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An Assessment of Injury Presentation to Determine Elder Abuse Prevalence in South Carolina

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AN ASSESSMENT OF INJURY PRESENTATION TO DETERMINE ELDER ABUSE PREVALENCE IN SOUTH CAROLINA

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DEDICATION

This research is dedicated to all vulnerable older adults who have endured harm and may have lost their voice. I hope this research restores those voices.

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To Dr. Jan Probst, my sincere appreciation for your willingness and patience to serve as my advisor and committee co-chair. Thank you for sharing your knowledge and humor with me. I've learned so much from you.

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Lastly, and most importantly, to my parents, Betty and Charles, thank you for being such loving and supportive parents, for always being so encouraging, and for teaching and reminding me that "Can comes before Can't". I love you both to the moon and back.

ABSTRACT

As the number of individuals age 60 years of age and older continues to rise in the United States, the care and safety of this population will be a growing issue. There are many contributing factors and reasons why elder abuse occurs. Elder abuse is an emerging issue; however there is limited research and understanding in the area. There are barriers to the detection and prevention of the issue. Emergency department staff is essential to the identification and detection of possible abuse, and it is important that these providers understand the risk factors and physical manifestations of abuse and neglect cases. Potential abuse codes were developed based on the injuries and diagnoses of confirmed cases of abuse and of patients that were brought to the attention of Adult Protective Services for possible abuse. Analysis revealed that there are no significant differences in the characteristics of elder ED patients with an APS flagged abuse case when compared to other elders without a flagged visit of abuse. The study also found that hospital shopping was present, and should be explored in future studies.

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GLOSSARY

Elderly Adult: An adult that is 60 years of age or older

Elder Abuse (Elder Mistreatment): The deliberate and purposeful actions that cause harm or establish a possibility of harm to a susceptible elder by a caregiver or other person that is in a relationship of trust (2) The failure by a caregiver to fulfill fundamental requirements that safeguard the elder from injury or harm.

Physical Abuse: The use of bodily force that may result in injury, physical pain, or impairment.

Sexual Abuse: Non-consensual sexual contact of any kind with an elderly person. Sexual contact with any person incompetent and unable to give consistent is also considered sexual abuse.

Emotional or Psychological Abuse: The infliction of distress, discomfort, or pain through verbal or nonverbal actions.

Neglect: The purposeful or accidental failure to provide care or meet obligations to an older adult.

Abandonment: The desertion of an elderly person by an individual who has assumed caregiving responsibilities, or an individual with physical guardianship of a senior.

Financial and Material Exploitation: A caregiver or person of trust criminal use of the resource (money, property, or assets) of the elderly individual.

Injury Presentation: A defined pattern of injury that is sustained by individuals (includes type of injury and location on the body)

Adult Protective Services: A division, of the Department of Social Services, which provides services to meet the adults' basic needs to safeguard their protection as approved, by the Omnibus Adult Protection Act of South Carolina.

Substantiated Abuse: Abuse that is reported, supported, and verified by evidence.

Unsubstantiated Abuse: Abuse that is reported but not supported or verified by evidence

Doctor Shopping: The behavior and action of patients moving from one doctor to another due to a lack of satisfaction with their care, to obtain illicit drugs, or avoid detection of abuse.

Hospital Shopping: The behavior and action of patients moving from one health care provider or hospital to another due to a lack of satisfaction with their care, to obtain illicit drugs, or to avoid detection of abuse.

CHAPTER 1

BACKGROUND, PROBLEM, AND JUSTIFICATION

1.1 INTRODUCTION

The United States Census Bureau projects the structure of the US population to age at a continual pace (Bond & Butler, 2013). The baby boomer generation began to reach retirement age in 2011 and will continue hit retirement age until the year 2029, and the members of this generation are credited with making up approximately 25% of the total United States population (Bond & Butler, 2013). Despite the progress in health care, improved levels of activity and prominence of aging adults, as this population continues to grow at a rapid pace, so does the unknown occurrence of elder abuse and neglect (Bond & Butler, 2013).

Researchers suggest four percent or between approximately 700,000 to 1.2 million elderly adults are victimized yearly, with 450,000 new incidents annually (Bond & Butler, 2013). Elder abuse is not reported, identified, or valued at the same levels as other types of abuse in the United States (Bond & Butler, 2013). Research has shown that 5 in 6 cases of abuse are not reported, and that 1.4% of abuse cases were reported to adult protective services by physicians (Bond & Butler, 2013).

Elder abuse is a complex problem and many health care providers have misconceptions regarding it (Bond & Butler, 2013). Emergency department providers are not knowledgeable in the indicators and risk factors for elder abuse. Philosophies of caring for elderly patients seeking crisis care have not been well defined as in other populations (children and women) (Sanders, 1992). Trauma care for the elderly population requires additional health care resources when compared to the nonelderly populations (Sanders, 1992). Emergency health care professionals have not been able to meet the demands of the elderly population with regard to the proper identification and presentation of illness and injuries in this population.

1.2 DEFINITION AND CLASSIFICATIONS OF ELDER ABUSE AND NEGLECT

Public health categorizes injuries as being intentional, unintentional, or of undetermined intent. Intentional injuries result from planned human action that is purposeful and directed at harming one's self or others. Unintentional injuries are unplanned occurrences in which there is no intent to harm.

There is a lack of consistency in the manner in which elder abuse is defined, utilized, assessed, and applied among APS, social services, law enforcement, and health care professions (Daly & Jogerst, 2003). The Centers for Disease Control (CDC) define elder abuse and neglect as any maltreatment of persons 60 years of age and older by a person in a position of trust involving, such as a caregiver. Elder mistreatment is referred to as:

(1) The deliberate and purposeful actions that cause harm or establish a possibility of harm to susceptible elder by a caregiver or other person that is in a relationship of trust to the elder, or

(2) The failure by a caregiver to fulfill fundamental requirements that safeguard the elder from injury or harm (Fulmer et al., 2004).

The National Center on Elder Abuse (NCEA) classifies elder mistreatment by: physical abuse, sexual abuse, emotional or psychological abuse, neglect by others, drug theft, duty related, abandonment, financial or material exploitation, and self-neglect (NCEA, 2002).

Physical Abuse is defined as:

- "The use of bodily force that may result in injury, physical pain, or impairment. This may involve: striking (with or without an object), punching, thrashing, pushing, shoving, shaking, slapping, kicking, pinching, and burning. In addition, the inappropriate use of drugs (prescription and illicit), physical restraints, force-feeding, and punishment of any kind are also examples of this type of abuse." (NCEA, 2002; Daly & Jogerst, 2003).

Sexual Abuse is defined as:

- "Non-consensual sexual contact of any kind with an elderly person. Sexual contact with any person incompetent and unable to give consent is also considered sexual abuse. This includes: unwelcome touching, all types of

sexual assault or battery (rape, sodomy, coerced nudity, and sexually explicit picture taking)." (NCEA, 2002, Daly & Jogerst, 2003).

Emotional or Psychological abuse is consists of:

- "The infliction of distress, discomfort, or pain through verbal or nonverbal actions. This abuse may include: verbal offenses, threats, intimidation, humiliation, and harassment. Regarding the person, as a child and social seclusion from family or friends are also forms of emotional and psychological abuse.

Neglect is defined as the purposeful or accidental failure to provide care or meet obligations to an older adult (NCEA, 2002, Daly & Jogerst, 2003). Neglect can be classified as active, inactive (passive), or self-neglect.

- Active Neglect is the deliberate failure to deliver care (NCEA, 2002, Daly & Jogerst, 2003).
- Inactive Neglect is the unintentional failure to deliver care, due to a caregiver lacking in knowledge, skills, or the own caregiver's decline in health (NCEA, 2002, Daly & Jogerst, 2003).
- Self-Neglect is characterized by the behavior of the elderly person that jeopardizes his or her own health or safety, by a failure to provide adequate food, water, clothing, personal hygiene, shelter, medication, and safety precautions (NCEA, 2002, Daly & Jogerst, 2003).

Abandonment is defined as:

- "The abandonment of an elderly person by an individual who has assumed caregiving responsibilities, or an individual with physical guardianship of a senior" (NCEA, 2002, Daly & Jogerst, 2003)

Financial and Material Exploitation is characterized by:

- "A caregiver or persons of trust criminal use of the resources (money, property, or assets) of the elderly individual" (NCEA, 2002, Daly & Jogerst, 2003).
- The component of financial abuse alone is appraised at $2.6 billion per year.

1.3 ELDER MALTREATMENT AND ADULT PROTECTIVE SERVICES (APS)

The present structure of protection services for elder and vulnerable adults stemmed from the composition of the child protective services system (Bonnie, 2003). States began to develop welfare programs to protect older adults from harm and assist them in the management of their assets (Bonnie, 2003).

The South Carolina the Department of Social Services (SCDSS) provides Adult Protective Services (APS) for residents of the state. The services are provided to meet the adults' basic needs and to safeguard their protection as approved, by the Omnibus Adult Protection Act of the South Carolina Code of Laws (DSS, 2011). Individuals that are eligible for these services include the elderly and disabled adults who are 18 years of age or older and are victims of actual or potential abuse, neglect, or exploitation. APS is provided after an

assessment is completed and reveals that the vulnerable adult is unable to provide for his/her own care and protection, and has been or is a potential for abuse, neglect, or exploitation. Adult Protective Services secures and coordinates existing services, arranges living quarters, obtains financial benefits to which a vulnerable adult is entitled to, secures medical services, supplies, and legal services (DSS, 2011). An individual or mandated reporter who has actual knowledge of the abuse, neglect, or exploitation of a vulnerable adult must report the incident where the individual resides to make a referral (DSS, 2011).

There are a variety of challenges in determining the scope of elder abuse in the United States due to difficulties with measuring the prevalence of the issue (Post et. al, 2010). During the 2011 fiscal year; the South Carolina Department of Social Services (SCDSS) had a total of 3,256 new clients that were reported and 4,307 clients receiving services. During 2011, 3638 maltreatments were assessed for Adult Protective Services (APS), and 2034 cases of maltreatment were substantiated (CAPSS, 2011). Confirmed maltreatment was categorized by abuse, exploitation, neglect by another individual, psychological abuse, or self-neglect (CAPSS, 2011).

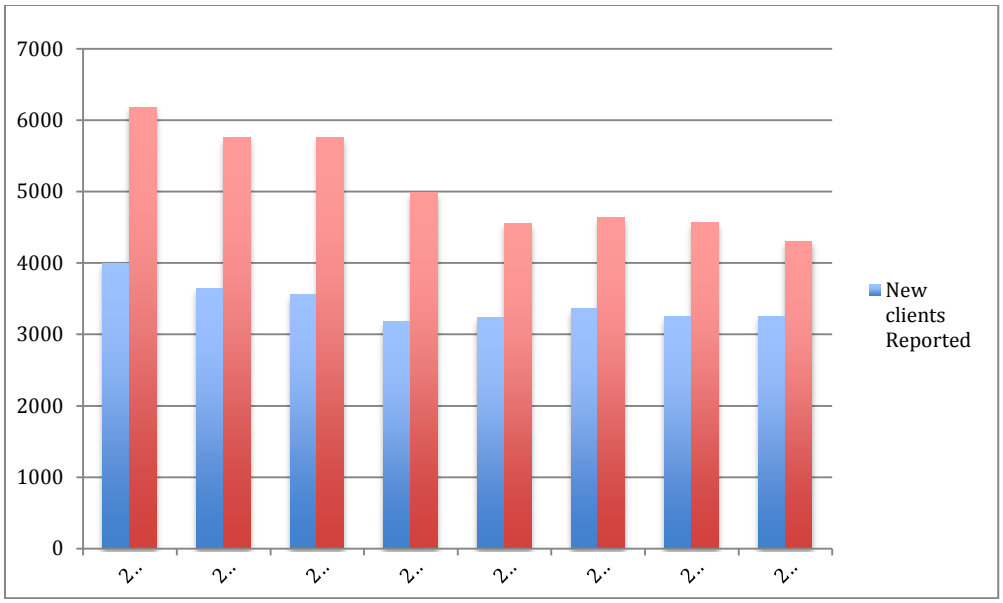


Figure 1.1: Adult Protective Services New Reported Clients and Clients Receiving Services in South Carolina

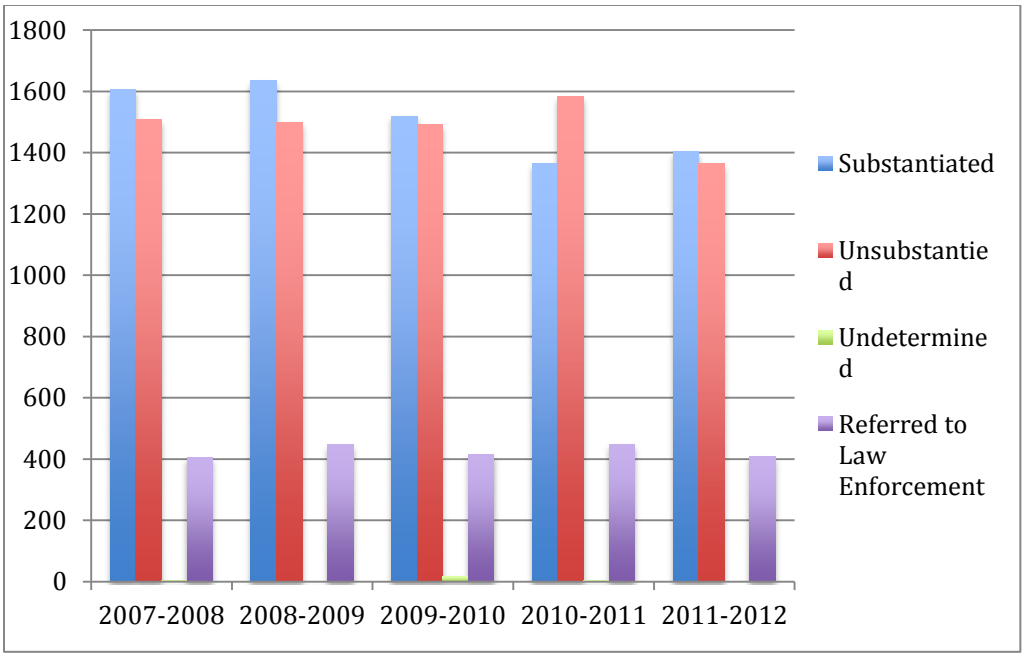


Figure 1.2: Adult Protective Services Substantiated and Unsubstantiated Abuse Cases 2007-2011

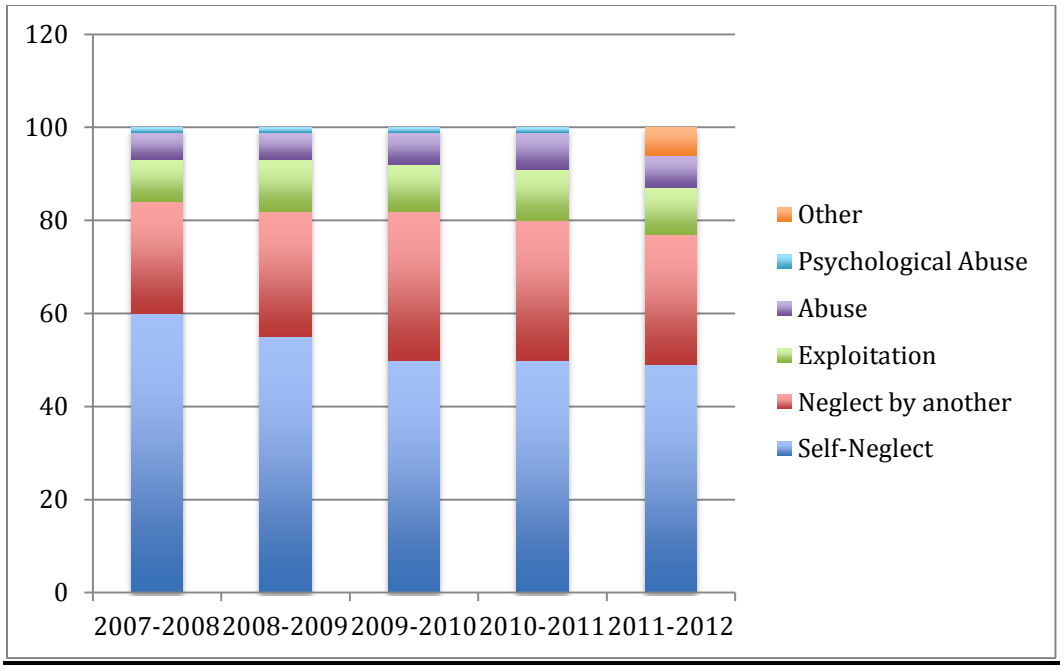


Figure 1.3: Adult Protective Services Substantiated Abuse Typology

1.4 REPORTING OF ELDER MALTREATMENT AND NEGLECT

Forty-four states and the District of Columbia have laws that require health care providers to report their suspicions of abuse (Daly, Jogerst, Brinig & Dawson, 2003). Studies suggest that the response of professionals who care for older adults are unfamiliar with the mandatory-reporting laws and that there is less effectiveness in the identification of abuse in elderly individuals (Lachs & Pillemer, 1995). Adult Protective Services is enlisted when suspected abuse is reported to state authorities, due to the expertise of the agency (Lachs & Pillemer, 1995). Providers should report any suspicions of abuse to the state regulator (Lachs & Pillemer, 1995).

Despite mandatory reporting laws, physicians report an estimated 2% of all reported elder abuse cases, while 20% of reports were from family members, 17% from hospitals, and approximately 10% were direct care workers (Ahmad & Lachs, 2002). Once abuse or neglect is suspected and reported, the evaluation usually includes a home visit by the physician or APS staff, geriatric assessments conducted at the multidisciplinary level, and remedial interventions can occur while the evaluations are taking place (Lachs & Pillemer, 1995).

Providers of care often experience difficulties in reporting their suspicions of abuse. Reporting certain injuries to be the result of a fall or other accident is more socially acceptable and less stigmatized than a report of elder abuse.

Table 1.1: Factors Affecting Reporting and Recognition of Elder Abuse and Neglect

Among Elderly	**Among Caregivers**	**Among Medical Providers**
Fear of Retaliation		Unable to recognize abuse/neglect and attributing patient medical condition to another cause
Fear of Being placed in nursing home		Time constraints
Fear that care provider/family member will get in trouble		Concern about offending the patient and family or denial that family member is abusing
Denial		Unfamiliar with Mandatory reporting laws
Blaming themselves for being a burden on their care provider		Unfamiliar with available resources
Embarrassment or		Concern for personal

shame over being abused		safety and a fear of involvement
Poor self-esteem and feeling that the abuse is deserved		Unfamiliar with screening tools
Inability to communicate effectively (i.e. Dementia)		Misinterprets the patient's signs as indicative of another disease process
Lack of knowledge of available resources		

(Bond & Butler,2013; Kleinschmidet , K.,1997)

1.5 COSTS OF ELDER ABUSE AND NEGLECT

Many studies have determined that the victims of elder abuse have poorer health status and use more medical services when compared to non-victims (Campbell et al., 2002; Drossman et al., 1995; Koss et al, 1991; McCauley et al., 1997). Diagnostic codes are used to justify treatment and the reimbursement for medical costs (Rovi, 2003). Elder abuse imposes large economic and tangible costs on society. Measuring the direct and indirect costs is a challenge (Senate Special Committee on Aging, 2008). The estimated cost of elder abuse in the United States is tens of billions of dollars annually (Bond & Butler, 2013). This cost includes: health care, social services, investigative, law enforcement, and legal costs, as well as loss of income and assets (Bond & Butler, 2013).

1.5.1 DIRECT COSTS OF ELDER ABUSE AND NEGLECT

According to the Department of Justice's Criminal and Victimization Survey of 2005, the direct costs to victims of crimes among those age 65 years and older totaled $1.3 billion (Senate Special Committee on Aging, 2008). This

estimate did not isolate individuals based on mental or physical capacity (Senate Special Committee on Aging, 2008). Direct costs include: immediate medical expenses and routine care for the abused elder, the costs that occur due to acute complications of elder abuse, and the care due to other co-morbid conditions (Senate Special Committee, 2008; Howard, 2001).

1.5.2 INDIRECT COSTS OF ELDER ABUSE AND NEGLECT

Direct costs are a portion of the actual economic burden of elder abuse (Senate Special Committee, 2008). Indirect costs to victims create more of a challenge in computing but are important to the understanding of the issue (Senate Special Committee, 2008). The federal, state, and local governments also incur indirect costs due to the payment of treatment and assisting abuse victims through Medicare, Medicaid, and other health and social service programs, and identifying and prosecuting perpetrators of abuse (Special Senate Committee, 2008).

1.6 DEFINITIONS AND SIGNIFICANCE OF HOSPITAL & DOCTOR SHOPPING

The phrase “Doctor shopping” was initially used in the mid-1970s to describe the action of patients moving from one doctor to another due to a lack of satisfaction with their care (Katsteler, 1976; Worley & Hall, 2012). Globally, doctor shopping has become synonymous with illegally obtaining and illicit use of prescription drugs (Worley & Hall, 2012). Doctor shopping is also defined as the simultaneous

use of several physicians by a patient and it is typically used in medication and child abuse diversion (Pradel et al., 2010). “Hospital shopping” has been used to categorize the behavior of perpetrators of child abuse who attempt to disguise the abuse by seeking treatment for their victims at different hospitals when necessary (Howard, 2001). “Hospital shopping” has primarily been studied regarding the issue of prescription drug abuse as a manner of diverting attention for unlawful or criminal activities within the healthcare system (Pradel et al., 2008).

