the program was implemented).

**TABLE XXXII. Summary: Injury Prevention**

<b>Injury Prevention sub-question</b>	<b>Document Review</b>	<b>Interviews</b>
Mention of injury prevention (initiatives)?	No mention of injury prevention or initiatives	Range of programs (hospital and installation based)
Are data used to monitor outcomes?	No mention of data outcomes related to injury prevention	For specific programs only (e.g., needlestick campaigns)

### **Leadership and Agents of Change**

Research Question 10: How does leadership act as an agent of change with regard to injury prevention and occupational injuries?

None of the documents reviewed mentioned any change principles including culture or organizational culture change (Table XXXIII). The safety regulation did not contain change principles but it did discuss making certain decisions if circumstances change but only in one section.

**TABLE XXXIII. Document Review: Agents of Change**

<b>Sub-Questions on Change</b>	<b>Site A</b>	<b>Site B</b>	<b>DoD Higher Level</b>
Does the document mention principles of change?	No mention of change in any context	No mention of change in any context	No mention of change in any context
Does the document mention culture change within the organization?	No mention of (organizational) culture or culture change	No mention of (organizational) culture or culture change	No mention of (organizational) culture or culture change

Table XXXIV below shows the results of the sub-questions on change. There were fewer responses for Site C because most of them are not at the installation level and these questions largely did not pertain to them. For the question on changes recommended to increase injury prevention, there were a variety of responses ranging from having more safety stand downs (i.e., dedicated time away from one's regular work devoted to safety) to general education. Each of the two sites had different responses. One participant stated: "Be proactive and assess your areas. If you trip over something, then a patient is more likely to trip over something." There were many obstacles in implementing change listed, including legal issues to complacency. One commented: "It is time – it is everything else you do." This participant meant that there are some many other things one is responsible for besides injury prevention. The last question was about other organization elements that can affect change. Most individuals listed their responses in the prior question. One person added: "We need leadership's buy-in. Whatever working group comes up with, we need that buy-in."



**TABLE XXXIV. Interviews: Agents of Change**

<b>Sub-Questions on Change</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
<p>Are there any changes you would recommend to increase injury prevention?</p> <p><i>Note: Multiple responses recorded</i></p>	<ul style="list-style-type: none"> <li>▪ More safety stand-downs (n=1)</li> <li>▪ Incorporating health and safety (n=1)</li> <li>▪ Involvement of junior leadership (n=1)</li> <li>▪ Improve hospital layout/design (n=1)</li> <li>▪ New equipment (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Getting everyone involved (n=1)</li> <li>▪ Doing risk assessments (n=1)</li> <li>▪ Being proactive (n=1)</li> <li>▪ Education (n=2)</li> <li>▪ Collaboration with others (n=1)</li> <li>▪ No, team is in place to lead to improvements (n=1)</li> <li>▪ Make change part of daily routine (n=1)</li> <li>▪ No response (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hold supervisor accountable (n=1)</li> <li>▪ Inform through emails, brown bags (n=1)</li> <li>▪ Not applicable/no response (n=5)</li> </ul>
<p>What are some of the obstacles in implementing change?</p> <p><i>Note: multiple responses recorded</i></p>	<ul style="list-style-type: none"> <li>▪ Need collaboration (n=1)</li> <li>▪ Changing people's thoughts (n=1)</li> <li>▪ No obstacles (n=1)</li> <li>▪ Time to educate people (n=1)</li> <li>▪ Being female (n=1)</li> <li>▪ No response (n=3)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Managing risk and liability (n=1)</li> <li>▪ Coordinating through labor (n=1)</li> <li>▪ Complacency (n=1)</li> <li>▪ Time (n=1)</li> <li>▪ Training (n=1)</li> <li>▪ Awareness (n=1)</li> <li>▪ No obstacles (n=1)</li> <li>▪ No response (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ People have certain way of doing things and may not be safest way (n=1)</li> <li>▪ Fiscal constraints (n=1)</li> <li>▪ No response/not applicable (n=5)</li> </ul>

<b>Sub-Questions on Change</b>	<b>Site A N=7</b>	<b>Site B N=6</b>	<b>DoD Higher Level Experts N=6</b>
Are there other organizational elements that affect how change in injury prevention can be implemented?	<ul style="list-style-type: none"> <li>▪ Leadership buy-in (n=1)</li> <li>▪ Money (n=1)</li> <li>▪ Personnel/Hiring Staff (n=2)</li> <li>▪ Equipment (n=1)</li> <li>▪ No response/not applicable (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Collaboration with outside departments (n=1)</li> <li>▪ Supportive management (n=1)</li> <li>▪ No response (n=4)</li> </ul>	<ul style="list-style-type: none"> <li>▪ May be difficult due to multiple tenant organizations (n=1)</li> <li>▪ No response/not applicable (n=6)</li> </ul>

The documents reviewed did not include any principles of change (Table XXXV). However, the interview participants listed education, being proactive, involving others (e.g., other disciplines) as ways to effect change.

### **Site Summary**

None of the Site documents included any change principles. The interview participants were asked what changes they would recommend to increase injury prevention. There was a variety of responses at both Sites. There were similar themes of getting people involved and safety/risk assessments. There were also different responses by Site. Site A mentioned hospital layout and equipment and Site B noted collaboration, being proactive, and making change part of the daily routine. Both Sites mentioned similar obstacles in implementing changes: time, needing collaboration, and awareness/education.

**TABLE XXXV. Summary: Agents of Change**

<b>Agents of Change Sub-Question</b>	<b>Document Review</b>	<b>Interviews</b>
Are principles of change mentioned?	No mention of change principles	No specific trends among interviews: some themes included: education; involving others; being proactive

### **Results Summary**

The table below (Table XXXVI) reflects triangulation of all of the types of data and analyses for each of the concepts. For both communication and data sharing, there was minimal mention of these concepts but during the interviews, they were important potential barriers (or facilitators) to reporting. Some of these include knowledge and/or being trained about the reporting process. Collaboration is also a key factor for both successful communication and data sharing in workers' compensation reporting. There were positive statements about the electronic reporting systems for both workers' compensation and safety but submitting to two systems has redundancies as they are completely separate systems. Some may only submit to one and there has to be excellent communication between OH/FECA and Safety to resolve discrepancies (and potentially share data).

There was no mention of injury prevention in the documents reviewed but individuals discussed injury prevention initiatives especially at the local level. Injury prevention seemed to be important to the participants but measuring the reduction in injuries or potential costs savings was not done in most cases (or thought necessary to be done). Although some interview participants thought that their initiatives may have led to reduction in injuries, they did not know

for certain. One individual remarked that injuries have been declining so he could not attribute the decline to the specific initiative.

The leadership concepts (based on the definitions in Appendix C) were more prevalent in the higher level documents. They were also more prevalent in the interviews, but mostly the initiative-based concepts (versus command-based). Those at higher levels seemed to have more ideas about systems-based change versus those at the installation level.

The processes code was used to reflect procedures or steps especially in the reporting process. Some of the documents did contain processes but only the bloodborne pathogen exposure documents had algorithms. The interview processes verbalized steps within the reporting process but they were mostly related to their discipline. There is one very comprehensive FECA policy document but most are not aware of it especially at the local level (from additional feedback). Algorithms are very useful but there were none on FECA among the documents or at the local level.

Within some of the documents, each role and responsibility was often defined in the context of occupational injuries and illnesses. During the interviews, when asked who had the responsibility for reporting, both the supervisor and employee were named. In several cases, it was mentioned that there is dual responsibility. The exact responsibilities of the supervisor and employee may need clarification.

Safety concepts were found within Safety documents, bloodborne pathogen exposure regulations, and throughout the interviews. However, the role of safety as a discipline was not clearly elucidated in the FECA Working Group or several other occupational injury documents.

Teamwork was not specifically mentioned in anything of the documents reviewed (except for the term “partnership”), notably the documents related to the FECA WG. Teamwork

was also not mentioned in the interviews in the context of the FECA WG. Overall there was discussion about teamwork and its importance in workers' compensation.

The documents indicate the need for initial and refresher training. According to the interviews, training is done inconsistently and some are receiving on the job, in the classroom, and/or online. There was a lot of feedback within the interviews and afterwards about training and the need for improvements especially focused on the individual roles in FECA (supervisor, employee, provider, and others).

Worker-supervisor relationship is an important concept within FECA but not mentioned within the documents. There was an indication in the interviews that it played an essential role in the process. As mentioned in responsibilities, the relationship between worker and supervisor needs clarification and emphasis.

**TABLE XXXVI. Concept Triangulation Matrix**

<b>Concept</b>	<b>Summary of Results from Document review</b>	<b>Summary of Results from Interviews</b>	<b>Summary of Field notes and Feedback</b>	<b>Summary of Comparisons and Conclusions</b>
Communication	Limited mention of communication (in Safety documents only).	In the context of reporting, some of the problems related to lack of understanding process, not having training.	There is little to no discussion on FECA matters between installations/sites. Communication within the installation can be poor as departments don't always collaborate.	No mention of communication in occupational injury documents and communication may be lacking with respect to FECA.

<b>Concept</b>	<b>Summary of Results from Document review</b>	<b>Summary of Results from Interviews</b>	<b>Summary of Field notes and Feedback</b>	<b>Summary of Comparisons and Conclusions</b>
Data Sharing	Data sharing not mentioned in any documents.	Electronic reporting systems advantageous but there are numerous barriers (redundancy between FECA and Safety).	Only some individuals have access to the DoL system (to get information on claim) but others may need it (e.g., case manager). Workers' compensation resources not widely shared (Implementing Guidance).	There are electronic systems for both safety and FECA but they are currently different. For FECA, only limited personnel (often only the ICS) has access to claim information.
Injury Prevention	Injury prevention not mentioned in documents.	Variety of hospital-focused on general initiatives; data not linked to initiatives.	Importance of collaboration and awareness.	Gap in guidance on injury prevention initiatives and means to demonstrate injury or cost reduction.
Leadership	Leadership referenced in most of the higher level documents; these documents however do not include any change principles.	Less initiative-based leadership concepts at installation level compared to higher level.	Through feedback, change principles and initiative demonstrated (participants at higher level willing to come up with ideas).	Leadership concepts not emphasized in local documents; change principles not included in any. Leadership concepts disproportionately reflected in interviews (more at higher level)

Concept	Summary of Results from Document review	Summary of Results from Interviews	Summary of Field notes and Feedback	Summary of Comparisons and Conclusions
Processes	Best processes in <i>Implementing Guidance</i> and at local level in Bloodborne Pathogen regulations.	Most participants able to discuss FECA steps.	Feedback on algorithm. Many have ideas on how to improve reporting process.	There is a good publication but many don't know about it. Algorithms are useful in the medical environment but none exists for FECA.
Responsibility	Defined by role in several documents (especially <i>Implementing Guidance</i> ).	Supervisor, employee, and others each have reporting responsibilities.	Discussion related to dual responsibilities or partnership.	One person or entity is not responsible for reporting; each defined by role and may be shared or in partnership.
Safety	Safety elements very detailed within Safety regulations and bloodborne pathogen documents.	Key collaborator in FECA process and most injury prevention initiatives are within Safety realm.	Reporting may be streamlined between Safety and FECA. Safety reporting less optimal for near misses.	Safety and FECA work together in most places, their relationship is not formalized in some regulations
Teamwork	Not mentioned specifically in documents although some similar concepts mentioned such as partnering and collaboration in higher level documents.	Teamwork concepts not mentioned in the context of FECA WG.	Collaboration needed in context of injury prevention initiatives.	Teamwork not mentioned but better collaboration needed for injury prevention and FECA WG.