Studies have found that this behavior occurs with the victims and perpetrators of elder abuse (Olmsted, 1982). The ability to track victims and their utilization of various hospitals and emergency departments to avoid detection of abuse remains an issue. The lack of care coordination and information exchange with other providers regarding a patient’s condition causes a break in the continuity of care and creates challenges in detecting and reporting suspicious injuries or behaviors that may be the result of abuse or neglect. The behavior of doctor shopping perpetuates the problems of abuse and limits the development of relationships of trust with physicians to be established (Woollcott, 1982). There is not a widely accepted definition of hospital and doctor shopping, or a differentiation between the two phrases (Worley & Hall, 2012). The use of the terms is infrequent and varies across multiple settings and situations.

The method of measuring doctor-shopping used by France’s General Health Insurance (GHI) was the development of a reimbursement database to estimate the scale of prescription drug diversion (Nordmann et al., 2013). A

calculation of doctor shopping was developed to determine the extent of prescription abuse (Pradel et al., 2010). This quantity is measured using the proportion of the dispensed quantity by the overlap of prescriptions from different prescribers (Pradel et al., 2010). Computing the hospital-shopping quantity for any given patient begins by defining the number of visits to the emergency department with different providers in a given period of time or the number of different hospital emergency departments visited in a given period of time.

Legislation in different states has been developed to address the issue of doctor and hospital shopping for prescription drug abuse (Pradel, 2010). These types of legislative actions can be further expanded to address other areas of abuse within the medical and public health communities such as physical and emotional abuse among various populations (child and elder).

The defining attributes of hospital shopping derived from the literature include:

1. The patient receives emergency care and services for abuse or neglect from one or more emergency departments and more than one physician; this is phrased *using multiple providers* (Worley & Hall, 2012).
2. The patient is obscuring or omitting information regarding abuse or neglect, and accessing the care from other providers, therefore this attribute is called *patient non-reporting* (Worley & Hall, 2012).

3. The provider awareness of the individual and/or perpetrator's behavior of suspected abuse and neglect or diversion of abuse detection, but the provider does not report suspicions to APS or law enforcement is described as *provider collusion or provider non-reporting* (Worley & Hall, 2012).

4. The practice by the individual occurs over time, therefore multiple episodes of abuse diversion occur, that is, it is not a one-time event. This attribute is phrased *repetitiveness* (Worley & Hall, 2012).

1.7 HOSPITAL SHOPPING LEVELS DEVELOPED FOR ANALYSIS

Hospital shopping is the behavior used by victims and perpetrators of elder abuse who attempt to disguise abuse by seeking treatment for victims at different hospitals when necessary. The research seeks to determine if hospital shopping is an issue among elder abuse victims, and the following models will be used to evaluate this behavior.

- LEVEL 1: an individual must have been treated at TWO or more different hospital emergency departments for an abuse or possible abuse code(s)
- LEVEL 2: an individual must have been treated at TWO different hospital emergency departments for an abuse or possible abuse code(s)
- LEVEL 3: an individual must have been treated at THREE or more hospital emergency departments for an abuse or possible abuse code(s)

Based on the analysis and the significance of the number of emergency room visits in the data, a determination of an appropriate definition and model of hospital shopping will be made. The model chosen will be applicable for future research on the issue of elder abuse and hospital shopping. The designated model will assist health care professionals in the identification of these occurrences of elder abuse for further investigation.

1.8 PROBLEM STATEMET AND PURPOSE OF RESEARCH

Internationally, the number of persons aged 60 years and older is projected to rise to approximately 1.9 billion by 2050 (Perel-Levin, 2008). The maturing of the population produces a growing set of societal challenges. The aging of individuals creates an increased susceptibility to abuse due to declines in physical mobility and mental capacity (Friedman et al, 2011). This rapid growth in the population suggests an increase in the risk of elder mistreatment and neglect in the United States (Post et al, 2010). Elder abuse impacts all levels of society (race, education, and socioeconomic status) and it is estimated that its prevalence in the United States lies within a range of 500,000 to 2.5 million individuals aged 60 and older (Friedman et al., 2011).

Health care professionals often have difficulty in identifying abuse in older adults due to the unique physiological, biological, and personal characteristics of this population. Emergency department (ED) staff and trauma personnel are in positions to identify physical forms of abuse caused by neglect or assault, outside of immediate family members or caretakers (Rovi, 2003). There are a

lack of strategies that increase the awareness and knowledge of ED staff on the examination of injury presentation and patterns of care will allow for more accurate diagnosing, coding and reporting efforts of actual and suspicious events. There is also no “gold standard” for defining abuse among the elderly population and the phenomenon of hospital shopping among elder abuse victims is not well studied. These two issues present challenges in elder abuse detection and prevention; therefore, making strategy development and best practices an essential step.

This research seeks to identify the diagnosis codes and injuries that are commonly associated with domestic and family violence in the form of elder abuse. The purpose of the research is to determine which injury presentations in emergency department (ED) visits are associated with documented elder abuse and how these events are coded.

The findings of this study may assist adult protective services staff, law enforcement, emergency department and health care professionals in reducing elder abuse and neglect and better identifying injuries that may indicate abuse and neglect and increase morbidity and mortality. This information can assist health care professionals, social services professionals, and law enforcement in the recognition and additional training on the injuries and behaviors that are indicative of possible abuse or neglect among elders.

An examination of the factors associated with reports of elder abuse and neglect can inform policy-makers on improving mandatory reporting legislation to adult protective service and other agencies involved in the issue. The

development of case definitions and standards that will assist emergency department staff in the detection of abuse from the proper recognition and coding of suspicious injuries will be an essential element in the study.

The research will increase the awareness of elder abuse in the state of South Carolina and at a national level, as well as assist in the identification of unreported and unknown cases of abuse and neglect to better determine the prevalence of the issue and methods to reduce it. The research will also determine if hospital shopping is a significant factor in elder abuse diversion and if health care professionals and researchers can utilize it as a measure of detection and prevention.

1.9 RESEARCH AIMS AND RESEARCH QUESTIONS

The proposed research has four primary goals:

1. Identify the risk factors (age, sex, co-morbidities, or geographic (rural/urban)) that differentiate elders with a visit of substantiated abuse from other elders.
2. Determine the diagnosis codes and injuries commonly associated with elder abuse as documented by SC Adult Protective Services, and how are these injuries coded in the study.
3. Determine if hospital shopping is present among elder abuse victims to avoid detection of elder abuse.

4. Determine the prevalence of elder abuse and neglect in the state of South Carolina as measured by injury presentations in Emergency Department (ED).

1.10 OVERARCHING RESEARCH QUESTIONS

The overarching research questions that provide direction to the study are:

1. What factors of the individual (victim) (e.g., age, gender, poverty level, race/ethnicity, disabilities, and prior victim of abuse) are associated with reports of substantiated and unsubstantiated elder abuse cases?
2. What ICD-9, E-Codes, and V-Codes are associated with reported cases of substantiated and unsubstantiated abuse?
3. What are the roles of the emergency department, adult protective services, and law enforcement agencies on the issue of elder abuse and how do these entities interact with each other to address the issue?
4. What individual (victim) factors, perpetrator risk factors, and adult protective services increase the likelihood of reports of elder abuse?
5. Does APS and emergency department data indicate if hospital shopping is present among cases of substantiated and unsubstantiated abuse?

1.11 RELEVANCE AND IMPLICATIONS FOR PUBLIC HEALTH PRACTICE

A primary objective in the field of public health is the prevention of injuries and a commitment to improving the quality and accessibility of health services and value of life. The research will be particularly relevant to public health

practice in serving the vulnerable population of older adults through the identification of risk factors of abuse and neglect. The research will also increase awareness of the prevalence of hospital shopping and other methods of diversion of detection among victims and perpetrators of abuse. The study will allow health care professionals, emergency department staff, law enforcement, and Adult Protective Services (APS) to use a set of clearly defined case definitions, specific injuries and commonly used ICD-9, E-codes, and V-codes to better detect and identify abuse and neglect among the elderly. The development of a clearly defined set of injuries that are associated with elder abuse and neglect, this will assist emergency department staff and personnel in diagnostic efforts.

CHAPTER 2

LITERATURE REVIEW

2.1 THEORETICAL FRAMEWORK OF ELDER ABUSE

Studies suggest that there is no distinct model or theory that can explain the complexity of the issue of elder abuse (Perel-Levin, 2008). There are certain traditions that continue to guide the field of elder abuse (Anetzberger, 2012). These traditions often impede the development and testing of new theories (Anetzberger, 2012). For example, there is difficulty in removing past inaccurate justifications and a lack of support of abuse in research (Anetzberger, 2012). There is also limited research and utilization of professionally developed surveys and official data (Anetzberger, 2012).

Such narrow scope of the research on elder abuse and neglect creates an absence of an overarching framework that explains the range of mistreatment indicators (Bonnie, 2003).

Citizens, clinicians, emergency department staff and physicians, social workers, law enforcement officials, and victims report occurrences of elder mistreatment to agencies, such as Adult Protective Services, that investigate and categorize the cases based on legal definitions of the issue (Bonnie, 2003). Researchers in the academic setting attempt to examine and classify individuals

at risk for elder abuse in the general population (Bonnie, 2003). Academic research has been absent of theoretical frameworks that are fully established in directing the data collection process and influence more effective assessments of the 1) variance of elder abuse and neglect prevalence by significant social characteristics and 2) the fundamental classifications that lead to an increased risk of elder abuse and neglect (Bonnie, 2003). The absence of a fully developed theoretical model in elder abuse research has resulted in underdeveloped, partial, and misrepresentative data (Bonnie, 2003).

2.2 CLASSIFICATION OF THEORIES

Elder abuse theories typically have ignored the views and perceptions of older adults, and have lacked emphasis in the areas of ageism, marginalization of older adults, sexism in society and the impact these factors have on the issue of abuse (Perel-Levin, 2008). Godkin, Wolf, & Pillemer describe five theoretical explanations of elder abuse and neglect: “Psychological status of the abuser, intergenerational transmission of aggressive conduct, dependence and exchange relationships, external stress, and social isolation.”

The theories of elder abuse are divided into four major categories: physical and cognitive impairment of the patient, caregiver behavior and stress, social exchange, and trans-generational violence and psychopathology in abuser (Campbell-Reay, 2001). The occurrence of elder abuse often borrows theory from other fields; such as domestic violence, child abuse, and criminal justice; instead of creating its own theories that address its unique dynamics

(Anetzberger, 2012). Several theoretical models draw from the fields of sociology, psychology, and feminism to define elder abuse at a broad level (Perel-Levin, 2008).

The theories are presented in two primary categories: 1) contributing factors and reasons why elder abuse occurs, and 2) detection of elder abuse and barriers to detection. The Cycle of Abuse perspective, the Risk Model, and the Social-Ecological model examines the dynamics that influence elder abuse, while Iceberg Theory assesses the issue of abuse detection and barriers to revealing unidentified cases of abuse.

2.3 THEORETICAL MODELS OF THE STUDY

2.3.1 CYCLE OF ABUSE

The cycle of violence in elderly abuse is similar to that found in child abuse and domestic violence (Kleinschmidt, 1997). Straus and Gelles (1986) found that violence can have an intergenerational cycle in which some cases of "elder abuse occur in homes where lifelong patterns of abuse and violent relationships." (Griffin & Williams, 1992) This phenomenon is characterized as "the intergenerational transmission of violent behavior" (Godkin et al., 1989, Griffin & Williams, 1992). In a 1976 study, Steinmetz found that adults who were abused as children were more likely to abuse their parents when compared to adults from nonviolent households (Griffin & Williams, 1992). This finding suggests that unresolved conflicts might result in retaliation and the victimization

of the older persons when they become vulnerable (Steinetz, 1978; Griffin & Williams, 1992).

Family and domestic violence is typically considered a form of chronic disease (Lachs & Pillemer, 1995). This is useful for clinicians because they are able to diagnose and recognize occasional periods of inactivity of abuse, instead of isolated events (Lachs & Pillemer, 1995).

This theoretical model will assist Emergency Department staff in understanding the patterns of abuse among elders with substantiated visits. This can help to differentiate abused elders from those that do not experience abuse. The cycle of abuse also informs the present study in identifying demographic and social factors to better identify factors to better identify factors associated with the problem and expand the level of knowledge in the field. Emergency department staff can utilize this theoretical model through the observation of the behaviors, attitudes, and interactions of suspected perpetrators and abuse victims when receiving trauma care.

2.3.2 RISK MODEL OF ELDER MISTREATMENT

The Risk Model provides a theoretical framework for researchers to categorize the results of elder abuse and neglect studies, based on George L. Engels's 1977 biomedical model (Bonnie, 2003). The model encompasses social and psychological factors to explain physiological states, such as the aging process or certain diseases or injuries that impact older adults. The model places focus on the individual and assumptions that are centered clinically but shifts the

focus to multiple interactions based on physiological, psychological and social factors (Bonnie, 2003). A limitation of the model developed by Engel is the absence of environmental and societal factors (Bonnie, 2003).

Elder abuse and neglect specifies that the victims of the abuse (focal subject) and a caregiver or person in a relationship of trust (responsible actor) are the primary focus of the analytical approach (Bonnie, 2003). The relationship between the characteristics of potential abuse victims (changes in health status, level of dependency, and competency level), interacts with the responsible actor characteristics (burden of care, stress level, level of financial dependence) are critical in the study of the model. Risk factors such as settings of abuse or neglect, relationship with perpetrator, and demographic and biological characteristics all create varied levels of risk for the individuals "embedded" within these factors (Bonnie, 2003).

The model is a transactional process between the older adult, the caregiver or perpetrator, and the emergency department physicians, staff, and other clinicians and providers of care and services concerned with the welfare of the individuals in this population based on the physiological, psychological, and social factors (Bonnie, 2003). The process occurs due to the individual's aging progression and life course (Bonnie, 2003). The individual's level of "embeddedness" is based on the contextual factors of setting and demographic features that enhance or reduce their level of risk for maltreatment (Bonnie, 2003).

The principal concept of the model is that abuse and neglect are dependent upon time with interactions of the independent variables occurring in a feedback loop over a period of time (Bonnie, 2003). The model illustrates that current research is limited in the presence of studies with time as a critical factor to understand the factors underlying the issue of abuse and neglect among the elderly (Bonnie, 2003).

This model can aid in the identification of risk factors for abuse victims. The diagnosis codes and injuries seen among substantiated abuse cases can be recognized through the study of the interactions that influence abuse. These interactions include the older adult victim with the physicians and emergency department staff, caregivers, and law enforcement.

2.3.3 SOCIAL-ECOLOGICAL MODEL

The research also utilizes features from the Social-Ecological Model, which was developed to explain the interrelations between personal and societal dynamics. In the 1970s, Bronhenbrenner's ecological model describes the human development and the complexity of the family, community and societal dynamics (Brunk, Henggler, & Whelan, 1987; Fraser, 1997). The model has been typically used to describe and understand child development and the influence of family on this development (Ammerman & Hersen, 1990). The model can be applied to the aging population in examining these complex interactions. Belsky's Ecological Perspective of Maltreatment expanded on the Bronfernbrenner model in that it integrated the multiple factors that cause maltreatment in children

(Ammerman & Hersen, 1990). The Belsky perspective further supports that there is no single cause to maltreatment; therefore this perspective can also be used to explain elder abuse and neglect within the study.

These dynamics gain credibility as a manner of accommodating multiple factors and theories explaining elder abuse (Anetzberger, 2012). Sociologists in urban research studies initially presented the model after World War I (Anetzberger, 2012). The Centers for Disease Control depict the Social-Ecological Model in the prevention of violence (Krug et al., 2002). The individual level recognizes the demographic factors (age, race, education, income) and personal history (physical and substance abuse history) that may influence a person's chances of being a victim or perpetrator of abuse (Krug et al., 2002).

The relationship or interpersonal level of the model analyzes the type of relationship the victim and the perpetrator may have which may increase the likelihood of abuse or the type of relationship the patient has with those providing services (Krug et al, 2002). The community and organizational strata examines the workplaces, neighborhoods, schools, and health care organizational settings, which distinguish the characteristics of these settings to determine the connection in being victims or perpetrators of abuse (Krug et al., 2002). The societal (policy) level explores the factors (social norms, cultural norms, health policies, and social legislations) that may cause an environment in which abuse or neglect is fostered or hindered (Krug et al., 2002). The model allows for prevention strategies to be implemented at each level to reduce the prevalence of abuse and neglect.

The risk factors of elder abuse and neglect can be stratified based on the levels in the Social-Ecological Model (Dahlberg & Krug, 2002). Individual risk factors include: cognitive impairment or mental capacity of the victim, current substance abuse, and elevated levels of aggression of the perpetrator (CDC, 2010). Relationship dynamics that increase the likelihood of abuse or neglect are: lack of social support, financial dependence upon the elder, and a history of disruptive conduct (CDC, 2010). Community level risk factors are limited access to formal care providing services (CDC, 2010). Societal factors increasing the chance of abuse and neglect among elders include: the marginalization of the aging population, and a lack of consistency among health care providers in detecting and reporting abuse (CDC, 2010).

The Social-Ecological model illustrates the interaction between the different levels of individual, the community and the environment as contributing to broader issue of elder abuse detection and prevention. The cause of elder abuse and neglect cases can be due to a multitude of factors at the individual level (cognitive impairment), interpersonal relationships (stressed caregiver), community (emergency department and local law enforcement), and environment (elder abuse mandatory reporting laws).

This model is applied to explain the interaction between the individual and the environment in order to improve these connections and the environments that support the individual. In the prevention of abuse and neglect, the individual should avoid an environment in which they may be more susceptible to the abuse, and engage in environments that are beneficial to the individual. This

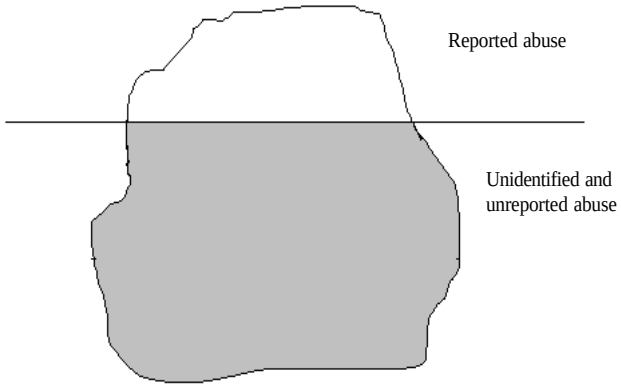
model encourages the development of relationships that improve the health and well being of the individual. In this research, the dynamic interactions of law enforcement, emergency department staff, caregivers, and community members to recognize and report abuse to promote a more beneficial environment for the older adult is critical. The data provides information at each level of the Social-Ecological model: individual (age, race, diagnosis), relationship (icd-9, e-codes, and v-codes to determine if injury is caused by another individual), community (Adult protective service flagged cases, emergency department visits), and societal (South Carolina reporting laws, APS reporting requirements, and law enforcement procedures).

This theoretical model can assist in the determination of risk factors that influence elder abuse and identify the diagnosis codes and injuries that are commonly associated with this type of abuse. This model also allows researchers to determine the social and environmental factors that increase the likelihood of abuse among the elderly population. This will contribute to improving the ability to detect and prevent cases of abuse.

2.3.4 ICEBERG THEORY OF ELDER ABUSE DETECTION

The theoretical category of elder abuse detection is a key fragment of the study of the issue. This research drew on the concepts and ideas of the “iceberg” theory of elder abuse detection due to the connection to the broader framework of describing the phenomenon of elder abuse, its perceptions, and the limitations surrounding the issue. The iceberg theory is known as the “omission theory” that

was originated from the writing style of Ernest Hemingway, an American author (Tatara, 1998). The “Iceberg” Theory states that the official reporting sources such as Adult Protective Services, receive reports regarding the most visible types of abuse and neglect, however there is a larger number of unidentified, unreported elder abuse and neglect cases (Tatara, 1998). Tatara found that incidents that are less obvious are not reported to an official agency.



Tatara, 1998

Figure 2.1: Iceberg Theory Illustration

In the “National Study of the Incidence and Severity of Child Abuse and Neglect”(NIS-1), the iceberg is made up of five stages or layers of identification of abuse (Mixson, 2000). The levels include: (1) Abuse or neglect that is recognized to child protective services, (2) maltreatment that is identified to other investigative organizations, (3) abuse known to professionals in the school system, hospitals, and other major agencies, (4) abuse and neglect that is recognized by other organizations and individuals, and (5) abuse and neglect that is not recognized by any individual. The study determined that stages 4 and

5 presented challenges in recognizing abuse and neglect; therefore levels 1,2, and 3 should be the primary areas of emphasis (Mixson, 2000).

The National Elder Abuse Incidence Study (NEAIS) found that the iceberg theory could be interpreted in an alternative manner than in the NIS-1 study. The NEAIS concentrated on the incidence and deficiency of abuse and neglect detection and reporting. This study divided the iceberg for elder abuse into three primary categories: reported abuse and neglect, abuse and neglect that is not reported, and abuse and neglect that is not recognized and not reported (Tatara, 1998). The method used to identify abuse at the layers beneath the "tip of the iceberg" was is that of a lookout model for organizations that come across potential elderly victims (Mixson, 2000). These organizations include: financial institutions, law enforcement, health care organizations and hospitals, and long-term care providers (Mixson, 2000).

Linking theory to research, the "Iceberg" theory of elder abuse concludes that a large portion of abuse cases are not reported or identified due to little contact with mandatory reporting and community agencies. The reported cases signify the "tip of the iceberg" or the partial measurement of the larger, unidentified problem of elder abuse, and it illustrates the status of the knowledge of elder abuse or mistreatment (Tatara, 1998; Rovi 2009). This unknown segment of the population may also present to reporting agencies (APS, Emergency Department, Law Enforcement) differently (physically, behaviorally, or emotionally) from those cases that are more easily identified and reported.

The iceberg theory relates to the research by determining if hospital shopping is present as a method to avoid detection of abuse by emergency department staff and law enforcement. This model also relates to the research in the determination of the prevalence of elder abuse and neglect in South Carolina, and seeks to uncover those cases and learn a more accurate total number of abuse cases among this population.

2.4 GROWING EVIDENCE AND INCIDENCE OF ELDER ABUSE & NEGLECT

The effects of elder abuse have only been studied in recent years with the global growth of the elderly population. Elder abuse is a concern that is exhibited in both affluent and impoverished countries and at all levels and classes in society (Perel-Levin, 2008). Elder abuse, similar other types of interpersonal violence, remained unmentionable and concealed throughout history (Perel-Levin, 2008).

In the 1960s, child abuse and domestic violence began to be openly discussed, but it was not until the 1970s that elder abuse surfaced as a type of domestic violence (Perel-Levin, 2008). Elder abuse was initially described as “granny battering” in British scientific journals in 1975 (Perel-Levin, 2008). However, researchers in the United States initially developed scientific and legal action on the subject (Perel-Levin, 2008).

In 1980, the United States Senate Special Committee on Elder Abuse reported that each year as nearly 500,000 to 2,500,000 cases of geriatric abuse, neglect or mistreatment occur nationally (Jones et al. 1988). In 1990, the first

prevalence study on elder abuse was produced and published in the United Kingdom (Perel-Levin, 2008). The frequency of elder abuse is based primarily on a limited number of population-based studies performed in various developed countries (Perel-Levin, 2008).

These surveys suggest abuse occurs among 4%-6% of the US population (Pillemer & Finkelor, 1988). Globally, the number of individuals 60 years of age and older is expected to triple, from approximately 672 million in 2005 to nearly 2 billion by 2050 (Perel-Levin, 2008). Due to the rate at which the aging of the global population is growing, there is expected to be increased incidence and prevalence of elder abuse (Perel-Levin, 2008). The substantiated or confirmed reports of abuse show that the relationship of the perpetrator to the victim is most frequently an adult child (33%), a spouse or intimate partner (11%), and other family member (22%) (Friedman, 2011).

2.5 RISK FACTORS OF ELDER ABUSE AND NEGLECT

Several studies have identified the risk factors associated with elder maltreatment. Risk factors for elder abuse can be identified at the individual, relationship, community, socio-cultural, and institutional levels (WHO, 2011). Individuals with cognitive impairment are at a greater risk for elder abuse, than the older adult population in general, due to the inability to advocate and protect oneself (Ziminski et al., 2011). Poor health and increased frailty in older adults also plays a role in maltreatment (Lachs & Pillemer, 1995). In addition to being a

risk factor for abuse, functional impairment, diminishes the ability of an older individual to defend oneself (Perel-Levin, 2008).

Characteristics of abusers which emerge as risk factors include: a reluctance of the caregiver to leave the patient alone with the health care provider; poor knowledge of the patient's medical conditions (Ahmad & Lachs, 2002); relatives or caregivers with cognitive impairment, mental illness, or substance abuse problems; family members or caregivers that are excessively dependent on the elder for financial assistance, or other necessities; a history of violence or antisocial behavior (Lachs & Pillemer, 1995). Increased awareness of psychosocial factors that affect older patients will aid health care professionals in recognizing the context that may strongly predict abuse and assist in better diagnosing of the issue (Perel-Levin, 2008). Other factors associated with elder maltreatment and neglect comprises: age, gender, and level of stress (Pedrick-Cornell, 1982).

Table 2.1: Risk Factors of Elder Abuse and Neglect

Elder Risk Factors	Perpetrator Risk Factors
Decreased Physical Mobility	Caregiver Stress
Decreased Physical Health	Substance Abuse
Frailty of the Victim	History of Violence
Functional Disability	Poor Impulse Control
Cognitive Impairment	Lack of Experience as a Caregiver
Declining Mental Status	Mental Illness
High Level of Care Needs	Cognitive Impairment
Social Isolation	Dependence on the Victim
Dependence on the Abuser	

2.6 SETTINGS OF ELDER ABUSE AND NEGLECT

Elder abuse occurs in a variety of settings due to the diversity of locations in which care is provided to this population. These settings are classified as institutional, non-institutional, and community based. Institutional settings include nursing homes; assisted living facilities, hospice and palliative care providers, and long-term care hospitals (Senate Special Committee, 2008). Non-institutional providers of care include home health agencies and personal care providers (Senate Special Committee, 2008). Approximately, 16% of adults aged 65 years of age and older in the United States receive some form of long term care services (Senate Special Committee, 2008). Of those services approximately 3.8 million live in the community, while an estimated 1.7 million living in institutional settings (Senate Special Committee, 2008).

Prevalence of abuse in institutional settings is difficult to measure; however, it is believed that these rates exceed that in community settings (Pillemer & Moore, 1990). An estimated 10% of US nursing staff in institutional settings disclosed that they had committed an act of physical abuse and 40% admitted to psychological abuse against residents (Pillemer & Moore, 1990).

2.7 EFFECTS OF ELDER ABUSE AND NEGLECT

Of the approximately 18% of the United States population aged 60 years and older, nearly 4% to 6%, an estimated 1.8 million, are mistreated or abused (Rovi, 2003). As individuals begin to age, the decline of physical mobility and mental capacity increase the susceptibility of abuse (Friedman, 2011). Elder

abuse has negative effects for older individuals such as reduced value of life and quality, emotional distress, loss of assets and property and a loss of security (Perel-Levin, 2008). Elder abuse is also correlated with increases in the presence of disease and an increased risk of mortality (Perel-Levin, 2008).

2.8 ELDER ABUSE AND NEGLECT LEGISLATION

The complexity of the issue of elder abuse has been slow to gain the attention of policy makers (Perel-Levin, 2008). In 1965, the Older Americans Act established programs that provide assistance and opportunities to older adults in the U.S. (Jogerst & Daly, 2003). In 1976, the act established Nursing Home Ombudsman programs to respond to abuse and neglect within long-term care facilities (Lachs & Pillemer, 1995). In 1987, an amendment to the Older Americans Act mandated local aging agencies to further evaluate the need for additional services designed for elder abuse prevention (Daly & Jogerst, 2003), and the Omnibus Reconciliation Act of 1987 mandated that physicians report suspected cases of abuse to the state regulator (Lachs & Pillemer, 1995).

In the 1980s, the Administration on Aging financed the National Center of Elder Abuse (NCEA), which provides abuse data, technical support and education to the public and professionals (NCEA, 2002; Daly & Jogerst 2003). The center also contributes to elder abuse program and policy creation (NCEA, 2002; Daly & Jogerst 2003). Forty-four states and the District of Columbia have laws that require individuals assuming care for the elderly to report alleged abuse and neglect, and thirty-eight of those states have rulings that reprimand

mandatory reporters for not properly re-counting suspected abuse cases (Daly, Jogerst, Brinig, & Dawson, 2003). The requirement of mandatory reporters to account abuse allegations is a critical factor in Adult Protective Services (APS) legislative efforts (Daly et al., 2003).

The Joint Commission has established benchmarks, which require hospitals to have written standards for recognizing all victims of violence, including elder abuse and neglect (Ziminski, Phillips, & Woods, 2011; Lynch, Duval, & Mosby, 2011).

The Elder Justice Act (EJA) is a portion of the Affordable Care Act which sanctions the federal reaction to elder abuse and neglect issues through the development and use of training, services and demonstration programs, as well as reporting and evaluation efforts of community and long-term care elder justice programs (Dong & Simon, 2011).

Table 2.2 Elder Abuse and Neglect Legislation Timeline

Year	Legislative Action
1965	The Older Americans Act was passed and it established programs that offer services and opportunities for older Americans.
1974	Congress mandated Protective Services Program for Adults under Title XX of the Social Security Act
1976	The Older Americans Act established Nursing Home Ombudsman programs to respond to the abuse and neglect of long-term care facilities
1987	The Older Americas Act was amended to require local Area Agencies on Aging to assess the need for elder abuse prevention services. Omnibus Reconciliation Act was created.
1988	National Center of Elder Abuse (NCEA) established
1992	NCEA became a permanent fixture in the Administration on Aging

2.9 PREVENTION STRATEGIES

An extensive range of data and research is utilized in the public health approach to violence prevention (WHO, 2011). This information is used to determine the scale, causes and risks of violence and develop and implement effective interventions (WHO, 2011). This approach focuses on:

- The compilation and gathering of information regarding the prevalence of elder abuse
- Advocate for raising the awareness and screenings for elder abuse in geriatric and social services, and other health care settings
- The promotion of multi-agency partnerships and collaborations to prevent elder abuse by increasing awareness

Researchers have found that programs and policies must be developed based on sound knowledge and five steps (Pedrick-Cornell, 1982). These steps include: humanizing the definition of elder abuse, research more publicly visible cases of elder abuse, determine the extent of the issue based on representative samples, the utilization of comparison groups, and theory testing and building (Pedrick-Cornell, 1982). Prevention of elder abuse can also be categorized into three classifications: primary prevention, secondary prevention and tertiary prevention.

2.9.1 PRIMARY PREVENTION

The public health approach to elder abuse emphasizes primary prevention (Hall, 2007). Preventing the level of exposure that increase the likelihood of abuse, and increasing exposure to factors that promote healthy aging and provide protection against the risk of abuse and neglect are key approaches to primary prevention (Hall, 2007). Primary prevention efforts occur at the population level.

2.9.2 SECONDARY PREVENTION

Secondary prevention places focus on offering programs and services to individuals at risk for becoming victims or perpetrators of maltreatment (Howard, 2001). These efforts target individuals and families with the known risk factors for abuse and neglect among the elderly. The main approach used to detect elder abuse is the identification of high-risk factors (Perel-Levin, 2008).

2.9.3 TERTIARY PREVENTION

Tertiary prevention of elder abuse and neglect occurs once the maltreatment has occurred. Tertiary services are a reactive response to treating an incident of abuse or neglect occurred (Howard, 2001). Tertiary services are offered in an attempt to prevent the event from occurring again and to provide support to the victim, their family, and the perpetrator (Howard, 2001).

2.10 DETECTION & SCREENING TOOLS OF ELDER ABUSE AND NEGLECT

Abuse and neglect result in a failure of an older adult to thrive properly. Several tools have been developed to detect elder abuse; however, few of these instruments have been accepted for application in clinical settings (Perel-Levin, 2008). Existing tools for the detection of elder abuse are: the Hwalek-Senstock Elder Abuse Screening Test (HSEAST), the Brief Abuse Screen for the Elderly (BASE), the Caregiver Abuse Screen (CASE), the Indicators Abuse Screen (IOA), the Elder Assessment Instrument (EAI), and the Elder Abuse Suspicion Index (EASI) (Perel-Levin, 2008).

- HWALEK-SENGSTOCK ELDER ABUSE SCREENING TEST (HSEAST): This screening tool addresses the different forms of elder abuse and is a self-report dimension (Perel-Levin, 2008). The instrument includes 15 items in the three areas of violation of individual rights or direct abuse, features of susceptibility, and potentially abusive circumstances (Perel-Levin, 2008). This tool is not ideal in cases in which the individual is cognitively impaired or unable to comprehend the instrument.
- BRIEF ABUSE SCREEN FOR THE ELDERLY (BASE): This screening tool is consists of five questions in which the respondent is the physician resulting from an assessment of the patient (Perel-Levin, 2008).
- CAREGIVER ABUSE SCREEN (CASE): The CASE screening instrument is comprised of eight questions to caregivers. This tool is used to identify abuse in cognitively compromised older adults, and does not direct questions to the patient (Perel-Levin, 2008). This tool may assist in the

task of interviewing an assumed abuser, but it adopts the caregiver model and disregards the component of patient autonomy (Perel-Levin, 2008).

- INDICATORS OF ABUSE SCREEN (IOA): The IOA is a checklist of 48 points of problem markers for abuse that is done by the health care professionals in the setting of a complete home assessment, in which the patient is spoken to (Perel-Levin, 2008). This tool builds on the evaluation proficiencies of the professional (Perel-Levin, 2008).
- ELDER ASSESSMENT INSTRUMENT (EAI): This tool incorporates a broad evaluation of the older person as well as additional assessments on specific physical, social, medical, independence and lifestyle concerns (Perel-Levin, 2008). This tool has been used as an assessment by emergency department elder abuse teams and nursing staff (Perel-Levin, 2008).
- ELDER ABUSE SUSPICION INDEX (EASI): The Elder Abuse Suspicion Instrument was created to establish a logical aim of suspicion for the justification of referrals to the appropriate community service for a more comprehensive appraisal (Perel-Levin, 2008). This instrument is composed five questions directed to the older individuals, with one observation that is to be completed by the physician. This tool is intended for further expansion to social workers and nurses for additional evaluation of the individual (Perel-Levin, 2008).

The main approach to detection of elder abuse and neglect has been through the identification of high-risk factors. Other techniques that have proved to be effective in child abuse detection are reminder flowcharts for assessing intentional injuries (Benger et al., 2002). The development of assessment standards assists in the determination of the effectiveness of the detection and screening tools. These strategies have been shown to increase the level of understanding and documentation of intentional injuries by emergency department staff as well as the referral rates for additional evaluations (Benger et al., 2002). A major barrier in identifying and reporting abuse in emergency departments is the frantic and hectic environment of trauma care. The developed tools and assessments are regarded as inaccurate, unreliable, or not sensitive or specific enough to be adopted (Perel-Levin, 2008).

2.11 PHYSICAL FINDINGS AND INJURY PRESENTATION

Injury presentation is defined as “the pattern of injury sustained by individuals, which includes the type of injury and the body location (Ziminski et al., 2011). Research suggests that specific injury presentations are more common in individuals that are abused when compared to those who are not (Ziminski et al., 2011). Injury analysis to determine the etiology and the conditions necessary to produce a certain injury is a fundamental factor in coding and use of DRGs (Ziminski et al., 2011). The examination of injury pattern differences based on cognitive impairment and fall status can potentially

challenge provider assumptions about the sources of injury in older adults and aid in the identification of potential victims of elder abuse (Ziminski et al., 2011).

There are ranges of physical and behavioral indicators that are used to identify abuse and neglect by providers. Severe cases of physical abuse rarely pose a diagnostic challenge for health professionals (Lachs & Pillemer, 1995), however, minor injuries and unexplained falls may present a more difficult task to detect. The diagnosis of abuse should be considered when an older adult presents with multiple injuries in various stages of evolution or when unexplained injuries are present or implausible explanation are provided (Lachs & Pillemer, 1995). Severe neglect presents in older patients as a dependent individual with adequate resources and a designated provider of care, has a severe inattention to nutrition, hygiene, or established medical needs, such as prescriptions that are unfilled and missed appointments (Lachs & Pillemer, 1995).

The most common physical injuries are unexplained bruises, lacerations, abrasions, head injury, and unexplained fractures (Lachs & Pillemer, 1995). The most common display of neglect is dehydration or malnutrition (Lachs & Pillemer, 1995). The burden of high rates of chronic disease among the elderly creates greater difficulty in correctly identifying physical presentations of abuse and neglect among the population (Lachs & Pillemer, 1995). These conditions may mimic mistreatment or lower the index of suspicion among clinicians (Lachs & Pillemer, 1995). Other factors providers should consider are: missed appointments, frequent visits to the ED, physician's office, or hospital, delay in

seeking medical care, “doctor/hospital shopping”, and unexplained injuries (Ahmad & Lachs, 2002).

Table 2.3: Indicators of Elder Abuse and Neglect

	Abuse Indicators
Physical Indicators	• Bruises, welts, discoloration, swelling • Cuts, lacerations, puncture wounds • Pale appearance • Sunken eyes, hollow cheeks • Detached retina • Soiled clothing or bed • Absence of hair/bleeding scalp • Dehydration/malnourishment without illness related cause • Evidence of inadequate care (untended bed sores, poor skin hygiene) • Evidence of inadequate or inappropriate administration of medication • Burns: may be caused by cigarettes, flames, acid, or friction from ropes • Signs of confinement (tied to furniture, bathroom, locked in a room) • Lack of bandages on injuries or stitches when indicated, or evidence of unset bones • Inadequately explained injuries (fractures, sores, lacerations, welts, burns) • Unexplained sexually transmitted diseases

2.12 THE USE OF ICD-9, E-CODES, AND V-CODES TO DETERMINE ABUSE AND NEGLECT

Diagnosis codes allow providers of health care and services to explain treatment to obtain reimbursement on medical costs (Rovi, 2003). In 1979, the diagnostic codes for adult maltreatment became accessible, and were expanded in 1996 to include more detailed forms of abuse (Rovi, 2003; Public Health Service and Health Care Financing Administration [PHS & HCFA], 1996; U.S.

National Center for Health Statistics [US NCHS]). Diagnostic codes also allow researchers to obtain statistical data on the incidence and prevalence rates of disease and health problems. The ICD-9 Codes that identify specific kinds of adult abuse include

Table 2.4: Abuse ICD-9 Diagnosis Codes

Abuse and Neglect ICD-9 Diagnosis Codes	
Diagnosis Category	**ICD-9 Code**
Adult maltreatment, unspecified	995.80
Adult physical abuse	995.81
Adult emotional/psychological abuse	995.82
Adult sexual abuse	995.83
Other adult abuse and neglect	995.85

Several studies have determined that there is a lack of use of these diagnostic codes for adult abuse (Rudman & Davey, 2000). E-Codes are the external cause of injury codes, which are used to describe the characteristics of abuse and the perpetrator (Rudman & Davey, 2000). The E-codes are associated with the specific ICD code categories (Rudman & Davey, 2000). E-codes allow researchers to gather data regarding the cause and effect of fatal and nonfatal injuries (WHO, 1997). These codes include:

Table 2.5: External Cause of Injury Codes on Abuse

External Cause of Injury Codes on Abuse	
E-Code Category	**E-codes**
Identifies Perpetrator	E-967.1, E-967.3, E-967.9
Identifies Nature of Abuse	E-960 through E-968
Identifies Whether Injury was purposefully inflicted	E-980 through E-989

ICD-10 codes include a separate set of codes for perpetrators, Y codes, which will replace the E-codes that are currently in use (Rudman & Davey, 2000). E-codes are not reimbursed by Medicare, which may present challenges in the utilization of these codes by providers.

V-codes provide information regarding a patient's history or circumstances that may impact their overall health status, but it is not considered a current illness or injury (Rudman & Davey, 2000). Relevant V-codes include:

Table 2.6: Relevant V-Codes to Determine Health Status

Relevant V-Codes to Determine Health Status	
V-Code Category	**V-Code**
Physical abuse and rape	V15.41
Emotional Abuse	V15.42
Other Abuse	V61.11
Counseling for Victim	V61.11
Counseling for the Perpetrator	V61.12

Clinicians and health care providers inconsistently and subjectively use ICD-9 codes on the basis of time, organizational pressures, knowledge, sources of information, and the awareness of billable diagnostic codes (Ziminski et al., 2011). The most apparent barrier regarding the use of diagnostic codes to identify elder abuse is that the abuse codes are not age-specific, and the grouping of domestic violence and other abuse cases occur with these codes (Wood, 2006).

2.13 EMERGENCY DEPARTMENT USE AND ELDER ABUSE

The National Centers for Health Statistics estimate that approximately 23% of emergency department (ED) visits among older adults were due to injury, and these injuries account for 5.9% of all injury-related ED visits (Scwartz et al., 2005) (Ziminski et al., 2011). In 2010, approximately 4.7 million persons aged 60 years and older were seen in EDs for nonfatal injuries, which include an estimated 63,000 violence related injuries (Ziminski et al., 2005; CDC, 2012). Emergency department visits among the elderly are considered resource intensive, which results in double the cost of younger individuals visiting the ED (Schwartz, 2005). Emergency Department data indicate admission information, demographic and provider information for individual visits. This data also provides information on the manner in which these visits were coded and the type of health provider that made the diagnosis. ED reports provide data on patient charges.