<b>Concept</b>	<b>Summary of Results from Document review</b>	<b>Summary of Results from Interviews</b>	<b>Summary of Field notes and Feedback</b>	<b>Summary of Comparisons and Conclusions</b>
Training	Initial and refresher (no training mode specified.	Training is inconsistently done; some received on the job, in class or online.	Many recommendations for training improvement.	No clear guidelines for training and not focused on roles in FECA process.
Worker-Supervisor Relationship	Worker-supervisor relationship not specifically mentioned in documents.	Worker-supervisor relationship plays an important role in WC.	Importance of supervisor educating worker.	The relationship of the worker and supervisor not articulated in FECA process.



## CHAPTER V: DISCUSSION

### Conclusions

Based on the data presented through 2013, there is a trend toward decreased workers' compensation costs. The workers' compensation claims for new DoD occupational injuries and illnesses in 2013 are less costly (\$2,570), on average, compared to claims for injuries or illnesses that occurred in previous years (\$14,005). Efforts to reduce costs such as return to work initiatives are working but this study suggests that other improvements are needed. Site B, in fact, showed an increase in costs from 2009 to 2013. For sites that are able to reduce workers' compensation costs, there must be ways to evaluate where the costs savings occurred. This can provide important feedback to stakeholders at the installations that their efforts are indeed working. For example, Site A has a Case manager and an Occupational Health physician who is dedicated to FECA efforts. Having these resources may be effective in reducing FECA costs compared to other installations (e.g., Site B, which does not have a case manager). One of the important roles of the Case Manager is working with the employee's supervisor in return to work options. The agency Occupational Health physician is not only able to provide follow up for the injured employees within the military medical center but the Occupational Health physician can provide evidence-based documentation to contradict certain claims.<sup>14</sup> If the cost savings at Site A could be attributed to the work of the Case Manager or Occupational Health physician, then this information can be shared with other sites.

During the triangulation of the qualitative data, there were several important findings that can further assist in improving workers' compensation efforts. Gaps were founded in the document review related to several of the a priori and inductive concepts. For example, some of the documents referred to training on an annual and refresher basis (initial and annual for

bloodborne pathogen exposure reporting). None of the installation level documents mentioned workers' compensation training. There was no mode of training specified in any of the documents for workers' compensation. According to the interviews and feedback, workers' compensation training is not being offered on a regular basis but training is needed. Recommendations included combinations of online and face-to-face training.

The Safety regulations (higher level) contained leadership and communication concepts but the regulations did not mention FECA or collaboration on workers' compensation issues (although Safety is a partner in this process). Safety and FECA processes are separate without formalized data sharing processes.

Injury prevention was not found in any of the documents reviewed. There was also no mention in these documents of any processes for data outcomes related to injury prevention. There are injury prevention initiatives being conducted at the installation, some of them in response to potential injuries in the workplace. Most of the initiatives mentioned in the interview had no associated outcome data.

Based on the interviews, there is not a systematic process for reporting and managing occupational injuries and illnesses at the installation level. The reporting and managing was based on what happens within the key informant's domain or department. The process is not systems-based because most individuals work in silos and may coordinate in a reactive mode or during the FECA WG. This may be due to lack of leadership, training, or even communication.

The revised algorithm in Appendix J demonstrates the overall reporting process from initial injury to disposition (return to work). It also shows the reporting pathways through the Safety Office and FECA. This algorithm incorporated feedback received from the key informants. The reporting process is not linear and in fact, there can be reporting back and forth

(as indicated by the bi-directional arrows) or even to other areas (not part of the algorithm, depending on location). For example, the employee may be required to get additional medical documentation for his or her claim. Because of the distinct FECA and Safety reporting processes, some installations may have developed informal lines of communication. In fact, at one non-study location, FECA and Safety meet on a regular basis to share information (“compare notes”).

The High Performance Work System was the basis and initial framework for the *a priori* codes and the framework is characterized by safety culture, transformational leadership, focused and proactive training, and information sharing. The HPWS embodies concepts that were mentioned in the problem statement and also hypothesized to lead to improvements in the workers’ compensation system. By exploring the *a priori* concepts through the documents, interviews, and field notes, one could understand where changes might be possible. For example, the document review and interview analyses revealed discrepancies in training, injury prevention, and reporting responsibilities. Leadership-based concepts (e.g., empowerment, change) were found mostly at the higher level documents and interviews compared to the local level. Teamwork and communication concepts were not in the documents nor in many of the interviews (to a great extent).

Using the HPWS as a starting point, a revised framework was created (Appendix K). This revised ideal model is based on discrepancies between the documents and interviews and also reflects comments by the key informants. Leadership and training (education) are at the center of this revised model. During the analysis of the interviews, it was found that many of the concepts were interlinked in the context of workers’ compensation (e.g., communication and teamwork).

Table XXXVII below demonstrates how these concepts are interlinked using examples from the interviews. Data sharing and safety are related through the reporting of job related hazards. Exposure data are provided in order to help prevent further injury. Leadership and teamwork are also interlinked. Collaboration through working groups is critical to inform leaders on timely workers' compensation trends and topics. The leader is at the center because he or she provides the overall vision for the organization. Training is also at the center of this model for several reasons. Training (education) is an important priority within the Army system. Military leaders receive regular training especially on safety and injuries but should also educate others. All of the other concepts surround and are linked to leadership and training. For example, if leadership provides the resources for an improved data sharing system, then there may be a more efficient workers' compensation system. The various concepts (or factors), under guidance and support of leadership, should work together and lead to improved reporting of civilian occupational injuries and illness and better injury prevention initiatives.

**TABLE XXXVII. Relationship Between Leadership Concepts**

<b>Concept (Code) Relationships</b>	<b>Interview Examples</b>
Leadership and Training	Supervisor's responsibility to educate employees; best learning on workers' compensation occurred by having mentorship
Leadership and Teamwork	The working group input is important for the leader's support; the value of working together especially through the FECA working group needs to be emphasized by leaders
Leadership and Communication	Importance of networking through working groups and discussing deficiencies; obtaining information through local and higher level policy documents

<b>Concept (Code) Relationships</b>	<b>Interview Examples</b>
Communication and Teamwork	We are able to get people back to work and find them jobs due to collaboration – including how one communicates with the employee; the value of working together on occupational injuries and illnesses needs to be emphasized
Communication and Data Sharing	Use trends from injury reporting and then communicate those findings back to workers (e.g., proper lifting techniques);
Data Sharing and Safety	Reporting of identified hazards on the job is important to help eliminate these issues; providing exposure data or surveys may be needed for people who have reported a work related injury or illness
Training and Communication	Face to face discussions are best for training so that people can ask questions and share information; role in occupational injuries and illnesses guides training needs and communicates focus on problem areas
Responsibility and Worker-Supervisor Relationship	Employees should take initiative with forms and timeline; if someone has an injury they are supposed to report to their supervisor
Safety and Worker-Supervisor Relationship	Need more safety stand-downs (or safety awareness events) so that employees have an opportunity to participate; importance of showing workers and supervisors importance of why they are each trained on the safety of their work environment

## **Limitations and Challenges**

### Secondary Data

The data obtained for this study are not ordinarily used for research purposes. They are a sub-set of the data used to evaluate the costs associated with federal civilian occupational injuries and illnesses. It was a sub-set of data because it had to be completely de-identified. The data were provided with a case identification (ID) number.

The de-identified data were provided in multiple worksheets linked by year of the workers' compensation claim. The year of the claim does not always correspond to the date of

the injury. For example, the claim could have been submitted in 2010 and the date of injury was in 2009. If there were medical costs associated with this claim in 2010, 2011, and 2012, then data related to this claim would appear in three different spreadsheets.

The geographical location code was used to identify the location of the injury or illness. There were several geographical location codes for a given location but some of the geographical location codes were linked to no claims (and may not have been used). There were a substantial number of claims with no geographical code and some of these claims could have been filed from the two Sites. It is therefore possible that the costs are underestimated especially if a claim was filed at different geographical location codes.

The data included nature of injury (e.g., sprain, contusion) and anatomical location (e.g., head). The data did not include where the injury occurred or how the injury occurred. Having these additional variables could be useful in injury prevention efforts.

At the end of each fiscal year, there may be delays in getting cost information into the system. In the 2013 year data, the medical costs toward May or June may be 'zero' until that data makes it through the process. A closer evaluation by month may provide insight into whether there are fewer medical costs at the end of the fiscal year.

In addition to the potential 'zero' medical costs at the end of the fiscal year, there are a substantial number of claims with no associated costs. As indicated in the findings, there are as many as 40 percent of new claims with no associated costs. Some of the claims indicated that they were rejected. Most, however, had no associated diagnosis (corresponding ICD-9 codes) and the disposition, therefore, was unknown. Many of these zero-cost claims were possibly submitted and the employee did not claim any lost time or medical costs (e.g., sustaining a

needlestick where care is rendered in-house but there are no medical costs or compensatory time).

Although there some information available on how to interpret data, there was no published data dictionary on the workers' compensation data elements. A prior student created one and although it was very complete, there were still areas subject to interpretation. Most of the knowledge about the data seemed to be held by certain individuals rather than be available through an SOP or website.

A request was also submitted to the Department of Labor through a Freedom of Information Act (FOIA) to obtain DoD workers' compensation data with the goal of getting a more complete dataset. The request was denied.

#### Document Review

The Army level documents were centrally located on a website that was also publicly accessible. However, other medical center (installation) documents were more difficult to find. Because installation-level documents are typically on their intranet, they are only accessible to those at that particular installation. For this project, others had to provide documents for review. It may be that there were documents available that were not reviewed as part of this research. In most cases, several people were asked at the given installation.

The documents ranged from shorter publications (1-2 pages) to very long regulations (20 or more pages). Because of the density of the longer regulations, some concepts may have been missed. In order to address the possibly limitation of the document review, the documents were reviewed twice and search functions were also used as described in the methods. It is possible that some key areas not described in the document, such as the methodology behind the POWER goal, were available elsewhere but were not accessible to the principle investigator.