Approximately 27% of hospital emergency departments have elder abuse protocols as compared to 75% with protocols for child abuse (Ahmad & Lachs, 2002). These figures reflect the limited attention elder abuse receives in many communities (Ahmad & Lachs, 2002). The Joint Commission has established standards that recognize victims of violence access health care for a number of reasons, and that health care professionals must be adequately trained and knowledgeable to identify abuse (Ziminski et al., 2011). Based on experience, several clinical presentations have been suggested to alert a clinician to the possibility of elderly abuse or neglect (Lachs & Pillemer, 1995). Research has

found that it is important for ED staff to be able to differentiate between legitimate accidents and maltreatment, especially among older adults with cognitive impairments (Ziminski et al., 2011). For example, some older adults with cognitive impairment who seek emergency medical care may present with injuries that raise suspicions of abuse (Ziminski et al., 2011). A portion of these injuries is incorrectly attributed to common accidents such as falls (Ziminski et al., 2011). Understanding that common injuries associated with falls may be the result of assaults or violent attacks are vital tools health professionals caring for this population currently lacks (Ziminski et al., 2011).

Emergency health care professionals are less comfortable caring for elderly than nonelderly patients (Sanders, 1992). Outside of the ED, a clinician is more likely to face the subtle patterns of ongoing mistreatment (Lachs & Pillemer, 1995), while within the ED more intense and severe forms of injury are present among this population. Besides the immediate family, ED staff and trauma personnel may be the only individuals to observe the physical forms of abuse, which are caused by neglect or assault (Rovi, 2003). Emergency department staff must interact with law enforcement staff and adult protective services to fully be able to address the issues of elder abuse prevention and detection.

In a 1995 review of ED records, Lachs and Pillemer found that neglect was the more frequent form of mistreatment than injury. There is little research available that provides guidance for clinicians to differentiate between accidental injury and suspicious injuries that may be due to abuse or neglectful behavior (Ziminski et al., 2011). Many older persons present physical signs and symptoms

of multiple factors due to aging such as skin frailty, falls, or confusion and cognitive impairment, therefore, it is important for ED staff to provide optimal care, ensure safety of the patient, to avoid falsely accusing caregivers or not identifying potential perpetrators (Perel-Levin, 2008).

2.14 LAW ENFORCEMENT AND ELDER ABUSE DETECTION

Law enforcement plays a significant role in elder abuse prevention and detection efforts. Police officers, sheriffs, prosecutors, and the court system hold perpetrators responsible for abusive actions by arresting, prosecuting, and incarcerating these individuals (NCEA, 2012). Law enforcement workers protect the victims of abuse by the enforcement of restraining orders, providing checks on the welfare of the vulnerable individual and coordinating or providing referrals for assistance programs for victims and perpetrators of elder abuse (NCEA, 2012). Law enforcement and legal entities defined and categorize elder abuse differently than the medical community and social services.

The South Carolina Law Enforcement Division (SLED) is a state agency that receives and coordinates reports and referrals of alleged abuse, neglect and exploitation of vulnerable adults 18 years of age and older. The unit that manages abuse reports is the Vulnerable Adult Investigation Unit (VAIU). Currently, SLED codes incidents of elder abuse under a broader category of adult abuse, and there is not a current method of grouping these cases on the basis of age to determine the prevalence of abuse reports and cases for adults age 60 years of age and older. Other barriers experienced by the agency when

attempting to detect abuse among this population are issues with accurate reporting from physicians of suspicions of abuse, emergency departments not fully utilizing agency nurse examiners trained in the detection of physical abuse presentations, cognitive impairment of potential victims and an inability to account abuse, proving malice intent by the perpetrator, and a lack of jurisdiction in specific locations or for certain cases (M. Brown, personal communication, April 1, 2013). SLED is primarily handles referrals from the South Carolina Department of Mental Health and the South Carolina Department of Disabilities and Special Needs. (M. Brown, personal communication, April 1, 2013)

It is essential to understand the role of law enforcement in the detection of elder abuse. The interaction with adult protective services and emergency department staff can allow for better identification of abuse cases that may otherwise be unknown due to less obvious presentations or lack of proper coordination between the entities. This triangulation of services will allow for improved detection practices and increased exposure of the iceberg of elder abuse. This suggests that a multidisciplinary approach to prevention and detection of elder abuse and neglect is needed to address the growing issue.

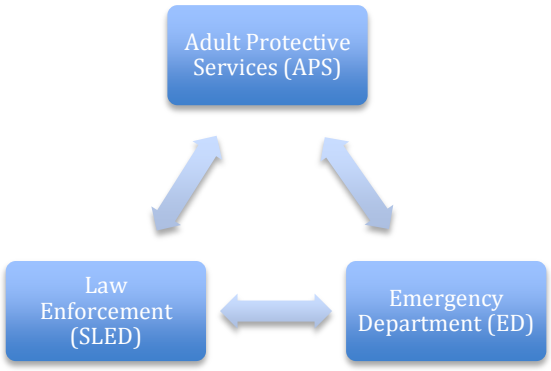


Figure 2.2: Triangulation of Adult Protective Services, Emergency Department, and Law Enforcement

2.15 LIMITATIONS AND BARRIERS OF ELDER ABUSE RESEARCH

The National Research Council in the United States appointed a panel to examine the risk and occurrence of elder abuse (Perel-Levin, 2008). The board determined that current elder abuse research: lacks theoretical frameworks that are comprehensive and rigorous, is unclear and inconsistent in defining and measuring abuse among this population, and flaws in population-based data (Perel-Levin, 2008). This area is also challenged with limited funding and researchers, ambiguities in ethical and methodological strategies, and conflicting research in violence involving geriatrics and other forms of family violence (Perel-Levin, 2008). The primary barrier to epidemiologic research is the varying definitions of elder abuse (Lachs & Pillemer, 1995) and the detection instruments are based in theory and do not accurately reflect the trend of elder mistreatment (Fulmer et al., 2004).

Developing a consistent definition of elder abuse is challenging due to the systems in place within the states and legislative changes have not resulted in promoting homogeneity (Anetzberger, 2012). The lack of standardization in

defining, recognizing and reporting abuse continues to be an issue in the medical community.

The level of data on the magnitude of elder maltreatment in the general population is limited. The research proposed seeks to develop case a case definition for elder abuse, hospital shopping and the injury presentation of elder abuse for providers to use to better recognize suspicious cases. The research will provide a population-based estimation for suspicious injuries. This will allow providers to understand elder abuse cases that are unidentified and undetected on the iceberg model. Previous research has not identified hospital shopping as a barrier to the detection of elder abuse and determined the significance of this practice in diversion. This will introduce a new concept in the study of elder abuse and neglect prevention and detection. The research will also seek to develop a definition for hospital shopping that is fully applicable to the elder abuse and neglect phenomenon. Previous research looks at hospital shopping as a barrier in prescription drug and child abuse diversion behavior. This study will also link diagnostic indicia to substantiated reports of abuse and ascertain whether “hospital shopping” occurs among the elders being abused.

Elder abuse and neglect research is in its infancy and must continue to be developed in the same manner as child abuse and domestic violence research over the past few decades. The development of elder abuse research requires the utilization of theoretical models and standardized case definitions of abuse. The professionals and researchers that care for and study this population must overcome the challenges that are unique to older adults.

There are several barriers to elder abuse and neglect research that contribute to the lack of development in the field. The first barrier is that those victims of abuse and neglect and their family members or caregivers may not be dependable respondents due to an inability to communicate properly or willingness to respond to questions or provide reliable and truthful information (Bonnie, 2003). Disadvantages of the use of proxies in the reporting of abuse is an inability to recognize abuse, if the proxy is involved in the abuse response bias is present, and the ability to typically only recognize ongoing abuse and not isolated events (Conner et al., 2010). The lack of reliability in abuse reporting and response to questions is also seen in law enforcement for physicians, perpetrators and victims. Emergency physicians cited the interview with the patient one of the most important factors that led to the suspicion of elder abuse, yet they rarely reported asking the patient questions regarding mistreatment while receiving emergency care (Jones et al, 1997).

The second barrier is that approaches successfully used in child abuse, domestic violence and other forms of family violence research have not been applied to elder abuse research (Bonnie, 2003). The physiological, psychological, and social characteristics of the elderly are different from those of children; therefore adjustments to the research must be made in order to properly assess the behavior in older adults.

A third barrier to enhancing elder abuse research is that perpetrator information and accessibility is difficult to achieve, therefore gaps in the identification and risk factors for abuse are increased (Bonnie, 2003). There is

limited information regarding the frequency, severity and the intention of the perpetrators (Anthony, 2009). The omission of certain types of victims, such as facility based abuse victims and cognitively impaired persons, creates bias in study samples, which impede elder abuse research (Bonnie, 2003).

A fourth barrier is emergency specialists perceive spousal and child abuse as more prevalent than elder abuse (Jones et al, 1997). Therefore, more attention is given to those forms of abuse in emergency departments. Further research on abuse among the elderly and the manifestations of this abuse need to occur in the field to aid in detection and prevention efforts are needed to address the emerging issue.

The lack of theoretical and conceptual development in the research presents added challenges in enhancing the field of mistreatment among the elderly. There is limited funding and appeal for researchers to investigate elder abuse issues, which creates difficulty in evolving the body of research in this area (Bonnie, 2003). There is very little research on elder abuse and issues such as hospital shopping and the perpetrators of elder abuse. Researchers must develop theories and conceptual models based on the elderly and mistreatment among this population by increased retrospective analysis to advance the field.

A lack of coordination of services and information among the various agencies treating and providing services to victims, as well as variations in the manner in which states and local agencies manage intervention are obstacles in improving elder abuse and neglect studies (Bonnie, 2003). Better coordination between agencies is critical elder abuse detection and prevention.

2.16 FOCUS AND SIGNIFICANCE OF THE RESEARCH

The literature review indicates a rise in the number of vulnerable older adults in the United States and an increase in the number of elder abuse cases in the nation. The field of elder abuse detection and prevention has been hampered by a lack of a clinical case definition. This research seeks to obtain more accurate estimations for the prevalence of elder abuse, develop a strategy of elder abuse detection in the clinical setting. A number of agencies, organizations, and researchers will be able to investigate the victimization of elders through the identification of older adults that have been treated at a variety of hospitals over a geographic area for a specified period for possible abuse-related etiologies. This research will also allow these individuals to develop strategies to decrease the incidence of elder abuse and neglect. This research can allow for better utilization of prevention programs and better establishment of interventions for this particular population.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 RESEARCH DATA APPROVAL

Per the University of South Carolina, Arnold School of Public Health, “All research involving human subjects must receive approval prior to any contact with subjects or data collection.” For the purposes of this research, all patient identifiers were stripped and random patient identifiers were assigned. This enables one to follow the locations of an individual’s hospital visits and diagnosis codes while preserving the patient’s anonymity. This study was approved by the University of South Carolina Institutional Review Board.

3.2 RESEARCH DESIGN AND DATA SOURCES

The research method will consist of a secondary analysis of data collected from the state of South Carolina, Office of Research and Statistics and the South Carolina Department of Social Services Adult Protective Services division. The South Carolina Budget and Control Board Office of Research and Statistics obtains, processes, disseminates, and translates health, demographic, biological, census data in South Carolina (ORS, 2013). The data consists of billing summary information for all emergency department visits in the state of South Carolina. The South Carolina Department of Social Services Division of Adult Protective

Services (APS) secures and coordinates existing services, arranges living accommodations, financial benefits, medical services, and legal services (DSS, 2011). The division collects information on the reported incidents (substantiated and unsubstantiated cases, type of abuse, referrals to law enforcement, etc). After review by their internal review committees, the South Carolina Office of Research and Statistics (ORS) and the South Carolina Department of Social Services have agreed to supply the requested data.

3.3 SETTING AND PARTICIPANTS

The study is a population-based examination of visits to emergency departments in South Carolina by adults 60 years of age and older for a period beginning in January 2011 and ending December 31, 2011. The data set includes 299, 022 records with the associated hospital identification and the emergency department visits with the target population and Adult Protective Services (APS) flagged 198 observations. Each record comprises 185 variables. All records are linked at the Office of Research and Statistics, South Carolina Budget and Control Board. Only de-identified patient information is used in the study.

The research design is a cross-sectional analysis. The sample is restricted to adult persons age 60 years and above. Records are created at the individual level, rather than the encounter level, to allow for accurate estimation of the prevalence of injury and abuse. The study will test the sensitivity and specificity of diagnosis codes to determine if injuries are due to accidents or linked to

abuse. The research identifies the diagnoses associated with abuse by getting a sample of adults who have been referred for Adult Protective Services for physical reasons of abuse or neglect, and link that sample to the South Carolina ED discharge records for a two year period, at the person-level.

3.4 DATA COLLECTION PLAN

The emergency department, Adult Protective Services flag, and hospital identifier datasets for the year 2011 were merged into one dataset to study and analyze. The use of unique identifiers for the patient allowed the researcher to follow any individual with a substantiated or unsubstantiated report of abuse or neglect across the study period, this identifier is referred to as the Patient ID. Each record contains an encrypted report identifier, data regarding the investigation, and demographics about the patient.

3.5 DEPENDENT VARIABLES: ABUSE AND HOSPITAL SHOPPING

APS data are used to indicate the individual's status as regards documented abuse in three categories: no abuse reported, abuse reported but not substantiated, and abuse reported and substantiated (or unsubstantiated). Substantiated abuse cases are those incidents that have been supported by evidence or proof, which has undergone verification of information by officials (DSS, 2011). Unsubstantiated abuse cases are reported incidents in which there is an insufficient amount of evidence available to support the claim of abuse (APS, 2010). The categories of abuse that are determined by Adult Protective

Services are: physical abuse, exploitation, psychological abuse, neglect by another person, and self-neglect (DSS, 2011). APS status will be defined at the person level by the variable, which has the following values: “Attention” which signifies unsubstantiated abuse, and “Confirmed” which represents substantiated cases of abuse.

Hospital shopping is the behavior victims and/or perpetrators of abuse use as a diversion mechanism. The behavior involves the individual seeking treatment from multiple emergency departments to disguise abuse from health care providers. This concept is explored in the study to determine if it is present among the study population, and the impact hospital shopping has on impeding detection of unknown cases. Hospital shopping will be defined at the individual level by variable, which will contain a count of the number of ED visits made by the individual during the observation year.

3.6 INDEPENDENT VARIABLE: POSSIBLE ABUSE & NEGLECT ICD-9 CODES

The following are possible injury and diagnosis codes that may signify abuse or neglect among the elderly population. These ICD-9 codes were used in the analysis to determine the frequency and prevalence among emergency department visits among adults 60 years of age and older in 2011. The possible diagnosis codes will be confirmed through data analysis of examining the most common injuries among persons with documented abuse, as well as injuries among individuals suspected of hospital shopping.

3.7 INDEPENDENT VARIABLES: RISK FACTORS FOR ABUSE AND HOSPITAL SHOPPING

The control variables are scaled and nominal in nature. The control variables include: Admission source, admission diagnosis, admission type, patient age at admission, patient sex, patient race, patient's county of residence, patient zip code, hospital charges, primary payor, discharge status. Table 7 outlines the independent variables used in this analysis. The paragraphs below expand on the independent variables available and the reasons for which they are included in the study.

Researchers have discovered patient sex is a characteristic of potential abuse victims that is significant in determining the individual's risk for being abused (Schiamberg, 2008). Various studies conflict in their findings of women having a higher likelihood of being abused when compared to male abuse victims (Kosberg, 1988), or male seniors are at higher risk than female elders (Pillemer, 1988).

Patient age at admission and age group are significant characteristics to study in the research because reported cases of elder abuse have indicated that the older an individual is, the higher their risk of being a victim of in abusive circumstances (Schiamberg, 2008; Kosberg, 1988). Health and physical decline and cognitive impairment are associated with advancing age, therefore increasing the level of vulnerability of the individual (Schiamberg, 2008). The oldest-old age group is the population most at risk for abuse (Steinzmetz, 1990; Zarit, 1994; Schiamberg, 2008).

Patient race is a characteristic that is studied to determine if elder abuse and neglect are racially centered, based on previous studies regarding cross-cultural geriatric behavior (Fineman, 1991).

Admission Diagnosis, primary diagnosis, and secondary diagnosis are essential characteristics to study due to an individual's level of health being an important factor in their likelihood of mistreatment. The level and severity of physical and cognitive impairment create increased care demands for caregivers and reduce an individual's ability to defend themselves or seek help due to increased vulnerability (Schiamberg, 2008; Lachs, 1995). Patient diagnostic information is also important because the research will identify diagnoses (e.g. type of injury) associated with abuse during the observation year.

Primary payor is an important factor to note in the research because it is important to monitor the financial components and costs of suspected abuse cases. Rovi found that Medicare was the primary payor for inpatient hospital stays of adult abuse victims. However, research has also found that there is no significant difference of primary payor for abuse victims that are 65 years of age and older (Rovi, 2009).

Geographic location of the hospital indicates differences in the manner in which abuse events are coded and diagnosed based on rural and urban differences (Rovi, 2009). This is significant in the study to determine whether geographic location of the hospital contributes to the lack of detection of abuse cases.

Table 3.1: Independent Variables Used in the Research

Variable Name	Variable Description	Variable Code
Admission Year	Admission Year	ADMYEAR
Admission Diagnosis	Admission Diagnosis	ADM_DIAG
Patient Age Group	Age 60-64 Age 65-69 Age 70-74 Age 75-79 Age 80-84 Age 85+	AGRP
County	County of Residence	COUNTY
Diagnosis Related Group	Diagnosis Related Group	DRG4
Hospital ID	Hospital Identification	HID
Individual Tracking Number	ORS Assigned Tracking Number	ID
ED Diagnostic Categories	Major ED Diagnostic Categories	MAJOR
ED Diagnostic Categories	Minor ED Diagnostic Categories	MINOR
Major Diagnostic Category	Major Diagnostic Category	MDC
Primary Diagnosis	001-999; V01-V829; Refer to ICD-9-CM Coding Manual	PDIAG
Cause of Injury Code	E800-E869 and E877-E999; Refer to ICD-9-CM Coding Manual, Supplementary Classification of Injury and Poisoning	PECODE
Primary Payor	Self Pay Medicare Medicaid Commercial Insurance Other	PAYOR1
Race	White African America Other	RACE
Gender of Patient	Male Female	SEX
Urban Rural Status	Urban Rural	URSTAT

3.8 DATA ANALYSIS PLAN

The Statistical Analysis System (SAS) software for Windows, release 9.3 will be used to analyze the data.

RESEARCH QUESTION 1: What are the risk factors that differentiate elders with a visit of substantiated abuse with other elders by performing a logistic regression to determine if age, sex, co-morbidities, or geographic (rural/urban) factors influence abuse?

The dependent variable for Research Question 1 is abuse, measured by the variable APSFLAG, which has three categories, attention, confirmed, and undetermined. Potential risk factors associated with documented abuse will be examined in bivariate and multivariate analyses. Bivariate analyses will measure the effect of each risk factor using Chi Square tests. As some risk factors may be associated with another (e.g., age and sex, since women generally live longer), multivariate logistic regression analyses all risk factors simultaneously.

RESEARCH QUESTION 2: What are the diagnosis codes and injuries commonly associated with elder abuse as documented by South Carolina Adult Protective Services, and how are these injuries coded in the study?

An assessment of the ICD-9 codes that indicate abuse among the elder population through injury presentation to develop clear case definitions is important for emergency department personnel. The dependent variable for Research Question 2 is abuse, measured by the variable ABUSEX, which has

two categories, yes/no. Abusex will be examined by analyzing primary diagnosis and the cause of injury code for ED visits among persons 60 years of age and older. Abusex is indicated by the developed list of possible abuse diagnosis codes, Appendix 1.

The calculation of sensitivity and specificity of diagnosis codes is completed to determine if injuries are due to abuse. Sensitivity and specificity analysis will be performed to determine if diagnosis codes of injuries and accidents are linked to abuse. Sensitivity in this study refers to the effectiveness in the detection of individuals that experience abuse, or the "tip of the iceberg." The 'tip of the iceberg" are the Adult Protective Services classification of substantiated cases of abuse. Specificity in the study signifies the effectiveness in identifying individuals that are not abused or neglected.

Table 3.2: Sensitivity and Specificity of Elder Abuse Detection

	Abuse	No Abuse	Total Number
Positive (Number)	Substantiated Abuse Cases (TP)	Unsubstantiated Abuse Cases (FP)	T-Test Positive
Negative (Number)	Abuse Cases not Identified (FN)	ED Cases w/ No suspicions of Abuse (TN)	T-Test Negative
	T-Disease	Non-Disease	Total

RESEARCH QUESTION 3: Is hospital shopping present among elder abuse victims to avoid detection of elder abuse?

This research question will be examined by the calculation of the number of different Emergency Department patients visited during study period, the establishment of criteria that may indicate “hospital shopping, and perform a logistic regression to determine if “hospital shopping” is present among the population.

The dependent variable for Research Question 3 is hospital shopping as indicated by the variable for visiting n hospitals, and has three levels (Hospital Shopping-1, Hospital Shopping-2, and Hospital Shopping-3). The research will seek to identify the predominant level of hospital shopping that occurred among persons 60 years of age and older in 2011.

RESEARCH QUESTION 4: What is the prevalence of elder abuse and neglect in the state of South Carolina as measured by injury presentations in Emergency Department (ED)?

The research will calculate of the percentage of Emergency Department visits that have suspected injuries. The calculation of the percentage of individuals with suspected injuries and the number of injury episodes per person: percentage % with 1 visit, % with 2 visits, etc. will occur determine the magnitude of the issue.

The dependent variable for Research Question 4 is the potential for elder abuse, based on an individual presenting with one or more of the diagnoses that is prevalent among abused persons.

3.9 PROCEDURES AND DATA COLLECTION METHOD

The emergency department, Adult Protective Services flag, and hospital identifier datasets for the year 2011 were merged into one dataset to study and analyze. The use of unique identifiers for the patient allowed the researcher to follow any individual with a substantiated or unsubstantiated report of abuse or neglect across the study period, this identifier is referred to as the Patient ID. Each record contains an encrypted report identifier, data regarding the investigation, and demographics about the patient.

3.10 STATISTICAL TESTS

We explored bivariate relationships between demographic variables and diagnosis codes and abuse. We used logistic models to identify the significant risk factors for substantiated abuse and multinomial logistic models for possible abuse and diagnosis codes.

CHAPTER 4

RESULTS

The study is a cross-sectional analysis of adults 60 years of age and older in the state of South Carolina who visited an emergency department between January 1, 2011 and December 31, 2011. The emergency department data was linked with Adult Protective Services (APS) data that contains confirmed abuse visits (substantiated) and visits brought to the attention of the division but did not have evidence to confirm abuse or neglect (unsubstantiated). The research identified risk factors, diagnosis codes, and analyzed the issues of hospital shopping and overall prevalence of elder abuse and neglect in the state. The study examines individual/patient level data, data at the visit level, and general population data. The findings are categorized based on the four research questions presented in the study.

4.1 RESEARCH QUESTION 1: What are the risk factors (age, sex, co-morbidities, or geographic (rural/urban)) that differentiate elders with a visit of substantiated abuse from other elder?

Research question 1 addresses the individuals 60 years of age and older who presented to Emergency Departments in South Carolina with a substantiated or unsubstantiated case of abuse flagged by Adult Protective Services. The question examines the characteristics of patients in the ED, the EDs and counties where cases of abuse were reported to APS, and an adjusted analysis to determine whether an individual would have a confirmed (substantiated) abuse diagnosis.

Table 4.1 describes the characteristics of patients who had APS flagged substantiated and unsubstantiated findings and who made visits to the ED during the period studied. Based on the analysis, females, and persons 80 years of age and older, who were white, with Medicare/Medicaid as a primary payor, living in urban settings had higher frequencies of substantiated and unsubstantiated abuse cases. Age was significantly associated with substantiated abuse versus unsubstantiated abuse. However, the other factors such as sex, race, payor, and geographic location were not significant in differentiating between substantiated and unsubstantiated cases.

Table 4.1: Demographic Characteristics of Substantiated and Unsubstantiated Abuse, Cases Among Persons Age 60 and older, South Carolina 2011

Characteristics	Substantiated Abuse		Unsubstantiated Abuse		Total APS Flags	P-value
	n	**%**	**n**	**%**		
Sex						**0.8755**
Male	35	59.3%	24	40.7%	59	
Female	80	57.6%	59	42.4%	139	
Age Group						**0.0214**
60-69	29	44.6%	36	55.4%	65	
70-79	44	67.7%	21	32.3%	65	
80+	42	61.8%	26	38.2%	68	
Race[1]						**0.2178**
White	64	60.9%	41	39.0%	105	
African-American	49	57.6%	36	42.4%	85	
Asian	0	0.00%	1	100%	1	
American Indian	0	0.00%	2	100%	2	
Other	1	25.0%	3	75.0%	4	
Hispanic	1	25.0%	0	0.00%	1	
Primary Payor [2]						**0.5032**
Self-Pay	0	0.00%	2	100%	2	
Medicare/Medicaid	105	58.0%	76	42.0%	181	
Commercial Insurance	8	61.5%	5	38.5%	13	
Indigent/Charitable Organization	1	100%	0	0.00%	1	
HMO	1	100%	0	0.00%	1	
Geographic Location						**0.6237**
Rural	28	54.9%	23	45.1%	51	
Urban	87	59.2%	60	40.8%	147	

[1] (a)Even calculated as white-nonwhite and, these two comparisons are not significant.
[2] Even calculated as Medicare/Medicaid-other, these two comparisons are not significant

Table 4.2 shows the frequencies of substantiated and unsubstantiated abuse cases by hospital visited. Lexington Medical Center had the highest number of ED visits among persons 60 years of age and older. Spartanburg Regional Medical Center had the highest number of patients (16) with substantiated (11) and unsubstantiated (5) abuse cases for Adult Protective Services. Hospitals with a larger total number of ED visits by persons 60 years of age and older, also had a higher number of APS flagged substantiated and unsubstantiated abuse cases.

Table 4.2: Frequency of Substantiated and Unsubstantiated Abuse Cases by Hospital Visited, South Carolina, 2011

Hospital Name	Total ED Visits	Total APS Flags	Documented abuse			
			Subs.		Unsub.	
			n	%	n	%
Abbeville County	1,999	0	0	0.00	0	0.00
Allendale County	1,623	1	1	0.51	0	0.00
East Cooper Regional Medical Center	2,653	0	0	0.00	0	0.00
AnMed Health	10,316	7	6	3.03	1	0.51
Bamberg County Memorial	1,647	0	0	0.00	0	0.00
Palmetto Baptist (Columbia) Medical Center	4,858	9	5	2.53	4	2.02
Palmetto Baptist (Easley) Medical Center	4,795	3	1	0.51	2	1.01
Barnwell County	1,728	2	2	1.01	0	0.00
Beaufort Memorial	5,180	1	1	0.51	0	0.00
Carolina Pines	3,544	8	5	2.53	3	1.52
Cannon Memorial	2,426	3	1	0.51	2	1.01
Carolinas Hospital System	4,442	1	0	0.00	1	0.51

Chester Regional Medical Center	1,958	0	0	0.00	0	0.00
Chesterfield General	1,668	1	1	0.51	0	0.00
Coastal Carolina Hospital	3,507	2	1	0.51	1	0.51
Clarendon Memorial	2,665	8	7	3.54	1	0.51
Colleton Medical Center	3,686	3	1	0.51	2	1.01
Conway Hospital, Inc.	5,884	0	0	0.00	0	0.00
Edgefield County	1,213	2	2	1.01	0	0.00
Springs Memorial	3,664	5	1	0.51	4	2.02
Fairfield Memorial	1,456	1	0	0.00	1	0.51
Georgetown County Memorial	4,113	0	0	0.00	0	0.00
Greer Memorial Hospital	4,352	1	1	0.51	0	0.00
Greenville Memorial Medical Center	12,200	4	1	0.51	3	1.52
Aiken Regional Medical Center	7,630	6	3	1.52	3	1.52
Grand Strand Regional Medical Center	11,606	0	0	0.00	0	0.00
Hampton Regional Medical Center	2,135	3	1	0.51	2	1.01
Hillcrest Memorial Hospital	3,748	1	1	0.51	0	0.00
Hilton Head Medical Center and Clins	5,523	0	0	0.00	0	0.00
Kershaw Health	3,602	2	2	1.01	0	0.00
Laurens County	3,736	0	0	0.00	0	0.00
Lexington Medical Center	13,823	12	8	4.04	4	2.02
Loris Community	5,972	0	0	0.00	0	0.00
Lake City Community Hospital	1,961	4	2	1.01	2	1.01
McLeod Regional	6,590	7	3	1.52	4	2.02
Marion County Medical Center	3,372	4	0	0.00	4	2.02
Marlboro Park	1,740	2	2	1.01	0	0.00
Mary Black Memorial	4,035	2	1	0.51	1	0.51
M.U.S.C. Medical Center	8,087	7	5	2.53	2	1.01
Mount Pleasant Hospital	2,391	0	0	0.00	0	0.00
Newberry County Memorial	2,700	0	0	0.00	0	0.00
Oconee Memorial	6,131	1	0	0.00	1	0.51
Piedmont Medical Center	7,142	7	2	1.01	5	2.53
Providence	4,892	0	0	0.00	0	0.00
Providence Northeast	3,940	0	0	0.00	0	0.00

Regional Medical Center, Orangeburg/Calhoun County	7,453	0	0	0.00	0	0.00
Palmetto Richland Memorial	6,948	7	4	2.02	3	1.52
Roper Hospital, Inc.	9,996	7	6	3.03	1	0.51
McLeod Medical Center-Dillon	2,596	2	2	1.01	0	0.00
St. Francis-Greenville	10,879	2	2	1.01	0	0.00
Bon Secours St. Francis Xavier	7,616	5	3	1.52	2	1.01
Self Memorial	6,018	2	0	0.00	2	1.01
Spartanburg Regional Medical Center	12,270	16	11	5.56	5	2.53
Trident Medical Center	10,499	8	6	3.03	2	1.01
Tuomey Regional Medical Center	6,849	15	7	3.54	8	4.04
Upstate Carolina Medical Center	3,653	11	6	3.03	5	2.53
Village Hospital	2,058	0	0	0.00	0	0.00
Waccamaw Community Hospital	5,888	1	1	0.51	0	0.00
Wallace Thomson	2,235	1	0	0.00	1	0.51
Williamsburg Regional Hospital	1,725	1	0	0.00	1	0.51
McLeod Medical Center-Darlington	2	0	0	0.00	0	0.00

Table 4.3 shows the frequencies of APS flagged substantiated and unsubstantiated abuse cases of ED patients by county of residence in South Carolina. For this study all 46 counties originating outside of South Carolina, Georgia, or North Carolina were merged into a “Mixed” category. The county with the highest number of reported abuse cases was Spartanburg County with 16 total APS flagged persons. Counties such as Richland, Charleston, and Lexington, with higher numbers of ED visit also had higher numbers of persons with an APS flagged visit.

Table 4.3: Frequency of Substantiated and Unsubstantiated Abuse Cases by County, South Carolina, 2011

County	Total APS Flagged Persons				Documented abuse			
					Sub.			Unsub.
	n	Rate per 10,000	n	Rate per 10,000	% of all sub. cases	n	Rate per 10,000	% of all unsub. cases
Abbeville	0	0.00	0	0.00	0.00	0	0.00	0.00
Aiken	6	1.50	3	0.75	1.52	3	0.75	1.52
Allendale	1	4.27	1	4.27	0.51	0	0.00	0.00
Anderson	8	1.77	6	1.33	3.03	2	0.44	1.01
Bamberg	0	0.00	0	0.00	0.00	0	0.00	0.00
Barnwell	3	5.88	2	3.92	1.01	1	1.96	0.51
Beaufort	1	0.19	1	0.19	0.51	0	0.00	0.00
Berkeley	11	3.46	9	2.83	4.55	2	0.63	1.01
Calhoun	0	0.00	0	0.00	0.00	0	0.00	0.00
Charleston	12	1.61	9	1.20	4.55	3	0.40	1.52
Cherokee	13	10.76	7	5.79	3.54	6	4.96	3.03
Chester	3	3.91	0	0.00	0.00	3	3.91	1.52
Chesterfield	2	1.89	2	1.89	1.01	0	0.00	0.00
Clarendon	8	8.54	7	7.48	3.54	1	1.07	0.51
Colleton	3	3.11	1	1.04	0.51	2	2.08	1.01
Darlington	8	5.01	4	2.51	2.02	4	2.51	2.02
Dillon	3	4.48	3	4.48	1.52	0	0.00	0.00
Dorchester	2	0.84	1	0.42	0.51	1	0.42	0.51
Edgefield	1	1.71	1	1.71	0.51	0	0.00	0.00
Fairfield	2	3.34	0	0.00	0.00	2	3.34	1.01
Florence	9	3.06	3	1.02	1.52	6	2.04	3.03
Georgetown	1	0.52	1	0.52	0.51	0	0.00	0.00
Greenville	5	0.53	3	0.32	1.52	2	0.21	1.01
Greenwood	2	1.20	1	0.60	0.51	1	0.60	0.51
Hampton	3	6.55	1	2.18	0.51	2	4.36	1.01
Horry	0	0.00	0	0.00	0.00	0	0.00	0.00
Jasper	2	4.09	1	2.05	0.51	1	2.05	0.51
Kershaw	1	0.69	1	0.69	0.51	0	0.00	0.00
Lancaster	4	2.03	1	0.51	0.51	3	1.52	1.52
Laurens	0	0.00	0	0.00	0.00	0	0.00	0.00
Lee	3	7.03	3	7.03	1.52	0	0.00	0.00

Lexington	10	1.86	7	1.30	3.54	3	0.56	1.52
McCormick	1	2.58	0	0.00	0.00	1	2.58	0.51
Marion	4	4.99	0	0.00	0.00	4	4.99	2.02
Marlboro	2	3.24	2	3.24	1.01	0	0.00	0.00
Newberry	0	0.00	0	0.00	0.00	0	0.00	0.00
Oconee	0	0.00	0	0.00	0.00	0	0.00	0.00
Orangeburg	0	0.00	0	0.00	0.00	0	0.00	0.00
Pickens	7	2.77	2	0.79	1.01	5	1.98	2.53
Richland	15	2.33	10	1.55	5.05	5	0.78	2.53
Saluda	1	1.99	1	1.99	0.51	0	0.00	0.00
Spartanburg	16	2.59	12	1.94	6.06	4	0.65	2.02
Sumter	15	6.84	7	3.19	3.54	8	3.65	4.04
Union	2	2.67	0	0.00	0.00	2	2.67	1.01
Williamsburg	1	1.19	0	0.00	0.00	1	1.19	0.51
York	6	1.39	2	0.46	1.01	4	0.92	2.02
Outside SC, NC, and GA	1	1.90	0	1.11	0.00	1	0.79	0.51

In addition to Tables 4.1, 4.2, and 4.3, it is helpful to profile the predicted probability of elderly patients with certain characteristics to the presenting to an Emergency Department with a case of substantiated versus unsubstantiated APS visits. For this purpose, elderly patients with a flag from Adult Protective Services were selected from the data. Table 4.4 illustrates a logistic regression for confirmed abuse status of Adult Protective Services cases. Based on the analysis, being between the ages of 70-74 and over the age of 85 are significantly associated with substantiated abuse status versus unsubstantiated abuse.

Table 4.4: Logistic Regression on Factors Associated with Confirmed Abuse Status of Patient (198 Persons), South Carolina, 2011

	Coefficient	SE	OR	LCL	UCL	P value
Observations						
198						
Sex						
Male	---	---				
Female	0.5043	0.3372	1.181	0.610	2.287	0.6214
Age						
60–64	---	---				
65-69	0.0236	0.5116	0.730	0.268	1.991	0.5391
70-74	-1.4913	0.5446	0.225	0.077	0.654	0.0062
75-79	-0.3259	0.5374	0.515	0.180	1.476	0.2168
80-84	-0.2500	0.5203	0.556	0.200	1.540	0.2586
85+	-0.9493	0.5422	0.276	0.095	0.799	0.0176
Race						
White	---	---				
Other	0.6400	0.3141	1.353	0.731	2.504	0.3360
Primary Payor						
Medicare	---	---				
Other	0.3802	0.5478	1.043	0.357	3.053	0.9382
Geographic Location						
Rural	---	---				
Urban	0.0676	0.3498	0.763	0.385	1.515	0.4382

4.2 RESEARCH QUESTION 2: What are the diagnosis codes and injuries commonly associated with elder abuse as documented by SC Adult Protective Services, and how do these relate to the potential abuse codes defined by the study?

Research Question 2 is restricted to documented cases; however it is an analysis of visits. Table 4.5 shows visits made by Adult Protective Services flagged persons, by the major diagnostic category involved. Symptoms or ill-defined conditions had a total of 149 substantiated and 52 unsubstantiated Adult Protective Services flagged cases. The injury and poisoning major diagnosis category had a total of 120 substantiated and unsubstantiated flagged cases of abuse among those 60 years of age and older.

Table 4.5: Emergency Department Diagnostic Levels (Major) of Visits Made By APS Flagged Cases, South Carolina, 2011

	All Flagged Cases		Substantiated Cases		Unsubstantiated Cases	
Major	**N**	**%**	**N**	**%**	**N**	**%**
Infectious and Parasitic Disease	2	0.26%	1	0.21%	1	0.35%
Neoplasms	1	0.13%	1	0.21%	0	0.00%
Endocrine, Nutritional, Metabolic, and Immunity Disorders	40	5.17%	24	4.95%	16	5.56%
Diseases of the Blood and Blood-Forming Organs	1	0.13%	0	0.00%	1	0.35%
Mental Disorders	54	6.99%	32	6.60%	22	7.64%
Diseases of the Nervous System and Sense Organs	50	6.47%	25	5.15%	25	8.68%
Diseases of the Circulatory System	33	4.27%	20	4.12%	13	4.51%

Diseases of the Respiratory System	49	6.34%	22	4.54%	27	9.38%
Diseases of the Digestive System	39	5.05%	27	5.57%	12	4.17%
Diseases of the Genito-urinary System	41	5.30%	23	4.74%	18	6.25%
Diseases of the Skin and Subcutaneous Tissue	19	2.46%	12	2.47%	7	2.43%
Diseases of the Musculoskeletal System and Connective Tissue	89	11.51%	56	11.55%	33	11.46%
Congenital Anomalies	1	0.13%	0	0.00%	1	0.35%
Symptoms, Signs, and Ill-Defined Conditions	201	26.00%	149	30.72%	52	18.06%
Injury and Poisoning	120	15.52%	73	15.05%	47	16.32%
Supplemental Classification of Factors Influencing Health Status & Contact with Health Services	33	4.27%	20	4.12%	13	4.51%
Total	773		485		288	

Table 4.6 shows ED visits made by patients with APS substantiated and unsubstantiated abuse, sorted by potential abuse diagnosis codes and E-codes. The majority of possible abuse status visits were made by females, between the ages of 65-69, the majority of the individuals are who were white, had a payor of Medicare, and lived in an urban area.

The table reveals the effectiveness of the possible abuse diagnosis codes. Within each demographic category, the study tested to determine if substantiated visits were more likely than those visits with only suspected abuse to have a possible abuse diagnosis code. Within the population, which consists of persons

for whom a minimum suspicion of abuse is present, there was no difference in diagnoses based on abuse status.

Table 4.6: ED visits, by confirmed abuse status of Patient and presence of potential abuse diagnosis (198 Persons)

	Presence of a Possible Abuse Diagnosis, Substantiated Abuse Cases Only					Presence of Possible Abuse Diagnosis, Unsubstantiated Abuse Cases Only					P-value
	Yes		No		Total	Yes		No		Total	
	n	%	n	%		n	%	n	%		
	119	77.1 %	366		485	70		219		288	
Sex											0.1482
Male	35	20.3 %	137	79.7 %	172	12	17.4 %	57	82.6 %	69	
Female	84	26.8 %	229	73.2 %	313	58	26.5 %	161	73.5 %	219	
Age Group											0.9878
60-64	49	25.4 %	144	74.6 %	193	34	57.6 %	25	42.4 %	59	
65-69	40	24.0 %	127	76.0 %	167	24	28.9 %	59	71.1 %	83	
70+	30	24.0 %	95	76.0 %	125	12	8.22 %	134	91.8 %	146	
Race[3]											0.7792
White	77	27.3 %	205	72.7 %	282	44	25.0 %	132	75.0 %	176	
Other	42	20.7 %	161	79.3 %	203	26	23.2 %	86	76.8 %	112	
Primary Payor											0.3421
Medicare/Medicaid	103	24.8 %	313	75.2 %	416	66	25.2 %	196	74.8 %	262	
Other	16	23.2 %	53	76.8 %	69	4	15.4 %	22	84.6 %	26	
Geographic Location											0.6532
Rural	21	20.4 %	82	79.6 %	103	19	22.1 %	67	77.9 %	86	
Urban	98	25.7 %	284	74.3 %	382	51	25.2 %	151	74.8 %	202	

[3] Race missing 1 observation, Value=218

For this study all 46 counties in the state of South Carolina were analyzed. Elderly patients from counties originating outside of South Carolina, Georgia, or North Carolina were merged into a "Mixed" category. Table 4.7 lists the frequencies and percentages of APS flagged substantiated and unsubstantiated Emergency department visits. Based on the analysis, Charleston County had the highest number (32) of possible abuse diagnoses for substantiated (19) and unsubstantiated cases (13).