### Contacting and Interviewing Participants

To date there have been no studies involving interviews of DA civilians on the topic of workers' compensation. In that regard, this research project is cutting-edge in that it allowed for DA civilians and military officers to provide responses on questions related to occupational injuries and illnesses. However, there were challenges. In most cases, participants were contacted without additional levels of approval (beyond what was required for the IRB approval). There were some requests for additional documentation about the study. There were questions about conducting this research as part of a dissertation. Responses were provided to these requests in the form of a memorandum, detailing additional information as required.

### Response Rate

Approximately 40 percent of key informants did not respond to the request to participate in the interview for this project despite two attempts to contact them. In several cases, the individuals responded that they would be out of the office for an extended period of time and/or would not be available. There were fewer individuals who responded than originally anticipated. However, those who participated did represent a broad range of disciplines with the exception of the union or employee side. It is possible that those who did not participate or the union representative would have provided different input. Potential participants may have not responded because they felt that did not have adequate knowledge about the workers' compensation process. Their input could have potentially contradicted the results of this study. This study was designed to select 15-20 participants at each site. The intent was to get a representative sample of those involved in the reporting and management of occupational injuries and illness. The ideal number to interview is not known as such a study has not been conducted. It is possible that more people are truly needed to adequately answer the research



questions on occupational injuries and illness. The majority of those invited to participate in this study are those who are subject matter experts and/or were recommended for their knowledge. These individuals may be more likely to know “what is going on” and have fewer problems or challenges. They are more prone to be knowledgeable in management of injuries than the reporting aspects. However, getting a random pool of supervisors would require many more participants and an entirely different study design.

### Time and Scheduling

Time was potentially a limitation during this study. Interviews had to be conducted during work time. Key informants were all federal employees, either Department of Army civilians or Army officers. Especially for participants who are civilians, there was awareness about scheduling interviews during clinic hours or other obligations. All hospital employees (which accounted for many of the participants) have to regularly submit time sheets on how they spend their time (e.g., doing administrative work, clinic, training, or on regular or sick leave). All of the employees were more senior in status and although they may have had some flexibility in scheduling, they also had more last minute obligations. Interviews were kept as close to 30 minutes as possible with some going longer given the participants’ schedules. Certainly if interviews could be longer or could be conducted during off-duty hours, more interviews and longer interviews would have been possible.

Knowing that time was an issue for most of the participants, a number of the responses were not clarified to the fullest extent possible. For example, if a participant responded that he or she used several publications but the responses were general (e.g., Army regulations versus specifying which ones). No further questions were asked. It could be that the participant was not able to remember the regulation number or name.

### Disclosure of interview data

Some individuals asked about the project and why it was being done. Information had been provided beforehand including in the form of an information sheet. If too much information was provided then it could potentially bias the interview. The interviewee needed to respond freely and without bias. However, it seemed at times that some interviewees were careful about how they responded. This was apparent in that an interviewee did not respond fully or openly in response to the question but provided more information later in the interview. There are many potential reasons for this. Some of the interviewees were known to the interviewer. Although the information sheet stated that individuals would not be identified, there still may be some concern about disclosing anything, especially negative issues, related to the work environment.

### Coding with Secondary Coder

The secondary coder was a necessary component of the interview analysis process and in itself not a limitation but there are disadvantages in having a coder who is not familiar with the military, Department of Defense, and workers' compensation. When the project started, the secondary coder did not know anything about qualitative analysis and never used NVivo®. In reviewing the interviews, he may not have adequately considered some concepts because he did not have the training or education. However, as someone with a different background, he questioned the contents of the interview and prompted consideration of diverse concepts. As described in the methods section, the secondary coder was trained in qualitative analysis and NVivo® as part of this project. Regardless of these limitations, the secondary coder was an important and necessary addition. He brought a different perspective and not being part of the military, he asked important questions about the coding within all of the interviews.

### Use of Army Acronyms

There are many acronyms in the DoD and in the Army. Furthermore, each area, Occupational Health, Safety, Industrial Hygiene, and so forth has their own language replete with acronyms. Even if the acronyms are known, the specific processes may be difficult to understand in a short interview. Those acronyms and processes were even more challenging for the secondary coder who had no DoD background. On the one hand it was a limitation to have a non-DoD coder, but his outside perspective was an advantage. He questioned terms that others (including the author) took for granted.

### Interview questions

It was important to ask all of the interview participants a standard set of questions to ensure all of the key areas and concepts were addressed. However, many different jobs were involved; in many cases, the questions did not apply. As a result, questions were unanswered. It was challenging to create questions that would apply to such a diverse range of participants. Ideally, each group of participants/interviewees would have been asked different sets of questions so they would be more relevant to their duties. However, there were so few people in each group (usually just one or two), that writing up different sets of questions was not feasible or justified.

The questions were also created for those at the installation level. Those who work at higher levels are not involved in local practices and therefore some questions did not apply. It is possible that the questions were too specific for the local level and had they been more general, they could have applied to the policy group.

Each interview participant provided important feedback and sometimes it would have been beneficial to add or make changes to certain questions based on that feedback. For example,

there were some questions that were redundant or may have been answered by the prior questions based on its wording. In addition to reviewing the interview questions, a pilot of the interview questions may have been helpful in further evaluating potential redundancy.

### **Generalizability**

This study may not be generalizable to all Army installations. The cases were not chosen to represent the Army in general and be a representative sample. The sample was purposive and meant to answer the research questions about workers' compensation practices. The interview participants represented a wide range of perspectives of individuals who are involved in reporting and management of occupational injuries and illnesses. Individuals were included from the installation level as well as higher levels (including those involved with policy). If those at the local level did not have knowledge about best practices in training, for example, then participants at the higher level could compensate for these deficits – and vice versa. By asking selected participants to comment on general themes after the interviews, this provided more validity to the results. Finally, the results of this study may not be applicable to other military services. Although they use the same workers' compensation forms, they may have different policies, training, and injury prevention strategies.

### **Leadership Implications for Public Health**

#### Systems-based implications

This project was a systems-based evaluation of workers' compensation practices. The study evaluated reporting and management at the installation level and at the higher or policy level. More importantly, it examined how the different departments or stakeholders interacted in their organization. Because so many entities are involved in the reporting and management process, there is a tendency for each group (from section to installation level) to act

independently. Not only is there poor communication and lack of data sharing, but best or recommended practices are not shared. Furthermore, because the workers' compensation system is so complex, many need training to understand some of the basics. Leadership (installation or organization-level leadership) should ensure maximal interaction between involved stakeholders and training to understand the roles of the stakeholders.

### Prioritizing

The leader (according to the Army regulation) is responsible for prioritizing tasks within the organization. Occupational injuries, their costs, and impact on the organization constitute one of many priorities for an organization's leader (e.g., leader of the Army installation). Hospital or installation leaders need to make decisions on the allocation of resources (e.g., funding, personnel) and the training priorities. These decisions will depend on how the injuries and illnesses and their costs are affecting the organization. Data on the costs and types of injuries are presented through the FECA WG. If the data presented show that injuries (and their costs) are increasing, then more resources and training may be devoted toward reducing injury rates and their related costs. It is again part of the systems-based process – if occupational injuries and illnesses are of greater priority, then more resources should be shifted.

### Buy-in

It was mentioned in the interviews that leaders at all levels need to be involved (these leaders include soldiers and civilians who hold leadership roles in the organization). Leaders and supervisors need to communicate their support of workers' compensation reporting and management as well as injury prevention initiatives. The support can be through physical presence, speeches, or emails. For example if the organization's leader communicates the importance of occupational injuries to that organization through a meeting or speech, then those

who attended know it is important. Those individuals who attended know that this topic, occupational injuries, is a priority for the leader. Visibility is crucial for buy-in.

### Resources

Reporting and management of injuries and illnesses requires resources. Although reporting is required, it takes time away from work in terms of the actual reporting (on the part of the employee or supervisor), medical appointments, and possible lost time related to the injury. Computer access is also needed to complete most of reporting requirements. In addition to the time required for initial reporting, there may be additional time needed for medical appointments. Depending on the nature of the occupational injury or illness, the employee may have work-related restrictions (e.g., may only be allowed to do aspects of his or her job) or may cannot do any part of his or her job. The supervisor must be prepared to find replacement personnel who are trained to perform those duties. At the two installations (sites), the most costly injuries in 2013 were associated with medical occupations (which may include occupations such as nurses) and included contusions, sprains and strains, and back strains.

Training not only includes periodic online or face-to-face education but it also includes the ability to self-educate through documents and other resources. One interview participant stated that she did not necessarily have the FECA training but she could utilize the resources (if they are available). As a leadership within an organization where occupational injuries and illnesses occur, one needs to ensure that supervisors, employees, and other stakeholders have access to the most up-to-date guidance. Even if the guidance is there, individuals need to know where it is and how to use it. Occupational injuries and illnesses can be infrequent in many work areas and employees and supervisors may not remember the steps in reporting. The organization

must ensure that there are quick links to the injury compensation specialist and safety on all employees' computers, as well as any key resources (SOPs, flow charts, etc).

### Training

As mentioned in one of the interviews, there is a lot of training required by DoD employees and civilians especially within the medical centers. In order to meet the requirements for this training, existing training may not get the attention it deserves and other important training is not scheduled or done (e.g., workers' compensation training). Leadership needs to prioritize training based on important issues within the organization. If supervisors and other stakeholders (e.g., medical providers) lack the knowledge about workers' compensation, then it should be included as mandatory training.

### Supervisor Responsibility

The supervisor is not only responsible for reporting the injury or illness through the Safety or FECA pathways but he or she is also responsible for ensuring that the employee is educated on the process. As was mentioned in the interviews, there may be distrust or stigma associated with reporting. Individuals may also not report all injuries, especially minor ones or near misses. It is also more than periodic education but making reporting and safety part of the culture. High Performance Work Systems, described earlier, empowers workers with improved communication and information sharing because the worker is deemed to be a valued asset within the organization. High Performance Work Systems is not a framework used within the Army, to the author's knowledge, but could have relevance based on its attributes (e.g., transformational leadership, safety culture, information sharing).

## Data

Data are both a leadership responsibility and a leadership tool. Those involved in occupational injuries and illnesses may not have the expertise on how to use the data but if the issue is of significant importance, leaders in the organizations can assign sufficient resources (e.g., staff, funding, computer support). As one interview participant remarked, you need to define the goals for your data in advance. This is where organizational leadership can meet with the subject matter experts and define what data he/she would like to see at the next meeting. Those interviewed in the study were not data experts. Some used data but few of the key informants actively analyzed the data. Those that did analyze data evaluated fairly simple frequencies or trends. As a public health leader, data should be collected and/or analyzed based on prioritized needs. For example, if there is an increase in slips and falls on the ice during the winter then one can compare the trends in slips and falls from the past five winters, associated medical costs, and lost time (time away from work).

## **Recommendations for Change**

The following recommendations for change are outlined in three categories: military-based practice, data, and future research. The recommendations are based on the study's results but also incorporate gaps in the literature. The recommendations should consider existing DoD or Army policies and resources. There may already be a similar program in development within the Army (e.g., training on workers' compensation). If a program is recommended, then resources (e.g., personnel, computers, and funding) may be required. Therefore, these recommendations are contingent on the availability of resources and approval by appropriate military chain of command.



### Military-Based Practice

The study showed that there are improvements needed in communication across groups within the same organization. The regulations reflect disparate processes (e.g., Safety regulations do not include FECA or FECA Working Groups). In many cases, the groups do work together albeit informally. The algorithm showed that there are two reporting systems through Safety and FECA pathways. Because forms are redundant, submission requirements to one or the other may be missed. A new system (Employees' Compensation Operations and Management Portal) (currently being piloted) provides a potentially better means of submission for FECA and Safety reporting. This is one step toward improving communication. Safety, Civilian Personnel (Injury Compensation Specialists) and other Key Personnel (Occupational Health, Industrial Hygiene) should meet separately (outside the FECA Working Group) to discuss installation based initiatives such as return to work progress, root cause analyses, and specific data needs.

The study involved identifying key informants who represent the main representatives in the reporting and management of civilian occupational injuries and illnesses. This group is not well-defined in any of the documents. In fact, there are discrepancies between two of the documents reviewed and between those who attend the FECA Working Group. The key informants in the reporting and management of civilian occupational injuries and illnesses should be better defined for the purposes of establishing a separate working group as well as ensuring these members are the most knowledgeable on workers' compensation in the organization. It may include a smaller group of subject matter experts and then a larger group (also key informants) but who are not required to have the same level of reporting requirements or meeting attendance.

Because the optimal mode and frequency of workers' compensation training is not known, a needs assessment is needed. The key informants mentioned that a combination of face-to-face and online might be optimal. Training is given online for many DoD and DA employees (military and civilian) on a variety of topics but it is likely that much of that training is not effective (especially training where employees can click through without having to understand the content). If workers' compensation training is administered online for supervisors, the emphasis should be on scenarios (practice-based) rather than theory. Training should be based on role in workers' compensation. For medical providers who evaluate workers with potential work related injuries, there should be standard training. For areas where injuries are infrequent, there may only need to be one time training plus reminders about important points of contact (e.g., injury compensation specialist). There are some courses offered in-person at Department of Labor district offices on FECA. However, these courses require travel expenditure and time, and although the course content may be useful, it is not specific to the military environment.

There are many resources on FECA but they are not being used widely. Some of these resources include the Workers' Compensation Implementing Guidance (excellent overview updated in 2015) and training slide sets on workers' compensation for supervisors from Civilian Human Resources Agency. Although some supervisors may not want to read a long document, others may appreciate the availability of these resources. These guidance or training resources can be made available on the intranet within an organization.

Only one of the two installations had a workers' compensation regulation. Both could benefit from using the higher level documents to augment their guidance. Installation level documents need to reflect local practices but in most cases, the documents follow federal and DoD regulations.

Flowcharts should be used more frequently because they are a quick snapshot of the process. They show who is responsible for reporting at each stage (e.g., employee initially responsible for notifying supervisor). At one site, there are posters of the bloodborne pathogen exposure reporting process within the hospital/clinic areas. If an employee has a needlestick and that individual cannot remember the process, the poster is a quick reminder without having to find a SOP (which is often more difficult to read). The flowcharts can also be specific to different injuries (based upon the most frequently occurring injuries at a given organization).

### Data

The secondary data contained a lot of useful information but there were limitations identified. The data were provided by date of claim. The costs were also separated by year (i.e., costs were provided for every year that the employee claimed medical or compensation costs). The data would be more useful if they were provided by date of injury and if they contained cumulative compensation and medical costs.

FR2 allows the user to search civilian occupational injuries by year of injury but there are no associated costs and year of injury is limited (to recent years only). FR2 does provide mechanism or cause of injury (e.g., slipped on the floor), location of injury (e.g., injured at the gym) in the workers' compensation data along with whether there was lost time. The FR2 data are more beneficial for injury prevention efforts compared to the data provided for this study and are recommended for those involved in Safety, Occupational Health, and Case Management activities.

Access to FR2 should be available to those within these job areas as permitted by their job descriptions. Access to FR2 will become even more important as more variables (especially cost data) are integrated and/or expanded. There should be a designated analyst within each

installation or region who analyzes data for pertinent trends. The analyst can also compare current claims to the data within the system (e.g., FR2) to check for any inconsistencies.

There should be better access to workers' compensation data for research or public health surveillance purposes. Allowing individuals to study the data can help establish areas of improvement within the system including quality control, variable definitions, and new variables or links. The claims data are also not linked to risk factor data (e.g., tobacco use or body mass index). Although it may be challenging to link workers' compensation data to medical data, understanding why certain groups are more likely to get injured is an important future area of occupational injury research.

It was stated during the interviews that data were used to report overall injury trends but data were not generally used to determine the effectiveness of injury prevention initiatives. Some initiatives may be in response to a recent event or problems (e.g., injuries related to unexpected bad weather) and there may not have been time to plan any outcome data. In many cases, analyses may be done retrospectively. These outcome data would be important should the same events occur again.

### Future Research

This study should be expanded to other installations including those of other military services. Future studies may include input from employees (contingent on union approval). The future studies may also include surveys instead of or in addition to interviews. Surveys may be another way to get input from federal employees. The surveys would ensure anonymity but unlike interviews, respondents answer the closed or open questions and there is no means to clarify or expand upon certain responses. Despite the limitations of surveys, its anonymity may

be a better means to study DA civilians – allowing a greater number to be studied and possibly achieving a better response rate.

Future research should also expand on communication, teamwork, and leadership. These concepts were identified as important in occupational injuries and illnesses but there were no specific questions that addressed them. Leadership in itself can be studied in the context of occupational injuries and safety culture. How does leadership style within the military influence the reporting of occupational injuries and illnesses? The HPWS literature mentions the advantages of transformational leadership yet most employees in the military environment are used to a more traditional rank-based structure. Within a safety-focused environment, those who are subordinate (in rank) should feel comfortable speaking up about concerns (including near misses, accidents, and other unsafe practices).

There are no FECA costs if medical care is provided with a military treatment facility for an employee who has sustained an occupational injury or illness. However, the medical care is not free – those costs are incurred by the organization. Medical care, within or outside the military system) can include lab work, radiology, outpatient visits, surgery, and rehabilitation. The military-based or private physician also is responsible for determining work-related restrictions. Future research should compare the costs in medical treatment between military versus private physicians and also compare the restrictions provided by these physicians.

There are differences between FECA and State workers' compensation and their benefits. Future research could explore the differences in costs between one state program (one state chosen because of the variability between state programs) and FECA over a 10 year period. There are best practices in some of the state workers' compensation and a better understanding of these practices and program differences may be beneficial for FECA. In fact, according to the

NIOSH Center for Workers' Compensation Studies, there are research groups devoted to sharing best practices in the areas of surveillance, prevention effectiveness, total economic impact, and disability management.<sup>65</sup> Contact will be made with the NIOSH Center to ascertain what is required in order to share these best practices.

### **Initiatives and Next Steps**

Because this project has been action research based, there have been discussions with many of the key informants about how to improve the workers' compensation process throughout the study. Some of these discussion extended to others involved in workers' compensation beyond the study sites. During the conception of this study, there were meetings by key informants at a non-study site related to the lack of understanding about the workers' compensation process and development of means to overcome the challenges. Some of the strategies included on-going training of the medical providers and brief information sheets distribution to key personnel (medical providers and clinic administrators) on workers' compensation and steps in managing or evaluating traumatic occupational injuries.

Through the interviews and additional feedback, several individuals remarked that it would be useful to have working groups with others outside the installation. In particular, one installation level key informant suggested having a small working group with other similar installations about occupational injuries and injury prevention initiatives. Although the working groups have not yet started, they are happening on a less formal basis with several Occupational Health clinics working together by sharing information (e.g., sharing an SOP on civilian occupational injuries). There are also plans to start a working group with representative from the higher level and the installations with a focus on best practices in workers' compensation. Such a working group was initiated out of discussions during several of this study's interviews and

feedback sessions, especially in the context of particular training needs and lack of awareness about workers' compensation resources within the military medical centers.

This study is a first step toward understanding best practices and areas of potential improvement within the system of workers' compensation and that system includes the higher level system and the installation level. This study was a first – the first mixed methods study in DoD workers' compensation. The study was innovative in being the first to include DA civilians in interviews related to workers' compensation.

In order to overcome the inherent challenges in workers' compensation, innovative solutions are necessary. This study involved leadership concepts allowing unique insight into workers' compensation best practices and areas of improvement on a systems-basis. The study also emphasizes a vision for a safer workplace and is based on the following key concepts: information sharing, teamwork, transformational leadership, communication, and proactive training.