Table 4.7: Total ED visits and visits by APS Cases age 60 and older, by Patient County of Residence, South Carolina, 2011

	Presence of a Possible Abuse Diagnosis, Sub. Abuse Cases Only					Presence of Possible Abuse Diagnosis, Unsub. Abuse Cases Only				
County	**Yes**	**%**	**No**	**%**	**Total**	**Yes**	**%**	**No**	**%**	**Total**
Abbeville	0	0.00	0	0.00	0	0	0.00	0	0.00	0
Aiken	5	1.03	4	0.82	9	1	0.35	7	2.43	8
Allendale	0	0.00	5	1.03	5	0	0.00	0	0.00	0
Anderson	4	0.82	29	5.98	33	1	0.35	3	1.04	4
Bamberg	1	0.21	2	0.41	3	0	0.00	0	0.00	0
Barnwell	1	0.21	2	0.41	3	1	0.35	12	4.17	13
Beaufort	1	0.21	8	1.65	9	0	0.00	0	0.00	0
Berkeley	13	2.68	36	7.42	49	0	0.00	5	1.74	5
Calhoun	0	0.00	0	0.00	0	0	0.00	0	0.00	0
Charleston	19	16.9	50	10.3	69	13	4.51	16	5.56	29
Cherokee	5	1.03	11	2.27	16	6	2.08	17	5.90	23
Chester	0	0.00	0	0.00	0	2	0.69	10	3.47	12
Chesterfield	8	1.65	31	6.39	39	0	0.00	2	0.69	2
Clarendon	2	0.41	10	2.06	12	2	0.69	2	0.69	4
Colleton	0	0.00	1	0.21	1	0	0.00	3	1.04	3
Darlington	2	0.41	11	2.27	13	2	0.69	18	6.25	20
Dillon	0	0.00	3	0.62	3	0	0.00	1	0.35	1
Dorchester	0	0.00	1	0.21	1	1	0.35	1	0.35	2
Edgefield	0	0.00	5	1.03	5	0	0.00	0	0.00	0

Fairfield	0	0.00	0	0.00	0	1	0.35	2	0.69	3
Florence	2	0.41	5	1.03	7	6	2.08	8	2.78	14
Georgetown	1	0.21	0	0.00	1	0	0.00	0	0.00	0
Greenville	3	0.62	6	1.24	9	1	0.35	12	4.17	13
Greenwood	2	0.41	0	0.00	2	0	0.00	1	0.35	1
Hampton	1	0.21	1	0.21	2	2	0.69	2	0.69	4
Horry	0	0.00	0	0.00	0	0	0.00	0	0.00	0
Jasper	0	0.00	2	0.41	2	0	0.00	2	0.69	2
Kershaw	0	0.00	1	0.21	1	0	0.00	0	0.00	0
Lancaster	3	0.62	1	0.21	4	8	2.78	12	4.17	20
Laurens	0	0.00	2	0.41	2	0	0.00	0	0.00	0
Lee	1	0.21	8	1.65	9	0	0.00	0	0.00	0
Lexington	15	3.09	28	5.77	43	1	0.35	9	3.13	10
McCormick	0	0.00	0	0.00	0	0	0.00	1	0.35	1
Marion	0	0.00	0	0.00	0	1	0.35	4	1.39	5
Marlboro	1	0.21	3	0.62	4	0	0.00	0	0.00	0
Newberry	0	0.00	0	0.00	0	0	0.00	0	0.00	0
Oconee	0	0.00	0	0.00	0	0	0.00	0	0.00	0
Orangeburg	0	0.00	0	0.00	0	0	0.00	0	0.00	0
Pickens	0	0.00	5	1.03	5	1	0.35	15	5.21	16
Richland	5	1.03	19	3.92	24	4	1.39	20	6.94	24
Saluda	0	0.00	2	0.41	2	0	0.00	0	0.00	0
Spartanburg	14	2.89	34	7.01	48	4	1.39	10	3.47	14
Sumter	2	0.41	8	1.65	10	9	3.13	11	3.82	20
Union	0	0.00	0	0.00	0	0	0.00	2	0.69	2
Williamsburg	0	0.00	0	0.00	0	0	0.00	1	0.35	1
York	8	1.65	32	6.60	40	2	0.69	8	2.78	10
Other	0	0.00	0	0.00	0	1	0.35	1	0.35	2
Total	119		366		485	70		218		288

In the adjusted analysis, the odds of a confirmed abuse case among elderly adults, the list of diagnoses associated with potential abuse identified for the study were not significantly associated with the likelihood that a visit would have been made by a person who was a substantiated abuse victim (p=0.7802). The p-value (0.0302) associated with sex in the model implies that females are significantly different and more likely to present to an ED with a confirmed case of abuse. The characteristics of being 80 years of age and older, having a primary payor of Medicare, and living in an urban area are significant in predicting abuse among persons in the study. All other characteristics for confirmed abuse are not significantly different in predicting abuse of persons 60 years of age and older.

Table 4.8 Logistic Regression for ED visits by Substantiated versus Unsubstantiated Abuse Cases, (198 Persons, 773 Visits)

	Coefficient	SE	OR	LCL	UCL	P-val
Possible Abuse						
No	---	---				
Yes	0.0496	0.1778	1.051	0.742	1.489	0.7802
Sex						
Male	---	---				
Female	-0.3854	0.1777	0.680	0.480	0.964	0.0302
Age						
60-69	---	---				
70-79	0.2861	0.1747	1.331	0.945	1.875	0.1014
80+	0.7519	0.2083	2.121	1.41	3.191	0.0003
Race						
White	---	---				
Other	0.1967	0.1619	1.217	0.886	1.672	0.2244
Primary Payor						

Medicare/Medicaid	---	---				
Other	0.5987	0.2591	1.820	1.095	3.024	0.0209
Geo. Location						
Rural	---	---				
Urban	0.4726	0.179	1.604	1.13	2.278	0.0083

Sensitivity in this study refers to the effectiveness in the detection of individuals that experience abuse, or the “tip of the iceberg. The ‘tip of the iceberg” are the Adult Protective Services classification of substantiated cases of abuse. The analysis tests the possible elder abuse conditions developed based on physician consultations, literature reviews, and Adult protective services data. The analysis examines visits of the adults for whom APS records were available instead of all ED visits.

Table 4.9 examines confirmed ED visit status with elderly adults with a flagged Adult Protective Services case. Specificity in the study signifies the effectiveness in identifying individuals that are not abused or neglected.

Table 4.9, illustrates the sensitivity analysis for potential abuse diagnosis as measured against APS flagged cases of substantiated and unsubstantiated abuse. Based on the sample studied, we would expect 34.02% of patients with a diagnosis of possible abuse to be flagged by Adult Protective Services as having a substantiated case of elder abuse. The low sensitivity indicates that the test of possible abuse diagnosis codes is catching 34 percent of cases of abuse, however the specificity indicates 65.27% indicates that some people are being placed in the abuse category that were not abused. Therefore, the estimation of

total abuse cases as indicated by the sensitivity and specificity analysis is a lower estimate.

Table 4.9: Sensitivity and Specificity of Potential Abuse Diagnoses among APS Flagged Cases, South Carolina, 2011

	Substantiated Abuse	Unsubstantiated Abuse	Total Number
Presence of Possible Abuse Diagnosis	165 visits	100 visits	265 visits
Absence of Possible Abuse Diagnosis	320 visits	188 visits	508 visits
	485 visits	288 visits	773 visits

Sensitivity=165/485=0.3402=34.02%%

Specificity=188/288=0.6527=65.27%

Positive Predictive Value= 165/265=0.6226=62.26%

Negative Predictive Value= 188/508=0.3701=37.01%

4.3 RESEARCH QUESTION 3**:** Is hospital shopping present among elder abuse victims to avoid detection of elder abuse?

Research question 3 examined the concept of Hospital Shopping among the substantiated and unsubstantiated cases reported to Adult Protective Services. The study developed three levels of hospital shopping (Hospital Shopping 1, Hospital Shopping 2, and Hospital Shopping 3) to determine the context in which the behavior would be defined and measured. The study examines the frequency of visits to a single ED and/or the number of EDs visited by an individual patient.

The variable hospital shopping measures if the behavior occurs among victims of abuse. The level by definition states that patients that participate in hospital shopping if they are treated at one or more emergency departments for one or more abuse or possible abuse diagnosis codes.

This research question was examined by the calculation of the number of different Emergency Departments patients visited during study period, the establishment of criteria that may indicate, “hospital shopping”, and to determine if “hospital shopping” is present among the population. The dependent variable for this research question is hospital shopping as indicated by the variable for visiting n hospitals, and has three models (Hospital Shopping-1, Hospital Shopping-2, and Hospital Shopping-3) that were developed. This will involve examining both the individual effects of the independent variables against the dependent variables of hospital shopping and abuse. The research seeks to

distinguish between variables that are poor predictors of hospital shopping and variables that may account for hospital shopping among the population.

4.3.1 HOSPITAL VISITS: ABUSED AND POSSIBLY ABUSED

Among the elderly patients who were flagged by Adult Protective services, 69 were treated at only one hospital. The results of analysis of APS flagged patients and the levels of hospital shopping are illustrated in Table 4.10.

The frequency each patient was admitted to a different emergency department or to the same emergency department multiple times is examined in the combined emergency department and the adult protective services data sets. The Table below indicates the number of patients who were seen at more than one emergency department among substantiated or unsubstantiated abuse cases. The number of patients presenting to different emergency departments with the behavior of hospital shopping was insignificant based on the study.

Table 4.10 illustrates the frequency of APS flagged ED visits by persons with a reported substantiated and unsubstantiated case of abuse. The table shows that a total of 69 patients had one emergency department visit at one ED with 36 substantiated visits and 33 unsubstantiated visits in 2011. The table shows that there were patients that had multiple visits at one emergency department, and patients with substantiated and unsubstantiated abuse that visited multiple emergency departments. The category of Hospital Shopping Level 2 had 27 total APS persons that made 84 substantiated visits and 51

unsubstantiated visits. Hospital Shopping Level 3 had a total of 15 persons with an APS flagged visit.

Table 4.10: Hospital Shopping Analysis

Emergency Departments Visited		**Total APS Patients**	**Visits by Patients with an APS Flag**	
			Substantiated visits	**Unsubstantiated visits**
1 ED visited		69	36	33
	2 ED visits, 1 ED	41	44	38
	3 ED visits, 1 ED	15	36	9
	4 ED visits, 1 ED	12	36	12
	5 ED visits, 1 ED	4	15	5
	6+ ED visits, 1 ED	15	112	49
2 Different EDs visited		27	84	51
3 Different EDs visited		11	103	72
4 Different EDs visited		2	0	19
5 Different EDs visited		2	19	0
Total		198	485	288

Based on the hospital shopping analysis in Table 4.10, hospital shopping is present among elder abuse victims with a flagged Adult Protective Services visit.

4.4 RESEARCH QUESTION 4: What is the prevalence of elder abuse and neglect in the state of South Carolina as measured by injury presentations in Emergency Department (ED)?

Research question 4 summarizes all emergency department visits in South Carolina among individuals 60 years of age and older. The question examines the characteristics of patients in the ED, what prompted their visit to the ED, the type of injuries these individuals sustained (if any), the number of these individuals that had possible abuse diagnoses, the manner in which these possible abuse codes are distributed across the major and minor diagnostic categories, individual characteristics of possible abuse diagnosis, and an adjusted analysis to predict whether an individual would have an abuse diagnosis.

Characteristics of ED patients are shown in Table 4.11. Among all ED visits made by adults 60 years of age and older (299,022), the majority of visits were made by women (59.4%), by persons between the ages of 60-64, who were predominantly white (65.1%), had Medicare as a primary payor (72.2%), were referred by a physician (96.7%) and lived in an urban setting (68.8%). The population gets smaller in each successive age group therefore the proportion of visits falling within each age group declines.

Table 4.11: Demographic Characteristics of Adults 60 Years and Older with Emergency Department Visits, South Carolina, 2011

Total: 299,022 Emergency Department Visits		
Characteristic	**Frequency**	**Percentage**
Sex		
Male	121,412	40.60%
Female	177,606	59.40%
Age		
60-64	75,331	25.19%
65-69	62,283	20.83%
70-74	48,418	16.19%
75-79	40,808	13.65%
80-84	33,114	11.07%
85+	39,068	13.07%
Race		
White	194,707	65.16%
African-American	95,806	32.06%
Other	8,299	2.78%
Primary Payor		
Self-Pay	13,863	4.64%
Medicare	216,122	72.28%
Medicaid	12,723	4.25%
Commercial Insurance	44,643	14.93%
Other	11,671	3.90%
Admission Source		
Physician Referral	288,687	96.73%
Other	9,762	3.27%
Geographic Location		
Rural	93,294	31.20%
Urban	205,728	68.8%

Table 4.12 shows the frequency of Major Diagnostic Categories for coding emergency department visits and visits by APS cases, as well as visits by other persons. The major categories with the highest frequency of ED visits were: Symptoms or ill-defined conditions (27.81%) and Injury and poisoning (21. 70%).

Symptoms or ill-defined conditions had a total of 37 substantiated and 15 unsubstantiated Adult Protective Services flagged cases. The injury and poisoning major diagnosis category had a total of 30 substantiated and unsubstantiated flagged cases of abuse among those 60 years of age and older.

Table 4.12: Emergency Department Diagnostic Levels (Major), All Persons 60 and Older, South Carolina, 2011

Major	Frequency	Percentage
Infectious and Parasitic Disease	2985	1.00%
Neoplasms	912	0.30%
Endocrine, Nutritional, Metabolic, and Immunity Disorders	11629	3.89%
Diseases of the Blood and Blood-Forming Organs	1102	0.37%
Mental Disorders	7031	2.35%
Diseases of the Nervous System and Sense Organs	9535	3.19%
Diseases of the Circulatory System	22320	7.46%
Diseases of the Respiratory System	21411	7.16%
Diseases of the Digestive System	16152	5.40%
Diseases of the Genito-urinary System	16736	5.60%
Diseases of the Skin and Subcutaneous Tissue	6913	2.31%
Diseases of the Musculoskeletal System and Connective Tissue	27127	9.07%
Congenital Anomalies	51	0.02%
Symptoms, Signs, and Ill-Defined Conditions	83144	27.81%
Injury and Poisoning	64909	21.7%
Supplemental Classification of Factors Influencing Health Status & Contact with Health Services	7043	2.36%
Total	299,000	

Table 4.13, shows ED visits for the two major diagnosis categories within which the potential abuse categories fall, symptoms, signs and ill-defined conditions and injury and poisoning. Within each category, the table further shows the proportion of visits with and without diagnoses suggestive of possible abuse. Contusions to intact skin, chest and abdominal pains, as well as other

symptoms, signs, and ill-defined conditions are significant diagnoses in the presence of possible abuse. In these categories, a total of 66,142 visits (45.45%) signaled possible abuse were made from the ED visits of adults 60 years of age and older in 2011. The proportion of injuries that may prompt suspicion of abuse were noticeably higher in some categories than others in the study.

Table 4.13: Detailed Analysis within Major and Minor Diagnosis Categories for Possible Abuse, South Carolina, 2011

Major Minor		Detailed Codes Not Linked to Possible Abuse		Detailed Codes Linked to Possible Abuse		Total
		n	%	n	%	
XVI. Symptoms, Signs, and Ill-Defined Conditions						
	Syncope and Collapse	4090	73.77	1454	26.23	5544
	Convulsions	568	70.12	242	29.88	810
	Dizziness and Giddiness	3992	79.82	1009	20.18	5001
	Pyrexia of Unknown Origin	922	83.36	184	16.64	1106
	Symptoms involving skin & other Integumentary Tissue	2285	73.05	843	26.95	3128
	Headache	3218	77.62	928	22.38	4146
	Epistaxis	1534	70.37	646	29.63	2180
	Abnormal Heart Sounds	1593	80.58	384	19.42	1977
	Dyspnea & Respiratory abnormalities	3522	85.67	589	14.33	4111
	Cough	819	84.43	151	15.57	970
	Chest pain	17743	84.92	3150	15.08	20893
	Symptoms involving Urinary System	2444	71.05	996	28.95	3440
	Abdominal Pain	9956	84.90	1771	15.10	11727
	Other Symptoms, Signs & Ill-Defined Conditions	14253	78.70	3858	21.30	18111
XVII. Injury and Poisoning						
	Fracture of Radius and Ulna	77	4.00	1847	96.00	1924
	Fracture of Hand and Fingers	137	13.66	866	86.34	1003
	Fracture of Lower Limb	424	14.95	2412	85.05	2836
	Other Fractures	477	9.36	4618	90.64	5095
	Sprains & Strains of the Wrist & Hand	83	11.50	639	88.50	722
	Sprains & strains of knee	215	19.01	916	80.99	1131

	& leg					
	Sprains and Strains of the Ankle	270	23.40	884	76.60	1154
	Other Sprains & Strains of the Neck	1366	51.47	1288	48.53	2654
	Other Sprains & Strains of the Back	871	31.42	1901	68.58	2772
	Other Sprains and Strains	665	24.38	2063	75.62	2728
	Intracranial Injury, excluding those of the face	159	14.30	958	86.15	1112
	Open Wound of Head	335	6.74	4632	93.26	4967
	Open Wound of Hand & Fingers	467	15.19	2608	84.81	3075
	Other Open Wound	480	98.56	7	1.44	1.19%
	Superficial Injury of Cornea	38	11.59	290	88.41	328
	Other Superficial Injury	579	21.74	2084	78.26	2663
	Contusions w/ intact skin surfaces	1873	13.34	12163	86.66	14036
	Other Injuries	1740	25.67	5038	74.33	6778
	Poisonings	848	62.58	507	37.42	1355
	Other & Unspec. Effects of External Causes	1072	44.15	1356	55.85	2428
	Complications of Surgical & Medical Care, Not Elsewhere Specified	1641	63.07	961	36.93	2602
Supplementary Classification of Factors Influencing Health Status and Contact with Health Services						
	Attention to Surgical Dressing and Sutures	23	34.85	43	65.15	66
	Follow-up Examination	41	58.57	29	41.43	70
	General Medical Examination	17	50.00	17	50.00	34
	Observation & Evaluation for Suspected Conditions not Found	490	25.32	1445	74.68	1935
	Other Factors Influencing Health Status & Contact with Health Services	241	39.77	365	60.23	606
Total		79,368	54.54	66,142	45.45	145,510

Table 4.14 shows the frequency of visits for possible abuse ICD-9 codes and E-codes that can be indicative of physical abuse among the elderly population. This table shows a breakdown of the Major categories that were significant in Table 4.12, by displaying the Minor categories for the corresponding

Major category. The frequencies of the codes in ED visits were determined in the study. Notable diagnosis codes include: abdominal pain (2.06%), pain in limb (1.18%) head injury (0.85%) for all ED visits among adults 60 years of age and older. The possible abuse ICD-9 codes were 23.46% of all ED visits, and possible E-codes were (0.98%) of all ED visits.

Table 4.14: Prevalence of Possible Abuse ICD-9 Codes and E-Codes Based on Diagnosis at Time of Admission, All Persons 60 years and Older, SC, 2011

ICD-9 Code	Code Description	Frequency	Percentage
276.51	Dehydration	2172	0.74%
300.00	Anxiety State NOS	1247	0.43%
388.70	Otalgia NOS	168	0.06%
719.41	Joint Pain-Shoulder	1288	0.44%
719.43	Joint Pain-Forearm	247	0.08%
719.45	Joint Pain-Pelvis	1545	0.53%
719.46	Joint Pain-L/Leg	1546	0.53%
719.47	Joint Pain-Ankle	403	0.14%
729.5	Pain in Limb	3434	1.18%
729.81	Swelling of Limb	499	0.17%
784.2	Swelling in Head and Neck	243	0.08%
784.7	Epistaxis	2180	0.75%
789.00	Abdominal Pain Unspecified Site	6028	2.06%
873.0	Open Wound of Scalp	1799	0.62%
873.40	Open Wound of Forehead	385	0.13%
882.0	Open Wound of Hand	1043	0.36%
883.0	Open Wound of Finger	1829	0.63%
959.01	Head Injury NOS	2470	0.85%
959.09	Face and Neck Injury	146	0.05%
959.2	Shoulder/upper arm injury NOS	205	0.07%
959.3	Elbow/Forearm/Wrist Injury NOS	147	0.05%
959.7	Lower Leg Injury NOS	414	0.14%
959.9	Injury-Site NOS	108	0.04%
Total		29,546	9.60%

Table 4.14 shows the frequencies for the list of possible abuse codes ICD-9 codes developed for the research to determine prevalence, while Table 4.14 shows the frequency of all significant E-codes indicative of possible elder abuse for adults 60 years and older. The two tables can be compiled into a larger list of codes to assess injuries in the population in future research.

Table 4.15 shows the frequencies for cause of injury codes (E-codes) that are potentially associated with elder abuse. Falls from slipping (16.67%), unspecified falls (16.21%), and Unspecified accidents (8.67%) were E-codes frequently used in emergency departments for patients 60 years of age and older. The possible abuse cause of injury codes account for 74.11% all cause of injury codes and 19% of all ED visits in the data.