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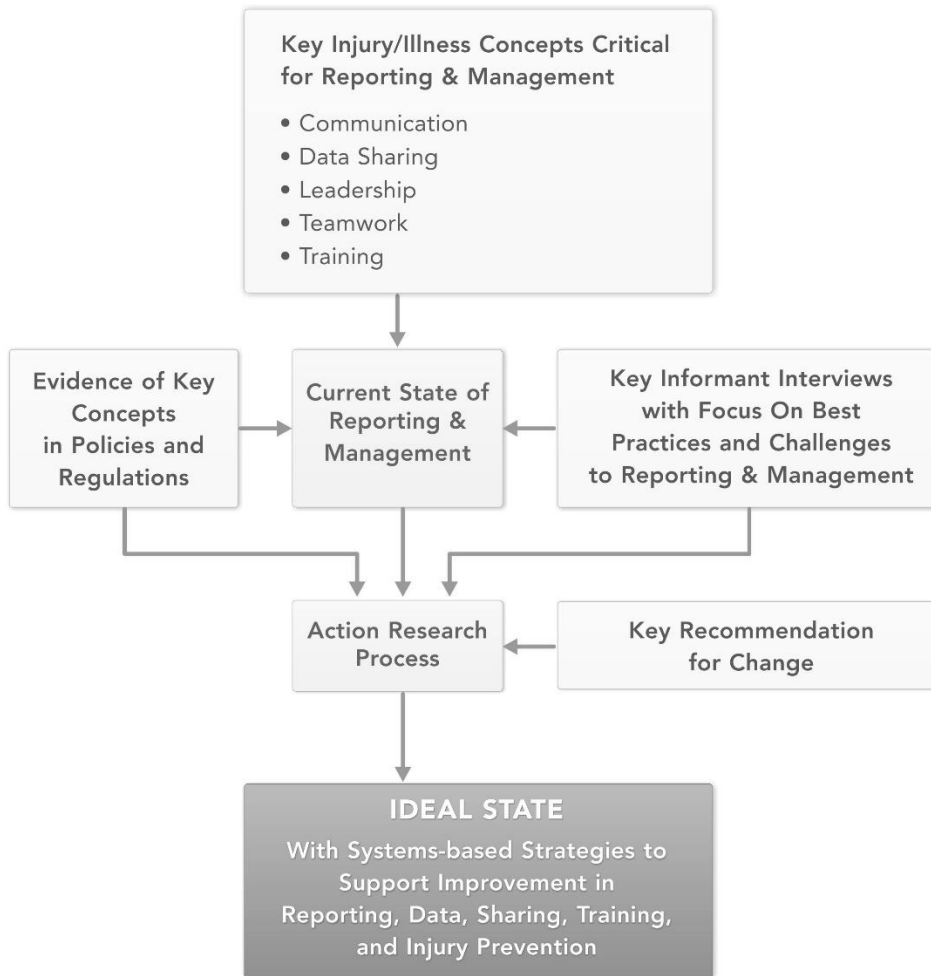
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## **APPENDICES**

## APPENDIX A. Conceptual Framework

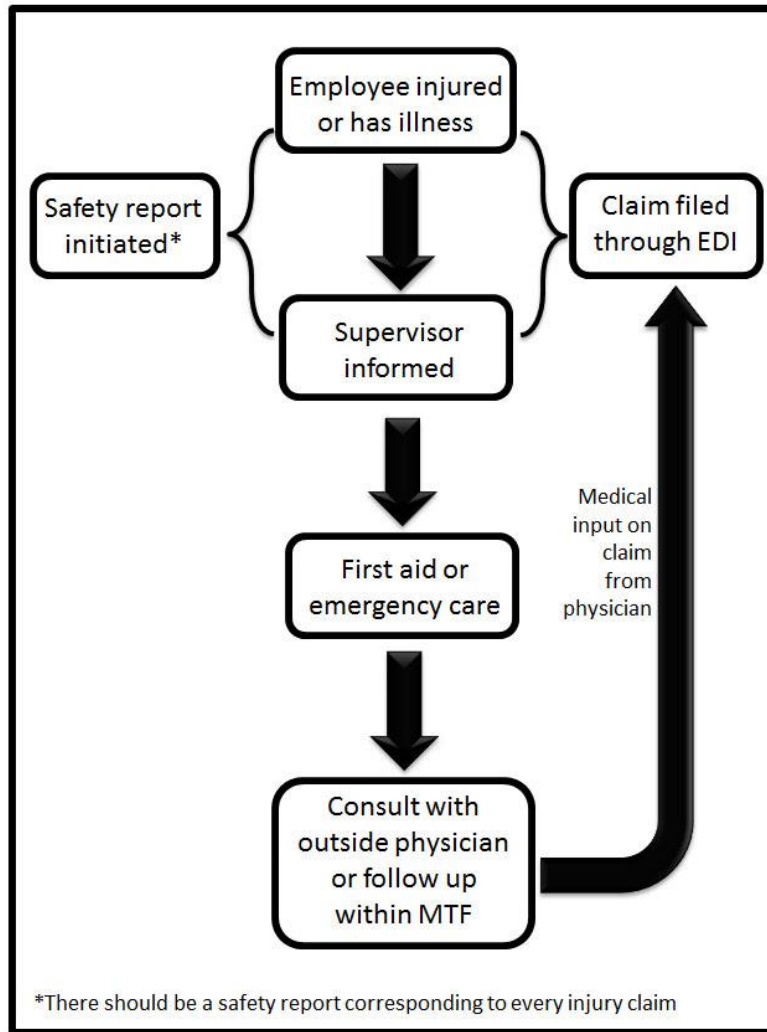
### INITIAL CONCEPTUAL FRAMEWORK

#### Reporting and Management of Civilian Occupational Injuries and Illnesses



## APPENDIX B. Initial Algorithm

### Civilian Occupational Injury and Illness Claim Process



## APPENDIX C. Concept Definitions

Each code is followed by sub-codes (as applicable), their definitions, and examples (e.g., key words).

<b>COMMUNICATION</b>		
Definition: The means by which we exchange ideas and connect to each other.		
Example: Provide information, give guidance		
Barriers	Hindrance of the exchange of ideas	Example: Failure to talk about an injury
Facilitators	Improvement of the exchange	Example: Promoting services through discussion
<b>DATA SHARING</b>		
Definition: Physical sharing of informational resources (e.g. forms or data)		
Example: Giving data, submitting forms		
Barriers	Way that data are blocked or not shared	Example: Didn't fill out form in a timely manner
Facilitators	Way that data are shared in a better manner	Example: Forms are completed electronically
<b>INJURY PREVENTION</b>		
Definition: Specific efforts to prevent or reduce injuries before they occur		
Example: Correct problems involving injuries; identifying and correcting hazards		
<b>LEADERSHIP</b>		
Definition: [Effective] leadership is about having a vision and motivating other; it is about producing useful change.		
Example: Buy-in; consultation; supervision		
Command-driven	Directives given to someone on a specific process (top-down).	Example: Command; directed to do



Initiative-based	Having buy-in and support from below.	Example: Getting others to take lead
<b>PROCESSES</b>		
<p>Definition: Refers to the existence of an established procedure. A specific goal is outlined “Do people know what to do?”</p> <p>Example: Steps taken such as if the employee sustain an injury, then she reports it</p>		
Lack of Process	No known process	Example: There is no data
Negative	Process leading to a negative outcome	Example: Process costs money, fails to return employees to work
Positive	Procedure resulting in improved outcomes Specific process known	Example: Cost-savings, returns employees to work, successful
<b>RECOMMENDATIONS</b>		
<p>Definition: Any advice from the participant to improve or change the process.</p> <p>Example: We need to have a better process in the Emergency Room...</p>		
<b>RESPONSIBILITY</b>		
<p>Definition: Refers to the recognition of the individual’s role within a process (“I am responsible for”)</p> <p>Example: We are responsible for the following tasks...</p>		
Fulfillment	Role or responsibility exists and is completed/filled	Example: She completed her task...
Lack of Fulfillment	Role or responsibility exists and fails to be completed	Example: He failed to do the task...
<b>SAFETY</b>		
<p>Definition: Policies, responsibilities, and procedures to safeguard and preserve resources (e.g., soldiers, DA civilians) against accidental loss.</p> <p>Example: Decrease accident rate</p>		

<b>TEAMWORK</b>		
<p>Definition: A small number of people with complementary skills committed to a common purpose, set of performance goals, and approach</p> <p>Example: Working together</p>		
Coordination	Any teamwork done in an informal manner	Example: Partnership; coordinated manner
Lack of teamwork	No teamwork (but expected to be present in situation)	Example: If they had worked together...
Working Group	Any teamwork done in a formalized manner	Example: Committee met; Working Group did the following
<b>TRAINING</b>		
<p>Definition: Developing or acquiring skills or knowledge for specific goals or competencies</p> <p>Example: Education; courses; mentorship</p>		
Face to Face	Classroom training or one-on-one training (must be formal)	Example: Coursework; classroom
Initial	Training conducted at the start of employment	Example: Orientation training
Lack of training	No training	Example: No training
On the Job	No formal training; training is done while working	Example: "On the job"; mentored
Online	Computer training	Example: "Online" (APEQS)
Refresher	Periodic training	Example: Annual training; continuous training
<b>WORKER-SUPERVISOR RELATIONSHIP</b>		
<p>Definition: Any interaction between the worker and the supervisor</p> <p>Example: Employee reporting to supervisor</p>		

Negative	Interaction which is negative in nature or has negative consequences	Example: Employee worked with supervisor to submit form in timely manner
Positive	Interaction which is positive in nature or has positive consequences	Example: Due to mistrust, the forms were not submitted in timely manner by supervisor

## APPENDIX D. NVivo Coding Stripes Example

The screenshot displays the NVivo software interface. On the left, a text box contains the following content:

- Have any of these initiatives led to a reduction of injuries on base?

We just started the campaign so it is too soon to say. There may be more reporting and people may report more. Are there less because people are being more careful?

- Have any of the initiatives resulted in significant cost savings to the government that you are aware of?

Below the text box, a partial question is visible: "Are there any changes you would recommend to increase injury".

On the right side of the interface, a vertical list of codes is shown, each with a corresponding colored stripe. The codes, from top to bottom, are:

- Safety
- Working Group
- Recommendations
- Data Sharing
- Negative Process
- Training
- Communication Barriers
- Responsibility
- Teamwork
- Injury Prevention (highlighted with a green stripe)
- Positive Process
- Communication
- Processes
- Coding Density

The interface includes a "Click to edit" link at the top and a status bar at the bottom.

## APPENDIX E. Interview Questions

Code: \_\_\_\_\_

Date of Interview: \_\_\_\_\_

Thank you for agreeing to speak with me today. I've already provided an information sheet on this project when I initially contacted you and another copy is available today. The overall purpose of this study is to evaluate current practices in occupational injury and illness reporting and possible areas of improvement. This interview should take approximately 20 minutes but the length may vary depending on how many questions you answer. If you don't wish to answer a question for whatever reason, you can decline. Some of the questions may not apply to you and if this is the case, we will move onto the next question. As was mentioned in the information sheet, this interview is voluntary. If you are uncomfortable with the questions, you may choose to stop the interview. Also, when you respond to the questions, please try to withhold from including actual names or identifiers. Even if you do state these, I will not record them.

Do you have any questions before we begin?

Number	Question
1	<p>What is your specific role regarding the organization's occupational injury and illness reporting process?</p> <ul style="list-style-type: none"><li>• Is this your primary area of responsibility?</li><li>• How does this role fit in with your other responsibilities?</li></ul>
2	<p>How are occupational injuries and illnesses reported within the organization?</p> <ul style="list-style-type: none"><li>• How do you know – what directives, policies, or protocols are you aware of?</li><li>• How were these communicated to you?</li><li>• Who has the responsibility for occupational injury reporting?</li><li>• To whom are they supposed to report for their injuries or illness?</li><li>• Where are the forms submitted?</li></ul> <p>What do you see as discrepancies, if any, between what is supposed to happen and what is actually happening with regards to injury reporting?</p>

Number	Question
3	<p>What are some of the challenges that the employee faces in reporting an injury or illness?</p> <ul style="list-style-type: none"> <li>• Can you give an example of a challenge you became aware of, or describe one of those challenges?</li> <li>• What recommendations would you make to overcome these challenges?</li> </ul>
4	<p>What are some of the challenges your department or section faces in reporting?</p> <ul style="list-style-type: none"> <li>• Can you provide an example of one of those challenges?</li> <li>• Are these challenges recurring incidents or unique cases?</li> </ul>
5	<p>What has worked well in terms of reporting injuries and illnesses?</p> <ul style="list-style-type: none"> <li>• How can we build on what has worked well?</li> </ul>
6	<p>Did you receive training for your role in injury and illness reporting?</p> <ul style="list-style-type: none"> <li>• If yes, how did you receive the training?</li> <li>• How often do you receive the training?</li> <li>• Is the training documented for review if required?</li> </ul>
7	<p>Do you feel that the training prepared you adequately for your role in injury and illness reporting? Why or why not?</p> <ul style="list-style-type: none"> <li>• What training do you think would be most useful for managing occupational injuries and illness? This includes preventing injuries and also reporting.</li> <li>• How should that training be delivered?</li> </ul>
8	<p>Do you regularly review or manage occupational injury and illness statistics?</p> <ul style="list-style-type: none"> <li>• If yes, which data do you use? Data that you collect or that is collected by others?</li> <li>• Have you made any changes as a result of these data?</li> <li>• How is the data managed once the case is filed?</li> <li>• Please describe any recommendations for changing the process for managing data, and explain why you would make these recommendations.</li> </ul>
9	<p>Do you attend the FECA Committee meeting?</p> <ul style="list-style-type: none"> <li>• What is your role at the meeting?</li> <li>• How do you see the role of this committee?</li> <li>• Does the Committee use the expertise of the members in setting goals or evaluating policies?</li> <li>• Do you or members of the FECA Committee engage in root cause analysis of injuries and near misses?</li> <li>• If yes, can you describe how this is done?</li> </ul>

Number	Question
10	<p>Are you aware of any occupational injury prevention initiatives that have been done on the installation?</p> <ul style="list-style-type: none"> <li>• If these initiatives have been implemented, how were they prioritized and executed?</li> <li>• Have any of these initiatives led to a reduction of injuries on base?</li> <li>• Have any of the initiatives resulted in significant cost savings to the government that you are aware of?</li> </ul>
11	<p>Are there any changes you would recommend to increase injury prevention? Please describe, and explain why you think this change/these changes would be helpful.</p>
12	<p>What are some of the obstacles you would face, or perhaps have already faced, in implementing change in injury prevention?</p> <ul style="list-style-type: none"> <li>• Describe one or more of the obstacles</li> <li>• Are there other organizational elements that affect how change in injury prevention can be implemented?</li> </ul>
13	<p>Is there anything else you would like to add related to the above questions or anything I may not have covered?</p>

THANK YOU FOR TAKING THE TIME TO SPEAK WITH ME TODAY.

## **APPENDIX F. Information Sheet**

### **Information Sheet: A Systems Approach to Improve Reporting, Management, and Prevention of Army Civilian Occupational Injuries and Illnesses**

#### **Prospective Study Participant:**

I am contacting you about your participating in a voluntary interview. This is a research study about civilian occupational injuries and illness and the workers' compensation process. I anticipate the interview will take about 30 minutes but it may be shorter or longer depending on how many questions apply to you. It will be conducted in a private area, one-on-one, convenient to you, either in person or by phone (depending on your location).

There will be a series of open-ended questions. If you don't feel comfortable answering one or more of the questions, you may choose not to answer any or all of the questions. Again, participation is completely voluntary. During the interview, I will be taking notes. There will be no audio or video recording. General themes from these interviews will be recorded and analyzed. Your name will never be released. Any reports generated from these interviews will need to go through proper clearance channels.

These interviews can have no direct consequences on your employment. If you believe there has been any coercion to participate in the interview, please contact [Insert Location] Department of Clinical Investigation [contact info here]. If you have any questions about this research study, please contact LTC Sheryl A. Bedno by email ([Sheryl.a.bedno.mil@mail.mil](mailto:Sheryl.a.bedno.mil@mail.mil)) or by tel (910-432-5575).



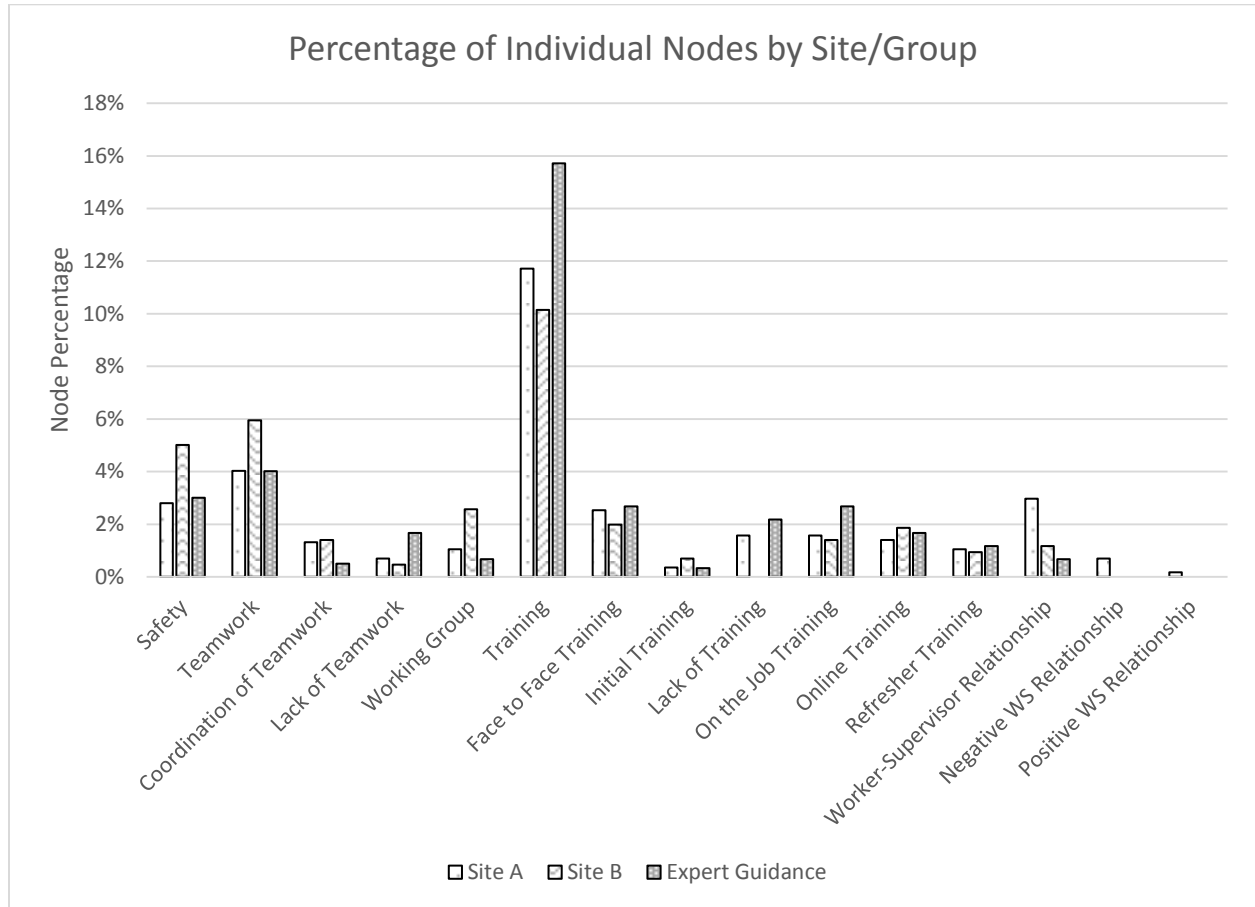
## APPENDIX G. Document Review

Link to full document review:

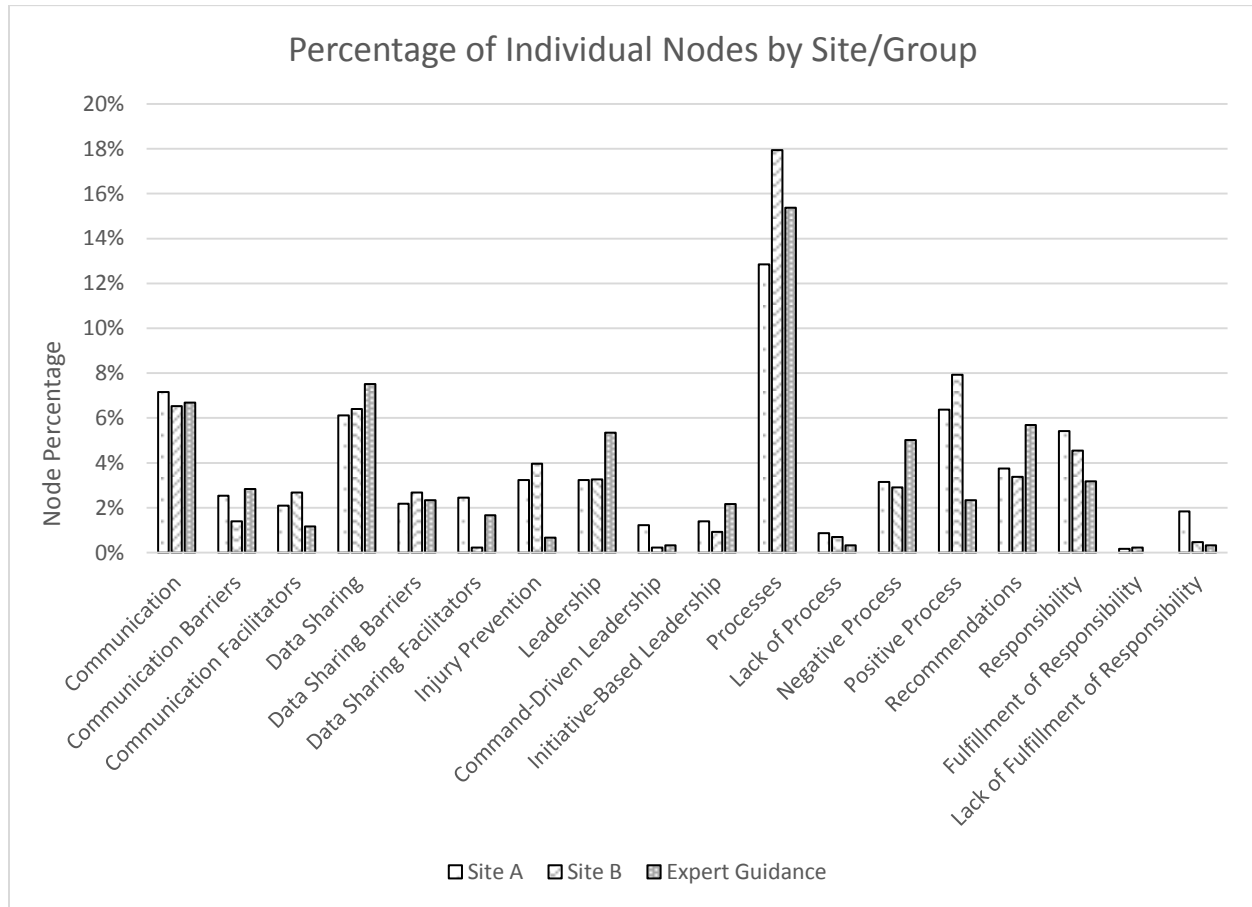
<https://drive.google.com/open?id=0B3014cFZJ67dUURvRG9EOVBsaFk&authuser=0>