Table 4.15: Cause of Injury Codes (E-Codes) Frequency, South Carolina, 2011

E-Code	Code Description	Frequency	Percentage
E880.1	Fall on sidewalk curb	173	0.23%
E880.9	Fall on stair/step NEC	1603	2.09%
E881.0	Fall from Ladder	444	0.58%
E884.2	Fall from Chair	745	0.97%
E884.3	Fall from Wheelchair	894	1.17%
E.884.4	Fall from Bed	1694	2.21%
E884.6	Fall from Commode	198	0.26%
E884.9	Fall-1 level to other NEC	627	0.82%
E885.9	Fall from slipping NEC	12770	16.67%
E887.0	Fracture, cause NOS (unspecified)	370	0.48%
E888.1	Fall Striking Object NEC	2098	2.74%
E888.8	Fall NEC	2822	3.68%
E888.9	Fall NOS	12417	16.21%
E915.0	Foreign Body entering orifice	948	1.24%
E916.0	Struck by Falling Object	440	0.57%
E917.4	Striking or struck accidentally by other Stationary object w/out subsequent fall	363	0.47%

E917.9	Other accident caused by striking or being struck accidentally by objects or persons	2323	3.03%
E918.0	Caught between objects	508	0.66%
E920.3	Knife/sword/dagger accident	548	0.72%
E920.8	Accident cutting instrument NEC	1579	2.06%
E927.0	Overexertion from sudden strenuous movement	2543	3.32%
E927.8	Other Overexertion & strenuous & repetitive movements or loads	515	0.67%
E928.8	Other Accidents NEC	1023	1.34%
E928.9	Unspecified Accident (NOS)	6641	8.67%
E932.3	Insulins & antidiabetic agents causing adv. effects in therapeutic use	315	0.41%
E934.2	Adverse effect of anticoagulants	311	0.41%
E947.9	Adverse effect of medicinal substances unspecified	1137	1.48%
E960.0	Unarmed fight or Brawl	162	0.21%
E960.1	Rape	5	0.01%
E965.0	Assault by Handgun	4	0.01%
E965.4	Assault by Other and Unspecified Firearm	8	0.01%
E966	Assault by Cutting & Piercing Instrument	38	0.05%
E967.0	Perpetrator of Child/Adult Abuse by Father, Stepfather, or Boyfriend	1	0.00%
E967.1	Perpetrator of Child/ Adult Abuse by Other Specified Person	3	0.01%
E967.3	Perpetrator of Child/ Adult Abuse by Spouse or Partner	12	0.02%
E967.4	Perpetrator of Child/Adult Abuse by Child	14	0.02%
E967.8	Perpetrator of Child/ Adult Abuse, by Non-related Caregiver	1	0.00%
E968.2	Assault by Striking by Blunt or Thrown Object	97	0.13%
E968.7	Assault by Human Bite	17	0.02%
E968.8	Assault by Other Specified Means	99	0.13%
E968.9	Assault by Unspecified Means	121	0.16%
E969	Late Effect of Injury Purposely inflicted by Other Person	6	0.01%
E980.0	Poisoning by Analgesic, Antipyretics, & Antirheumatics, Undetermined whether accidentally	19	0.02%

	or purposely inflicted			
E980.2	Poisoning by Sedatives & Hypnotics, Undeter. whether accidentally or purposely inflicted	6	0.01%	
E980.3	Poisoning by Tranquilizers & Other Psychotropic Agents, Undeter. whether accidentally or purposely inflicted	19	0.02%	
E980.4	Poisoning by Specified Medicinal Substance, Undeter. whether accidentally or purposely inflicted	37	0.05%	
E980.5	Poisoning by Unspec. Drug or Medicinal Substances, Undeter. whether accidentally or purposely inflicted	20	0.03%	
E890.9	Poisoning by Other & Unspec. Solid &Liquid Substances, Undeter. whether accidentally or purposely inflicted	19	0.02%	
E982.9	Poisoning by Unspec. Gases & Vapors, Undeter. whether accidentally or purposely inflicted	4	0.01%	
E985.4	Injury by Other and Unspec. Firearm, Undeter. whether accidentally or purposely inflicted	5	0.01%	
E986	Injury by Cutting & Piercing Instruments, Undeter. whether accidentally or purposely inflicted	3	0.00%	
E988.8	Injury by other specified Means, Undeter. whether accidentally or purposely inflicted	5	0.01%	
E989	Late Effects of Injury, Undeter. whether accidentally or purposely inflicted	8	0.01%	
Total		56,782	74.11% of visits with E-codes	18.99% of all ED visits

Tables 4.12, 4.13, 4.14, and 4.15 show the manner in which ED visits are coded and the frequency of the possible diagnosis codes that suggest possible elder abuse or neglect is present. These codes and diagnostic categories

determine the prevalence of possible abuse codes for all ED visits among persons 60 years of age and older in 2011.

Table 4.16 illustrates ED visits for patients whose reasons for a visit included previously determined potential abuse diagnosis codes and E-codes. It is important to note that a single ED visit, can have multiple diagnosis codes associated with it. The analysis shown below is based on the principal diagnosis and any associated E-codes (source of injury codes). It does not take into consideration secondary diagnosis. The majority of possible abuse status patients were female, between the ages of 60-64, the majorities of the individuals were white, had a payor of Medicare, and lived in an urban area.

Table 4.16: Characteristics of Elder Visits, by Possible Abuse Diagnosis Status, South Carolina, 2011

Documented Abuse						
	Possible Abuse Diagnosis		**No Possible Abuse Diagnosis**			
	n	**%**		**%**	**Total**	**P- value**
Observations	71,383		227,635		299,018	
Sex						**<.0001**
Male	25,275	20.82	96,137	79.18	121,412	
Female	46,108	25.96	131,498	74.04	177,606	
Age						**<.0001**
60–64	29,105	21.15	108,506	78.85	137,611	
65-69	20,708	23.21	68,517	76.79	89,225	
70 and older	21,570	29.88	50,612	16.93	72,182	
Race[4]						**<.0001**
White	51,501	26.45	143203	73.55	194,704	

[4] Frequency of 210 observations missing for race, the effective sample size=298,808

Other	19848	19.07	84256	80.93	104,104	
Primary Payor						**<.0001**
Medicare/Medicaid	55492	24.25	173,351	75.75	228,843	
Other	15,891	22.64	54284	77.36	70,175	
Geographic Location						**<.0001**
Rural	22228	23.83	71066	76.17	93,294	
Urban	49155	23.89	156569	76.11	205,724	

In adjusted analysis the odds of potential abuse among elderly adults were positively related to gender, age group, race, primary payor, and geographic location. The characteristic of SEX in the model implies that females were more likely than males, to present to an ED with a diagnosis that is defined as possible abuse, holding all other variables constant. White older adults are more likely than other races of patients to present to an ED with a diagnosis that is an indication of possible abuse. Patients residing in urban areas are also more likely to have potentially abusive diagnosis codes. The characteristics are significant in distinguishing ED patients with possible abuse diagnoses from other patients 60 years of age and older.

Table 4.17: Characteristics of ED Patients Associated with Possible Abuse Diagnoses based on logistic regression, South Carolina, 2011

	Coefficient	**SE**	**OR**	**LCL**	**UCL**	**P value**
Observations						
299,018						
Sex						
Male	---	---				

Female	-1.0341	0.0090	1.308	1.285	1.331	<.0001
Age						
60–69	---	---				
70-79	-1.2095	0.0109	1.097	1.074	1.121	<.0001
80+	-0.9109	0.0112	1.479	1.447	1.512	<.0001
Race						
White	---	---				
Other	-1.7022	0.0096	0.670	0.658	0.638	<.0001
Primary Payor						
Medicare/Medicaid	---	---				
Other	-1.2789	0.0111	1.024	1.002	1.046	0.0352
Geographic Location						
Rural	---	---				
Urban	-1.0715	0.0094	0.961	0.944	0.979	<.0001

4.5 QUALITATIVE FINDINGS

An interview with a South Carolina Law Enforcement Division (SLED) officer was conducted to determine the role of law enforcement in elder abuse detection and the level of division interactions with Adult Protective Services and Emergency Department providers. The interview found that:

1. There is no current method of grouping abuse cases on the basis of age. Therefore, the agency must combined all cases of abuse for persons 18 years of age and older in the same pool, and there is no way to separate the cases out for older adults, 60 years of age and older.
2. There are no specific coding practices for law enforcement officers to use when differentiating the type of abuse that occurs when investigating cases. Domestic abuse and child abuse are the only

options available. Therefore, elder abuse cases are placed in the domestic abuse category.

3. There are inaccuracies in physician reporting of suspicions of abuse. Physicians have difficulty in their ability to recall events and confidently identify elder abuse physical manifestations. This creates a level of concern for law enforcement officers, and makes prosecution and elder abuse detection more difficult.
4. The South Carolina Law Enforcement division offers health care providers the resource of nurse examiners. These examiners are trained and familiar with injury presentation among abuse victims (rape and physical violence). There is an underutilization of law enforcement examiners by emergency department staff for suspected elder abuse cases.

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 DISCUSSION

This dissertation focused on the relationship between older adult individual characteristics, characteristics of all emergency department visits, the manner in which individuals and the population present to the emergency department with injuries, the phenomenon of hospital shopping, and the overall prevalence of elder abuse in the state of South Carolina. The four research questions that gave the dissertation direction were:

1. What are the risk factors (age, sex, co-morbidities, or geographic (rural/urban)) that differentiate elders with a visit of substantiated abuse from other elders?
2. What are the diagnosis codes and injuries commonly associated with elder abuse as documented by SC Adult Protective Services, and how are these injuries coded in the study?
3. Is hospital shopping present among elder abuse victims to avoid detection of elder abuse?
4. What is the prevalence of elder abuse and neglect in the state of South Carolina as measured by injury presentations in Emergency Department (ED)?

There were a total of 299,022 emergency department visits in South Carolina among individuals 60 years of age and older in 2011. Among the adults who were identified as actual or potential abuse cases in 2011, 198 of them had at least one ED visit. There were 115 substantiated and 83 unsubstantiated persons reported to APS.

5.1.1 Risk Factors and Geographical Characteristics

There were 121,412 ED visits made by females, 60 years of age and older in South Carolina in 2011; 139 of them received an APS flagged case of substantiated (80) and unsubstantiated (59) abuse. Some studies have indicated female older adults have higher rates of elder abuse when compared to males (Kosberg, 1988). Pillemer found that males have a higher likelihood of abuse in the elder years (Pillemer, 1988). This research supports other research studies in which women tend to have more cases of abuse than men.

Previous studies have found that as age increases, the likelihood of abuse increases as well (Shiamberg, 2008; Kosberg, 1988). The age group that presented to the ED with at least one APS flagged visit more often was 80 years of age and older. This group had a total of 68 APS flagged cases. The study found significantly differentiates between age group and the likelihood of being abused. As age increases so does the risk of elder abuse.

White individuals has a total of 105 APS flagged substantiated and unsubstantiated cases. When compared to all other races, and with non-white,

both analyses found that race was did not significantly differentiate abuse with individuals that are not abused.

There were 228,845 Medicare and Medicaid recipients with 181 flagged visits from Adult protective services. Rovi found that Medicare was the primary payor, but there was no significant difference of primary payor for abuse victims. This study supports that finding with for individuals presenting in EDs in South Carolina. It is important to note, when Medicare/Medicaid were compared to payors compressed into an "Other" category, the analysis found that payor type did not significantly differentiate between abused and non-abused persons 60 years of age and older.

A total of 205,724 individuals living were in urban areas that were flagged with 147 APS cases. Based on the analysis within the study the risks factors examined did not differentiate elder adults with a visit of substantiated abuse from other elders in South Carolina.

Spartanburg County and its associated hospital (Spartanburg Regional Medical Center) had the highest number of reported visits of substantiated and unsubstantiated abuse to Adult Protective Services. The higher number of reported cases could be due to better detection practices by ED providers in Spartanburg County, or because there is a higher likelihood of elder abuse in this area. Future studies and analysis will be needed to determine which of these reasons for the increased number of APS cases.

The risk factor of older age is significant in distinguishing abused from non-abuse elders; however, the other characteristics analyzed in the study are

not predictive in differentiating individuals of having a case of elder abuse with other elder adults. The adjusted analysis of individual characteristics indicated that being female, over the age of 85 and residing in an urban area are significantly associated with substantiated versus unsubstantiated abuse. The adjusted analysis determined being over age 85 was significantly associated with substantiated versus unsubstantiated.

This research did not identify a specific type of cultural, geographic or demographic profile that could predict elder abuse before it occurs, with 100 percent confidence. Age is a good indicator of abuse, however, it would be most effective in combination with other factors that better predict abuse.

5.1.2 Diagnosis Codes and Documented Abuse

Research question 2 examined documented cases of abuse and analyzed visits to the ED to determine if the developed list of possible abuse codes differentiate abused versus non-abused elderly persons. A list of Possible Abuse Diagnosis codes were compiled based on common documented injuries and diagnoses from ED cases reported to Adult Protective Services.

Based on the possible abuse diagnosis codes, the characteristics that are associated with abuse are individuals who are female, age 65-69, are white, with a primary payor of Medicare, who live in an urban setting. The age group that are more likely to experience abuse for actual cases reported to APS (60-64) differed from the possible elder abuse code analysis of cases of abuse, in that individuals 65-69 years of age presented to an ED with a possible abuse diagnosis.

Therefore, the development of the list of possible elder abuse diagnosis codes will allow providers to uncover additional cases of abuse changing the factors associated with elder abuse. For persons in the population for which minimum suspicion of abuse is present, there was no difference in the diagnosis coding based on abuse status. Injury presentation for persons presenting at an ED may trigger investigations into elder abuse.

The study found that Charleston County had the highest number of possible abuse diagnoses. Current methods of diagnosing injuries in Charleston County may not fully be capturing visits that should signal abuse.

The effectiveness of using the possible abuse diagnosis codes developed for the study was tested. The sensitivity and specificity analysis of potential abuse diagnoses and Adult Protective Services (APS) flagged cases indicated that the test for potential abuse diagnosis codes was 34.02% sensitive and had a specificity of 65.27%.

Based on the population studied, we would expect 34 percent of patients to have a potentially abusive diagnosis indicative of elder abuse or neglect, while 65 percent of patients would be without a potential abuse diagnosis. The tests indicate that though the test is not accurate in the detection of confirmed abuse cases, there is an underestimation of ED visits that are indicative of elder abuse. The high specificity indicates that there are relatively few false positives identified in the analysis. Although the screening for elder abuse patients can identify cases to a certain extent, the analysis indicates that the test for possible abuse diagnosis is not doing well as a “gold standard” for abuse detection in emergency

departments. Therefore, the possible abuse diagnosis codes must be evaluated and additional analysis completed. The findings suggest that elder abuse detection can be improved by incorporating secondary diagnosis codes among individuals visiting emergency departments to impact sensitivity. New strategies that take sex, age, and geographic location into account might improve sensitivity of the elder abuse detection screening while also enhancing the specificity in the study.

5.1.3 Hospital Shopping

Hospital shopping is an understudied phenomenon in elder abuse research. Three levels (Hospital Shopping 1, Hospital Shopping 2, and Hospital Shopping 3) were developed. The study examined this by determining the frequency of visits to ED by the 198 individuals with a flagged APS case. The patient's level of activity with presenting to emergency departments with an injury or diagnosis indicative of abuse was reviewed. The 198 individuals had a total of 773 emergency department visits.

Persons going to one ED was prevalent, however, hospital shopping was present in 42 (21.2%) of persons with an APS flagged visit. The absence of the concept of hospital shopping in prior studies on elder abuse makes it difficult to compare results. Additional analysis should be done with a larger sample of persons with a confirmed substantiated or unsubstantiated flagged by Adult Protective Services.

2.9.4 Injury Presentation and Abuse Prevalence

The prevalence of elder abuse and neglect in the state of South Carolina is determined by examining the characteristics of patients in the ED, what prompted their visit to the ED, the type of injuries these individuals sustained (if any), the number of these individuals that had possible abuse diagnoses, the manner in which these possible abuse codes are distributed across the major and minor diagnostic categories, individual characteristics of possible abuse diagnosis, and an adjusted analysis to predict whether an individual would have an abuse diagnosis.

There were a total of 299,022 Emergency Department visits in South Carolina made by persons 60 years of age and older in 2011. Women made up 59 percent of all ED visits among this population. Individuals 60-64 had the highest number of ED visits.

The emergency departments have to diagnostic coding levels, major and minor. The major diagnostic level provides a broader category for conditions, illnesses, and injuries. The minor diagnostic level provides a more specific and detailed diagnosis within the broader, major category. The study examined all major diagnostic categories and the abuse and injury related minor diagnostic codes. Of all ED visits among persons 60 years of age and older the Symptoms, Signs, and Ill-Defined Conditions and the Injury and Poisoning major diagnostic categories had the highest frequencies among Adult Protective Services flagged visits. Table 4.15 presents the major diagnostic categories and the frequency of

ED visits with the presence or absence of possible abuse diagnosis found in the symptoms and injury major categories.

Minor categories that signaled the presence of possible abuse were: other symptoms, signs and ill-defined conditions, abdominal pain, chest pain, and contusions with intact skin. The minor category of other symptoms, signs, and ill-defined conditions is a broad and vague diagnostic category. ED physicians may use these possible abuse diagnosis codes for suspicions of abuse, which are not obvious or cannot be easily defined.

Based on the adjusted analysis, the characteristics (sex, age, payor, race, and geographic location) are significantly associated with differentiating individuals with the presence and absence of possible abuse diagnosis codes. As age increases the likelihood of presenting to an ED with a possible abuse diagnosis increases. Women are more likely than males to have a possible abuse diagnosis. Persons with a primary payor of Medicare are more likely than individuals with other payors to have a possible abuse diagnosis. It is important to note that Medicare is the predominant form of payment for persons in the study population. Persons with the race of white were more likely to have a possible abuse diagnosis than other races in the study. Individuals living in urban areas had a higher likelihood to have a diagnosis suspicious of abuse. It is important to determine if urban settings have better detection practices or resources than rural areas, or higher rates of possible elder abuse.

Based on injury presentation of possible abuse diagnosis codes the prevalence of elder abuse in 2011 was 485 substantiated visits and 288

unsubstantiated visits. Therefore, a total of 773 visits should have signaled APS attention versus the actual number of APS flagged visits of 257 visits. The actual number of elder abuse cases in South Carolina is more than the reported APS cases, however, it is less than the amount projected in the study based on the use of possible abuse diagnosis codes. However, the use of injury presentation and possibly abuse diagnosis codes will better identify unknown cases and reveal more of the “iceberg” of elder abuse.

5.2 CONCLUSION

Elder abuse is an emerging issue in the United States due to the rapid increases in the number of elderly adults in the population. Providers of health care services lack the knowledge and proper training to be able to accurately detect and identify abuse cases among the elderly. Mistreatment involving minor injuries or subtle signs accounted for 41% of the reasons for a lack of suspected elder abuse not being reported by emergency department physicians (Jones et al., 1997). Other reasons included: the physician being unsure about how to report suspicious cases, a lack of clarity regarding the definition of elder abuse and neglect, and a lack of recognition of abuse during the time of the ED visit (Jones et al, 1997).

Currently, Emergency departments, adult protective services, and law enforcement work as separate entities in the manner in which they handle elder abuse. Each entity has its own process for the recognition and reporting or receiving reports of abuse. The emergency department’s role in elder abuse is to

treat all physical presentations and to report suspicions of abuse. Adult protective services receive reports of possible abuse cases, and determine if the cases is substantiated or unsubstantiated. APS also secures and coordinates services for the vulnerable adult. Law enforcement's role in elder abuse prevention efforts is to investigate and hold perpetrators of abuse responsible for abusive actions (NCEA, 2012).

The findings of this study may assist adult protective services staff, law enforcement, emergency department and health care professionals in reducing elder abuse and neglect and better identifying injuries that may indicate abuse and neglect and increase morbidity and mortality. This information can assist health care professionals, social services professionals, and law enforcement in the recognition and additional training on the injuries and behaviors that are indicative of possible abuse or neglect among elders.

Based on the analysis, further research and training is needed in the area of elder abuse and neglect. Emergency department staff, law enforcement, and Adult Protective services must work together to better train staff in understanding and identifying injury presentations of elder abuse and neglect. The South Carolina Law Enforcement Division (SLED) currently trains nurses on the detection of abuse and the identification of typical abuse injury presentations. However, these clinical staff members are not located within the Emergency Departments, and many ED staff members do not utilize this resource when treating older adults that may have suspicious injuries. Therefore, these nurses should be placed in emergency departments and/or the law enforcement division

should make sure emergency department staff members receive this training to better identify abuse and injury presentations. This strategy will allow for more accurate detection of abuse and provide researchers with more precise prevalence analysis.

Recognizing possible injuries associated with abuse and responding appropriately to suspicions of elder mistreatment are skills that ED staff can be taught. A cooperative relationship and interdisciplinary approach prevention between ED staff, APS, and law enforcement will create an environment conducive to prevention and detection of elder abuse. It is essential to understand the role of law enforcement in the detection of elder abuse. The interaction with adult protective services and emergency department staff can allow for better identification of abuse cases that may otherwise be unknown due to less obvious presentations or lack of proper coordination between the entities. This triangulation of services will allow for improved detection practices and increased exposure of the iceberg of elder abuse. This suggests that a multidisciplinary approach to prevention and detection of elder abuse and neglect is needed to address the growing issue.

The issues surrounding a lack of detection of hospital shopping could be due to the inability of emergency department staff to report suspicions of abuse to Adult Protective Services, or varying methods of identifying elder abuse between emergency department staff.