Site A	Site B	Site C
2	2	7
Memorandum	Memorandum/Regulation	Memorandum/Policy Guidance
Specific to Bloodborne Pathogen Exposure Reporting (steps)	Specific to Bloodborne Pathogen Exposure Reporting (diagram)	No
Yes	Yes	Yes
No	No, but mentions supervisor responsibility	Collective leadership; Command; President
Coordination (not teamwork); Mentions interaction amongst a large range of disciplines	No	Partnering (also in Safety reg)
No	No	Yes - Safety
None	None	POWER goals
Initial and refresher	Initial and annual - for safety and bloodborne pathogens	Initial and refresher for supervisors
There is a clear statement on the purpose of the FECA WG	No	There is a clear statement of the purpose of the FECA WG
Yes	No	No (minimal reference)
No	No	No

## APPENDIX H. Percentage of Nodes by Site

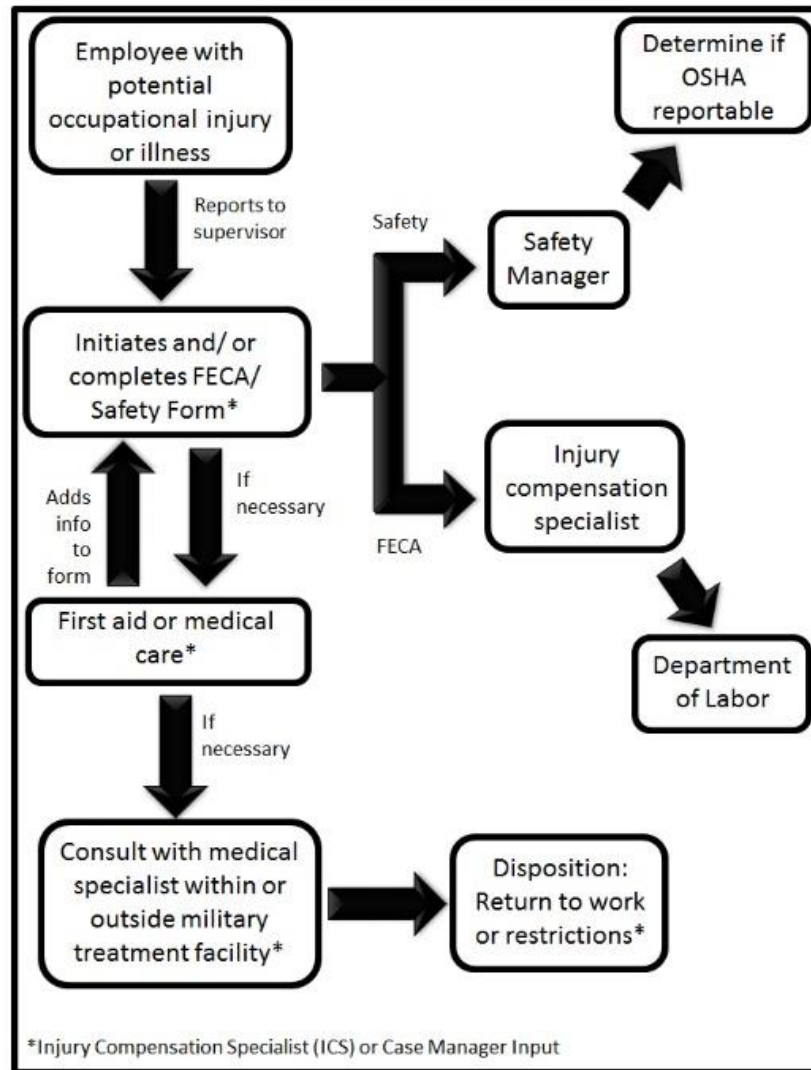


## APPENDIX I. Percentage of Nodes by Site (Part 2)



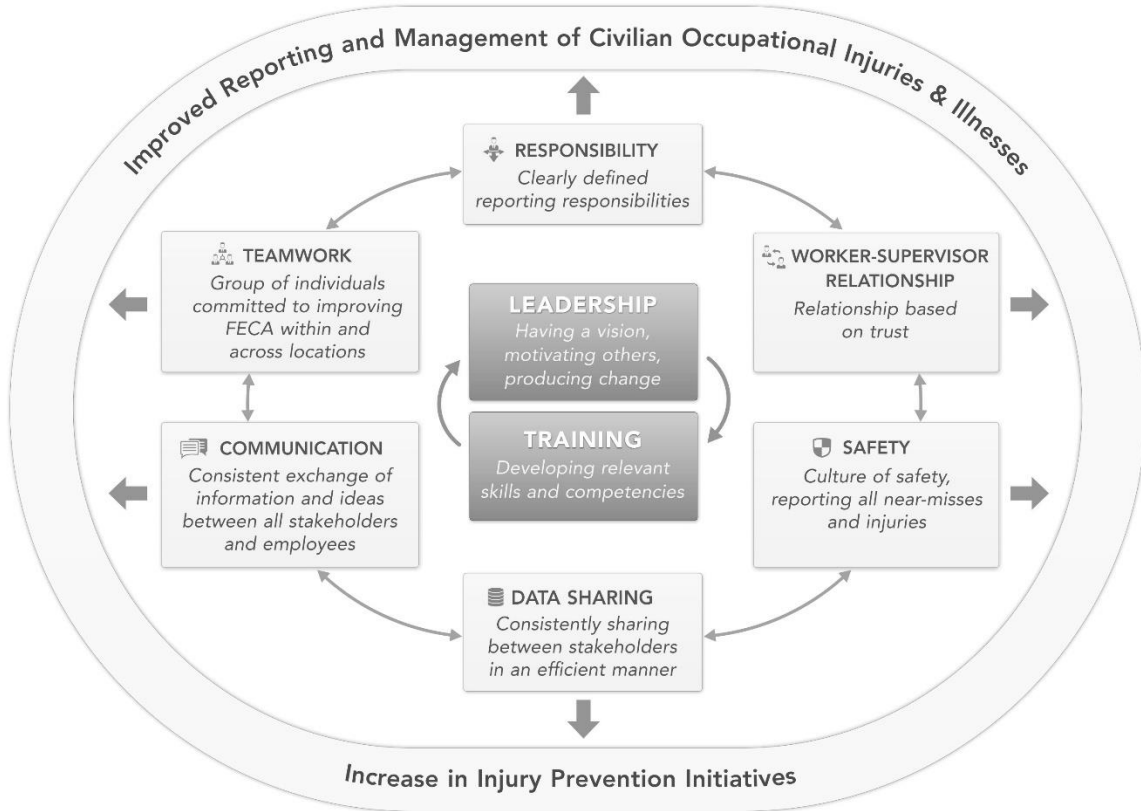
## APPENDIX J. Updated Algorithm

### Civilian Occupational Injury and Illness Reporting Algorithm



## APPENDIX K. Revised Conceptual Framework

# FINAL CONCEPTUAL FRAMEWORK



## APPENDIX L. IRB Approval (UIC)

### UNIVERSITY OF ILLINOIS AT CHICAGO

Office for the Protection of Research Subjects (OPRS)  
Office of the Vice Chancellor for Research (MC 672)  
203 Administrative Office Building  
1737 West Polk Street  
Chicago, Illinois 60612-7227

#### Exemption Granted

November 13, 2014

Sheryl Bedno, MD, MPH  
Community Health Sciences  
401 Summerlea Drive  
Fayetteville, NC 28311  
Phone: (301) 920-4586 / Fax: (910) 396-8196

**RE: Research Protocol # 2014-1064**  
**“A Systems-Based Approach to Improve the Reporting, Management, and Prevention of Army Civilian Occupational Injuries and Illnesses”**

**Sponsors: None**

Dear Dr. Bedno:

Your Claim of Exemption was reviewed on November 11, 2014 and it was determined that your research protocol meets the criteria for exemption as defined in the U. S. Department of Health and Human Services Regulations for the Protection of Human Subjects [(45 CFR 46.101(b))]. You may now begin your research.

**Exemption Period:** November 11, 2014 – November 11, 2017  
**Lead Performance Site:** UIC

[REDACTED]

**Subject Population:** Adult (18+ years) subjects only  
**Number of Subjects:** 60 (individuals for interviews)

**The specific exemption categories under 45 CFR 46.101(b) are:**

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation; and

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

## APPENDIX M. IRB Approval (Military)



DEPARTMENT OF THE ARMY  
Womack Army Medical Center  
Fort Bragg, North Carolina 28310

REPLY TO  
ATTENTION OF:

MCXC-DME-RES21

21 October 2014

MEMORANDUM FOR: LTC Sheryl Bedno, MC, USA, Womack Army Medical Center, 2817 Reilly Road, Fort Bragg, NC 28310-7301

SUBJECT: [407802-1] A Systems Approach to Improve Reporting, Management, and Prevention of Army Civilian Occupational Injuries and Illnesses

1. Thank you for your submission of New Project materials for this research study. I have reviewed the protocol and determined that it is exempt from 32 CFR 219.101(b) (4). This project involves both review of existing data and interviews. The existing data is recorded in a manner in which subjects cannot be identified. This is an EXEMPT study. Therefore Institutional Review Board (IRB) oversight is not required.

2. Please note that if you decide to make any changes to the procedures approved in this protocol, you must first request approval from this office. Any change that could potentially alter the exempt status of this project must be considered prior to initiation.

3. If you have questions, the POC is Linda Jenkins at (910) 907-8277 or [linda.j.jenkins.civ@mail.mil](mailto:linda.j.jenkins.civ@mail.mil). Please include your project title and reference number in all correspondence with this committee.

This document has been electronically signed in accordance with all applicable regulations, and a copy is retained within our records.

## **APPENDIX N. VITA**

### **Sheryl A. Bedno, MD, MPH, MS**

DrPH (2012-2015)      University of Illinois at Chicago School of Public Health  
MPH - Epidemiology (2002-2014)      University of Washington School of Public Health  
MD (1996-2001)      University of Illinois at Chicago College of Medicine, Chicago, Illinois  
MS – Kinesiology (1993-1995) University of Illinois at Chicago, Chicago, Illinois  
BA – International Studies (1985-1989) Johns Hopkins University, Baltimore, Maryland

#### **GRADUATE MEDICAL EDUCATION**

2009 – 2010      Occupational and Environmental Medicine Residency  
                         Uniformed Services University of the Health Sciences, Bethesda, MD  
  
2006 - 2007      Psychiatry Residency (PGY-2)  
                         National Capital Consortium, Washington, DC  
  
2002 - 2004      Public Health Residency  
                         Madigan Army Medical Center, Tacoma, Washington  
  
2001 - 2002      Psychiatry Internship  
                         Tripler Army Medical Center, Honolulu, Hawaii

#### **MEDICAL LICENSURE**

State of Hawaii, #12060 (Expiration January 2016)

#### **BOARD CERTIFICATION**

Occupational Medicine: 2011-2021

Public Health and General Preventive Medicine: 2015-2025



## **OTHER CERTIFICATION**

Medical Review Officer: #10-08727

## **PROFESSIONAL EXPERIENCE**

Mar 2015 – present Chief, Department Preventive Medicine, Womack Army Medical Center, Fort Bragg, NC

July 2014 – Feb 2015 Deputy Chief, Department Preventive Medicine, Womack Army Medical Center, Fort Bragg, NC

Jun 2013 – Jun 2014 Chief, Department Clinical Investigation, William Beaumont Army Medical Center, Fort Bliss, TX

Jul 2012 – Jun 2013 Chief, Department Preventive Medicine, William Beaumont Army Medical Center, Fort Bliss, TX

Jul 2010 – Jun 2012 Chief, Occupational Health, Dwight D Eisenhower Army Medical Center, Fort Gordon, GA

Nov 2011 – Jun 2012 Public Health and Epidemiology Staff Officer, ISAF/NATO Headquarters, Kabul, Afghanistan (deployment)

Jul 2007 - Jul 2009 Chief, Accession Medical Standards Analysis and Research Activity (AMSARA), Walter Reed Army Institute of Research (WRAIR)

Aug 2004 – Jul 2006 Coordinator, Global Emerging Infections Surveillance and Response System (GEIS) US Army Medical Research Unit – Kenya

Sept 1997 – May 2001 Research Assistant, University of Illinois at Chicago College of Medicine, Department of Medicine, Section of Endocrinology

Apr 1997 – Sept 1998 Research Assistant. University of Illinois at Chicago College of Medicine, Office of Special Projects

Apr 1995 – Sep 1996 Graduate Assistant University of Illinois at Chicago Department of Human Nutrition and Dietetics

Jan 1991 - Jun 1992 Communications Manager, International Diabetes Federation (IDF), Brussels, Belgium

## **CURRENT APPOINTMENTS/COMMITTEES**

Member, American College of Preventive Medicine Scientific Review Committee

Adjunct Assistant Professor, Military/Emergency Medicine, Uniformed Services University of the Health Sciences

Chair, Institutional Review Board, Womack Army Medical Center

#### MEMBERSHIPS

American College of Occupational and Environmental Medicine

American College of Preventive Medicine (Fellow)

#### PUBLICATIONS IN REFEREED JOURNALS

1. Bedno S, Hauret K, Loring K, Kao T, Mallon T, Jones B. Effects of Personal and Occupational Stress on Injuries in a Young, Physically Active Population: A Survey of Military Personnel. *Mil Med* 2014 179: 1311-1318.
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## **SELECTED PRESENTATIONS**

### *Oral Presentations:*

1. Bedno SA. Readiness to Quit: Tobacco Cessation at William Beaumont Army Medical Center. Paso del Norte Tobacco Control Network (El Paso, TX). May 2014.
2. Bedno SA. Civil Sector Health Development in Afghanistan. American College of Preventive Medicine. February 2013.
3. Bedno SA, Loring KA, Kao TC, Hauret K. Causes of and Consequences of Sports-Related Injuries: A Survey of Active Duty Service Members. American College of Sports Medicine Annual Conference. June 2011.
4. Bedno SA, Gubata ME, Yi B, Cowan DN, Niebuhr DW. Specificity of Risk Factors for Selected Overuse Injuries Among Male Army Recruits. American College of Sports Medicine Annual Conference. June 2010.
5. Bedno S, Li Y, Scott C, Han W, Cowan D, Niebuhr D. Heat Illness Among Recruits Exceeding Body Fat Limits. USACHPPM Force Health Protection Conference. August 2008.
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### *Poster Presentations:*

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### APPENDIX O. Research Questions (Table Form)

Research Question	Method	Document Review	Interview Questions	Concept(s)
What are the top occupational injuries and illnesses and annual costs locally and at the DoD level?	Secondary data analysis (bivariate analysis)	N/A	N/A	Injuries/illnesses and their costs
How are occupational injuries and illnesses reported at the installation-level and how does this differ from guidance provided to supervisors and/or employees?	Qualitative analysis: interviews and document review	<ul style="list-style-type: none"> <li>Is a reporting algorithm available for all or specific occupational injuries or illnesses?</li> </ul>	<ul style="list-style-type: none"> <li>How are occupational injuries and illnesses reported within the organization?</li> <li>How do you know: what directives, policies or protocols are you aware of?</li> </ul>	Communication; data sharing

<b>Research Question</b>	<b>Method</b>	<b>Document Review</b>	<b>Interview Questions</b>	<b>Concept(s)</b>
Who is responsible for occupational injury and illness reporting and management? How effective is shared accountability?	Qualitative analysis: interviews and document review	<ul style="list-style-type: none"> <li>• Does the document indicate responsibility for injury or illness reporting?</li> <li>• Does the document define which disciplines participate in occupational injury/illness processes?</li> </ul>	<ul style="list-style-type: none"> <li>• What is your specific role regarding the organization's occupational injury and reporting process?</li> </ul>	Teamwork; communication; data sharing
How do the occupational injury and illness policies highlight the roles of leadership, teamwork, and communication? Are these policies derived at the local or DoD level?	Qualitative analysis: document review	<ul style="list-style-type: none"> <li>• Does the document mention teamwork?</li> <li>• Does it mention leadership?</li> <li>• Does it mention communication? [details on how they are mentioned and differences between local and higher level]</li> </ul>	N/A	Teamwork; leadership; communication



<b>Research Question</b>	<b>Method</b>	<b>Document Review</b>	<b>Interview Questions</b>	<b>Concept(s)</b>
What metrics are used for occupational injuries, if any, and how are the metrics established? Are these metrics evidence-based?	Qualitative analysis: interviews and document review	<ul style="list-style-type: none"> <li>Are metrics defined in any of the documents and if so, are they evidence-based?</li> </ul>	<p>Do you regularly review or manage occupational injury and illness statistics?</p> <ul style="list-style-type: none"> <li>If yes, which data do you use? Data that you collect or that is collected by others?</li> <li>Have you made any changes as a result of these data?</li> <li>How is the data managed once the case is filed?</li> <li>Please describe any recommendations for changing the process for managing data, and explain why you would make these recommendations.</li> </ul>	Data sharing

Research Question	Method	Document Review	Interview Questions	Concept(s)
What kind of training is required to report and manage occupational injuries and illnesses on the part of the supervisor? How does this training respond to the needs of the hospital or installation?	Qualitative analysis: interviews and document review	<ul style="list-style-type: none"> <li>Does the document indicate the need for training?</li> <li>If so, does the document mention how often training should be conducted?</li> </ul>	<ul style="list-style-type: none"> <li>Did you receive training for your role in injury and illness reporting? If yes, how did you receive the training? How often do you receive the training? Is the training documented for review if required?</li> <li>Do you feel that the training prepared you adequately for your role in injury and illness reporting? Why or why not? What kind of training do you think would be most useful for managing occupational injuries and illnesses? This includes injuries and reporting? How should that training be delivered?</li> </ul>	Training; leadership; communication

Research Question	Method	Document Review	Interview Questions	Concept(s)
How can improved communication be used to facilitate reporting of occupational injuries and illnesses?	Qualitative analysis: interviews and document review	<ul style="list-style-type: none"> <li>Does the document discuss data sharing, information or communication issues?</li> </ul>	<ul style="list-style-type: none"> <li>What are some of the challenges that the employee faces in reporting an injury or illness?</li> <li>What are some of the challenges your department or section faces in reporting?</li> <li>What are some of the discrepancies between what is supposed to happen and what is actually happening in terms of reporting?</li> </ul>	Communication; data sharing

Research Question	Method	Document Review	Interview Questions	Concept(s)
What is the role of the FECA Committee at the installation level? Are there processes in place for FECA programs to use data for injury prevention through the FECA Committee/Working Group?	Qualitative analysis: interviews	<ul style="list-style-type: none"> <li>Is the role of the FECA committee defined by regulation? Is it defined at higher and installation level?</li> </ul>	<p>Do you attend the FECA Committee meeting?</p> <ul style="list-style-type: none"> <li>What is your role at the meeting?</li> <li>How do you see the role of this committee?</li> <li>Does the Committee use the expertise of the members in setting goals or evaluating policies?</li> <li>Do you or members of the FECA Committee engage in root cause analysis of injuries and near misses? <ul style="list-style-type: none"> <li>If yes, can you describe how this is done?</li> </ul> </li> </ul>	Teamwork; data sharing

Research Question	Method	Document Review	Interview Questions	Concept(s)
How does leadership provide guidance on data collection or analysis to influence or drive decisions permitting appropriate injury prevention and case management activities?	Qualitative analysis: interviews and document review	<ul style="list-style-type: none"> <li>Does the document mention injury prevention?</li> <li>If so, does it mention data collection related to injury prevention?</li> </ul>	<p>Are you aware of any occupational injury prevention initiatives that have been done on the installation?</p> <ul style="list-style-type: none"> <li>If these initiatives have been implemented, how were they prioritized and executed?</li> <li>Have any of these initiatives led to a reduction of injuries on base?</li> <li>Have any of the initiatives resulted in significant cost savings to the government that you are aware of?</li> </ul>	Leadership; data sharing

Research Question	Method	Document Review	Interview Questions	Concept(s)
How does leadership act as an agent of change with regard to injury prevention and occupational injuries?		<ul style="list-style-type: none"> <li>Does the document mention principles of “change”?</li> <li>Does it mention changing the culture within the organization?</li> </ul>	<ul style="list-style-type: none"> <li>Are there any changes you would recommend to increase injury prevention?</li> <li>Please describe, and explain why you think this change/these changes would be helpful.</li> <li>What are some of the obstacles you would face, or perhaps have already faced, in implementing change in injury prevention?</li> <li>Describe one or more of the obstacles</li> <li>Are there other organizational elements that affect how change in injury prevention can be implemented?</li> </ul>	Leadership; injury prevention; communication

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