5.3 LIMITATIONS AND STRENGTHS OF DISSERTATION STUDY

Many South Carolina agencies group vulnerable adult data by individuals age 18 years of age and older. This categorization of data based on age group makes it difficult to address risk factors based on other forms of abuse, such as physical, emotional, financial, exploitation and neglect. Another limitation in the study is that perpetrator information is not available. This limits the ability to provide recommendations focused on the perpetrator and addressing their risk factors to reduce the likelihood of abuse and neglect among the elderly population. A third limitation is that E-codes and V-codes are not reimbursed by Medicare, therefore, providers tend not to capture these codes primarily in when seeing patient. Since E-codes and V-codes provide information on the external cause of the injury and individual history, abuse may not be properly captured in the coding process. Medicare also does not want codes that indicate a suspicion of abuse to be used by providers, therefore limiting its ability to detect abuse using emergency department data. Another limitation of the research is that hospital shopping is a new concept when applied to elder abuse. Therefore, to address this limitation research from prescription drug abuse and child abuse must be applied to the issue of elder abuse. A fifth limitation is Adult Protective Services has limited resources and is not able to readily respond or fully investigate all cases that are suspicious of abuse. For example, if a physician reports suspicions of abuse to a social worker, which is then reported to APS, APS does not respond to the case as long as the patient is considered to be in a safe place (defined as a hospital or nursing home). This is a concern if abuse

occurs within a nursing facility or if the patient is discharged from a hospital to the environment in which abuse occurred.

This study is innovative in that it looks at the issue of hospital shopping among elder abuse and neglect victims, introducing a new area of research to be explored to better understand the problems associated with elder maltreatment. There is limited research on hospital shopping as it pertains to elder abuse and the unique characteristics and risk factors associated with this particular population. The absence of a "gold standard" for defining elder abuse and hospital shopping is an issue that must be addressed. Due to the small sample of Adult Protective Services flagged persons, this study was unable to address the extent of hospital shopping where elder abuse or neglect was not suspected or confirmed by the use of the developed list of possible abuse diagnosis codes.

The triangulation of adult protective services, the emergency department staff, and law enforcement is an important aspect of increasing the validity and effectiveness of elder abuse and neglect by multiple methods of gathering data and identifying potential victims. A limitation of this approach is that there is not always an equal balance and effective interaction and sharing of information between the three entities. This creates disparate data and lack of identification and understanding of the prevalence of elder abuse and neglect in the state of South Carolina.

There are several strengths of the dissertation study. A major strength is the study identifies geographic locations in South Carolina that have a higher number of substantiated and unsubstantiated abuse cases. This will allow for

further research to determine what characteristics are present in the location to account for this difference. A second strength of the study is that the concept of hospital shopping was introduced to the field of elder abuse and neglect, and will allow for further analysis to determine its association with elder abuse at other levels other. A third strength is that a set of possible abuse diagnosis codes were established to aid emergency department staff to better improve elder abuse and neglect detection. A fourth strength is the identification of the importance of law enforcement, emergency department staff, and Adult Protective Services in the detection and prevention of elder abuse and neglect.

5.4 RECOMMENDATIONS

The study reinforces the need for the establishment of a set of diagnosis codes, e-codes, and v-codes that are indicative of abuse for emergency department staff to use as a guide to detecting elder mistreatment. The utilization of a set of possible abuse diagnosis codes will reveal more unknown and undetected cases of elder abuse. Additional attention to diagnostic coding practices during ED visits is important to address, as well as the development of elder abuse diagnosis codes and injury presentations for ED staff to use as a guide for diagnosis and detection.

A primary objective in the field of public health is the prevention of injuries and a commitment to improving the quality and accessibility of health services and value of life. The research will be particularly relevant to public health practice in serving the vulnerable population of older adults through the

identification of risk factors of abuse and neglect. The research will also increase awareness of the prevalence of hospital shopping and other methods of diversion of detection among victims and perpetrators of abuse. The study will allow health care professionals, emergency department staff, law enforcement, and Adult Protective Services (APS) to use a set of clearly defined case definitions, specific injuries and commonly used ICD-9, E-codes, and V-codes to better detect and identify abuse and neglect among the elderly. The development of a clearly defined set of injuries that are associated with elder abuse and neglect, this will assist emergency department staff and personnel in diagnostic efforts.

Based on the study certain geographic areas and provider locations (urban, counties, and hospitals) have higher rates of substantiated and unsubstantiated APS reported cases of abuse. The county of Spartanburg and its associated hospital (Spartanburg Regional Medical Center) is an urban setting, with the highest rates of APS flagged reports. The higher rates of substantiated and unsubstantiated abuse cases could be due to better detection practices of elderly abuse or this area has more incidences of elder abuse. Additional research must be done to determine the causes of the higher rates. A qualitative and quantitative research can be conducted to define detection practices and factors and developed a standardized approach to detection, reporting, and prevention efforts for broader application throughout the state of South Carolina.

Future research and analysis should be performed to determine if hospital shopping is present where elder abuse and neglect is not suspected or confirmed by the use of possible abuse diagnosis codes. Further investigation into possible

abuse diagnosis codes and a revision of the developed list of PADCs to provide a more accurate detection strategy to be used by emergency department staff in encounters with elder adults is essential.

5.5 IMPLICATIONS FOR PUBLIC HEALTH

The three core functions of public health developed by the Institute of Medicine (IOM) are assessment, policy development, and assurance. The issue of elder abuse can be analyzed through the use of these core functions. The issue of elder abuse was assessed in the study to identify the health risks and monitor the health status of adults 60 years of age and older.

The policy development function of public health will allow for more polices and plans to address elder abuse by reducing prevalence and increased detection of abuse cases. This function can be addressed by developing interdisciplinary teams and partnerships. The coordination of resources and knowledge between APS, ED staff, and law enforcement are more conducive to addressing the issue of elder abuse.

The assurance core function of public health encourages the enforcement of laws and regulations. Adult Protective Services addresses this function by linking abused individuals to services to protect the victims. It is important that ED staff, APS, and law enforcement agencies work together to coordinate services and link possible and confirmed abuse cases with resources to prevent further abuse, and minimize the overall occurrence of phenomenon.

The 10 essential services of public health can be used to: examine the activities and roles surrounding elder abuse, identify the factors and characteristics association with the issue, develop methods for increased detection and reporting strategies to prevent abuse among adults 60 years of age and older. The essential services are activities that help fulfill the requirements of the core functions of public health. The assessment core function includes services such as monitoring health status and diagnosis and investigation of health problems and hazards. The assessment core function and these essential services can be addressed through the development of a standardized list of diagnosis codes that are indicative of abuse and empowering ED staff to report suspected cases of abuse to Adult Protective Services and law enforcement agencies. The policy development core function is reached through the essential services of informing, educating and empowering individuals about health issues, mobilization of partnerships within the community, and the development of policies. The utilization of training programs for ED staff, other health care providers, and individuals that provide services or care to the elder in identifying all injury and physical presentations of abuse is an essential component to addressing this issue. The further development of policies based on the injury presentation and other reporting requirements will also fulfill this function. The enforcement of laws, linking individuals to personal health services, the assurance of competent health care workers, and the evaluation of the effectiveness, accessibility, and quality of individual and population-based health are all services found in the assurance core function. Law enforcement divisions

are responsible for the enforcement of laws and regulations, while Adult Protective Services and ED staff links the victims of elder abuse with services to protect and deliver services to prevent further abuse. Training and additional education of emergency department clinical staff and social services workers on elder abuse detection and identifying injury and behavioral presentations of abuse are reflective of this essential service. The evaluation of the effectiveness and quality of elder abuse prevention strategies is essential at all levels. Research is a factor that is present throughout all three of the core functions and the ten essential services of health.

The implementation and use of syndromic surveillance practices to utilize Emergency Department data to monitor injury presentations in the form of possible abuse diagnosis codes will be an essential aspect for health care providers and researchers in detecting elder abuse occurrences. Improved surveillance of injuries and diagnoses will allow for better reporting, detection, and prevention practices and strategies.

BIBLIOGRAPHY

Ahmad, M., & Lachs, M. (2002). Elder Abuse and Neglect: What Physicians Can and Should Do, *Cleveland Journal of Medicine*, 69(10), 801-808.

Allen, P., Kellett, K., & Gruman, C. (2004). Elder Abuse in Connecticut's Nursing Homes. *Journal of Elder Abuse and Neglect*,15 (1), 19-42.

Ammerman, R., & Hersen, M. (1990). Children at Risk: An Evaluation of Factors Contributing to Child Abuse and Neglect, Plenum Press.

Anetzberger, G. (2012). An Update on the Nature and Scope of Elder Abuse, *Journal of the AmericanSociety on Aging*, 36(3), 12-20.

Anthony, E., Lehning, A., Austin, M., & Peck, M. (2009). Assessing Elder Mistreatment: Instrument Development and Implications for Adult Protective Services, *Journal of Gerontological Social Work*, 52(8), 815-836.

Benger, J., & Pearce, A. (2002). Simple Intervention to Improve Detection of Child Abuse in Emergency Departments, Quality Improvement Report, 324: 780-782.

Biggs, S., & Goergen, T. (2010). Theoretical Development in Elder Abuse and Neglect. *Ageing International*, 35:167-170.

Bond, M., & Butler, K. (2013). Elder Abuse and Neglect: Definitions, Epidemiology, and Approaches to Emergency Department Screening, *Clinical Geriatric Medicine*, 29, 257-273.

Bonnie, R.J., & Wallace, R.B. (Eds.). (2003). Elder Mistreatment: Abuse, Neglect, and Exploitation in an Aging America, Committee on National Statistics. Washington, D.C.: The National Academies Press.

Brown, M. (2013). Personal Communication: South Carolina Law Enforcement, April 1, 2013.

Brunk, M., Henggeler, S.W. & Whelan, J.P. (1987). A Comparison of Multi-systematic Therapy and Parent Training in Brief Treatment of Child Abuse and Neglect. *Journal of Consulting and Clinical Psychology*, 55, 311-318.

Carter, M., & Gupta, S. (2008). Characteristics and Outcomes of Injury-related ED Visits among Older Adults. *American Journal of Emergency Medicine*, 26, 296-303.

Carretero, S., Garcés J., Ródenas, F., & Sanjosé, V. (2009). The Informal Caregiver's Burden of Dependent People: Theory and Empirical Review. *Archives of Gerontology and Geriatrics*, 49, 74-79.

Conner, T., Prokhorov, A., Page, C., Fang, Y., Xiao, Y., & Post, L.A. (2010). Impairment and Abuse of Elderly by Staff in Long-Term Care in Michigan: Evidence from Structural Equation Modeling. *Journal of Interpersonal Violence*, 26 (21), 21-33.

Cox, K. (2008). The Application of Crime Science to the Prevention of Elder Abuse. *British Journal of Nursing,* 17(13), 850-854.

Cropanzano, R., & Mitchell, M.S. (2005). Social Exchange Theory: An Interdisciplinary Review. *Journal of Management,* 31(6), 874-900.

Dahlberg, L., & Krug E. (2002). Violence-a global public health Problem. World Report on Violence and Health. *World Health Organization*, 1-56.

Daly, J., & Jogerst, G. (2003). Mandatory Reporting: Relationship of APS Statute Language on State Reported Elder Abuse. *Journal of Elder Abuse and Neglect*,15(2), 1-21.

Daly, J., & Jogerst, G. (2003). Statute Definitions of Elder Abuse, *Journal of Elder Abuse and Neglect*, 13(4), 39-57.

Dehart, D., Webb, J., & Cornman, C. (2009). Prevention of Elder Mistreatment in Nursing Homes: Competencies for Direct-Care Staff. *Journal of Elder Abuse and Neglect*, 21(4), 360-378.

Dellinger, A., Stevens, J. (2006). The Injury Problem among Older Adults: Mortality, Morbidity, and Costs. *Journal of Safety Research*, 37, 519-522.

Dong, X., & Simon, M. (2011). Enhancing National Policy and Programs to Address Elder Abuse. *Journal of American Medical Association*, 305(23), 2460-2461.

Dyer, C. (2000). The High Prevalence of Depression and Dementia in Elder Abuse or Neglect. *Journal of the American Geriatrics Society*, 48(2), 205-208.

Emerson, R. (1976). Social Exchange Theory. *Annual Review of Sociology*, 2, 335-362.

Fast, J., Williamson, D., & Keating, N.(1999). The Hidden Costs of Informal Elder Care. *Journal of Family and Economic Issues,* 20(3), 301-326.

Fraser, G. (1997). Dilemma of Ritual Abuse, Washington, DC: American Psychiatric Publishers.

Friedman, L., Avila, S., Tanoye, K., & Joseph, K. (2011). A Case-Control Study of Sever Physical Abuse of Older Adults. *Journal of the American Geriatrics Society*, 59, 417-422.

Fulmer, T., Guadagno, L., Dyer, C., & Connolly, M. (2004). Progress in Elder Abuse Screening and Assessment Instruments. *Journal of American Geriatrics Society*, 52, 297-304.

Garbarino, J. (1977). The Human Ecology of Child Maltreatment: A Conceptual Model for Research. *Journal of Marriage and Family*, 39(4), 721-735.

Godkin, M., Wolf, R., Pillemer, K. (1989). A Case Comparison Analysis of Elder Abuse and Neglect. *International Journal of Aging and Human Development.* 28(3), 207- 225.

Goergen, T., & Beaulieu, M. (2010). Criminological Theory and Elder Abuse Research-Fruitful Relationship or Worlds Apart? *Ageing International*, 35, 185-201.

Griffin, L., & Williams, O.(1992). Abuse Among African-American Elderly. *Journal of Family Violence*, 7(1), 19-35.

Hall, J. (2007). Violence Prevention: Elder Abuse, Healthy States Forum for State Legislators: Innovation and Collaboration in Wellness, (Presentation).

Howard, E. (2001). *Evidence of Hospital Shopping by Perpetrators of Child Abuse in a Population Based Study.(Doctoral Dissertation)*. Available from ProQuest Dissertations and Theses database. (UMI No. 3013426)

Hudson, M. (2008). Elder Mistreatment: A Taxonomy with Definitions by Delphi. *Journal of Elder Abuse and Neglect*, 3(2), 1-20.

Jones, J., Dougherty, J., Schelbie, D., & Cunningham, W. (1988). Emergency Department Protocol for the Diagnosis and Evaluation of Geriatric Abuse. *Annals of Emergency Medicine*, 17, 10.

Jones, J., Veenstra, T., Seamon, J., & Krohmer, J. (1997). Elder Mistreatment: National Survey of Emergency Physicians. *Annals of Emergency Medicine*, 30, 473-479.

Kleinschmidt, K. (1997). Elder Abuse: A Review. *Annals of Emergency Medicine*, 30, 463-472.

Krueger, P., & Patterson, C. (1997). Detecting and Managing Elder Abuse: Challenges in Primary Care, *Canadian Medical Association Journal*, 157(8), 1095-1100.

Krug, E., Dahlberg, L., Mercy, J., Zwi, A., & Lozano, R. (2002). Social-Ecological Model: A Framework for Prevention. *World Report on Violence and Health, Centers for Disease Control, World Health Organization*, 1-56.

Lachs, M., & Pillemer, K. (1995). Abuse and Neglect of Elderly Persons. *New England Journal of Medicine,* 332(7), 437-443.

Lachs, M., & Pillemer, K. (2004). Elder Abuse. *Lancet*, 364, 1263-72 (Seminar).

Lachs, M., Williams, C., O'Brien, S., Hurst, L., Kossack, A., Siegal, A., & Tinetti, M. (1997). ED Use by Older Victims of Family Violence. *Annals of Emergency Medicine*, 30:448-454.

Le, B., Dierks, E., Ueeck, B., Homer, L., & Potter, B.(2001). Maxillofacial Injuries Associated with Domestic Violence. *Journal of Oral Maxillofacial Surgery*, 59, 1277-1283.

Lowenstein, A. (2010). Caregiving and Elder Abuse and Neglect- Developing a New Conceptual Perspective. *Ageing International*, 35, 215-227.

MacKenzie, E. (2000). Epidemiology of Injuries: Current Trends and Future Challenges, *Epidemiologic Reviews*, 22, 1.

Mixson, P. (2000). Counterparts Across Time: Comparing the National Elder Abuse Incidence Study and the National Incidence Study of Child Abuse and Neglect. *Journal of Elder Abuse and Neglect*, 12(1), 19-27.

Patterson, C. (1993). Chapter 17: Secondary Prevention of Elder Abuse. In S. Mignon, C. Larson, & W. Holmes (Eds.), *Family* Abuse: Causes, Consequences, and Responses.

Pedrick-Cornell, C., & Gelles, R. (1982). Elder Abuse: The Status of Current Knowledge. *Journal of Family Relations*, 31(3), 457-465.

Perel-Levin, S. (2008). Discussing Screening for Elder Abuse at Primary Health Care Level. *World Health Organization, Ageing and Life Course*, 1-38.

Pillemer, K., & Finkelhor, D. (1988). The Prevalence of Elder Abuse: A Random Sample Survey, *The Gerontological Society of America*, 28(1), 51-57.

Post, L., Page, C., Conner, T., Prokhorov, A., Fang, Y., & Biroscak, B. (2010). Elder Abuse in Long-Term Care: Types, Patterns, and Risk Factors. *Research on Aging*, 32:3, 323-348.

Pradel, V., Delga, C., Rouby, F., Micallef, J., & Lapeyre-Mestre, M. (2010). Assessment of Abuse Potential of Benzodiazepines from a Prescription Database Using "Doctor Shopping" as an Indicator. *CNS Drugs*, 24(7), 611-620.

Rovi, S., Chen, P. Vega, M., Johnson, M., & Mouton, C. (2009). Mapping the Elder Mistreatment Iceberg: US Hospitalizations with Elder Abuse and Neglect Diagnoses. Journal of Elder Abuse and Neglect, 21(4), 346-359.

Rovi, S., & Johnson, M. (2003). More Harm Than Good? Diagnostic Codes for Child and Adult Abuse. *Journal of Violence and Victims*, 18(5), 491-502.

Sanders, A. (1992). Care of the Elderly in Emergency Departments: Conclusions and Recommendations. *Annual Emergency Medicine*, 21, 830-834.

Schiamberg, L. & Gans, D. (1999). An Ecological Framework for Contextual Risk Factors in Elder Abuse by Adult Children. *Journal of Elder Abuse and Neglect*, 11(1), 79-103.

Schwartz, S., Rosenberg, D., Wang, C., Sanchez-Anguiano, A., & Ahmed, S. (2005). Demographic Differences in Injuries among the Elderly: An Analysis of Emergency Department Visits, *The Journal of Trauma*, 58, 346-352.

Tatara, T., Kuzmeskus, L., Duckhorn, E., & Bivens, L. (1998). The National Elder Abuse Incidence Study. Final Report: The Administration on Aging, 1-136.

Tomita, S. (1982). Detection and Treatment of Elderly Abuse and Neglect: A Protocol for Health Care Professionals. *Physical and Occupational Therapy in Geriatrics*, 2(2), 37-51.

Ward, T., & Siegert, R. (2002). Toward a Comprehensive Theory of Child Sexual Abuse: A theory of knitting perspective. *Psychology, Crime, and Law*, 8(4), 319-351.

Wood, E. (2006). The Availability and Utility of Interdisciplinary Data on Elder Abuse: A White Paper for the National Center on Elder Abuse. *American Bar Association Commission on Law and Aging for the National Center on Elder Abuse*, 1-67.

Woollcott, P., Aceta, T., Rutt, C., Bloom, M., & Glick, R. (1982). Doctor Shopping with the Child as Proxy Patient: A variant of Child Abuse, *Journal of Pediatrics*, 101(2), 297-301.

World Health Organization. (1997). Manual of the international classification of diseases, injuries, and causes of death, ninth revision, Geneva: WHO, http://www.who.int/library.

Worley, J., & Hall, J. (2012). Doctor Shopping: A Concept Analysis. *Research and Theory for Nursing Practice: An International Journal*, 26(4), 262-278.

Ziminski, C., Phillips, L., & Woods, D. (2011). Raising the Index of Suspicion for Elder Abuse: Cognitive Impairment, Falls, and Injury Patterns in the Emergency Department. *Journal of Geriatric Nursing*, 33(2), 105-112.

APPENDIX A: Possible Elder Abuse Diagnosis Codes for Persons

Table A.1: List of Possible ICD-9, E-Codes, and V-Codes to Detect Elder Abuse and Neglect

Category	**ICD-9 Code**
Perpetrator of adult abuse	E967.0
Adult Abuse by Other Specified Person	E967.1
Adult Abuse by Spouse or Partner	E967.3
Adult Abuse by Child	E967.4
Adult Abuse by Sibling	E967.5
Adult Abuse by Other Relative	E967.7
Adult Abuse by Non-Related Caregiver	E967.8
Adult Abuse by Unspecified Person	E967.9
History of Physical Abuse	V15.41
History of Emotional Abuse	V15.42
History of Other Psychological Trauma	V15.49
Counseling for Marital/Partner problems, unspecified	V61.10
Counseling for Victim of Spousal and Partner Abuse	V61.11
Other Parent-Child Problems	V61.29
Problems with Aged Parents or in-laws	V61.3
Counseling for Perpetrator of Spousal/Partner Abuse	V62.12
Counseling for Perpetrator of Physical/Sexual Abuse	V62.83
Rape	V71.5
Abuse and Neglect	V71.81
Bruising/Hematoma	
Hematoma of auricle or pinna	380.31
Vaginal Hematoma	623.6
Hematoma of vulva	624.5
Burns	
Late Effect of burn of Eye Face Head and Neck	906.5
Late Effect of Burn of Wrist and Hand	906.6
Late Effect of Burn of Other Extremities	906.7
Late Effect of Burns of Other Specified Sites	906.8
Late Effect of Burn of Unspecified Site	906.9
Superficial Injury of Other Multiple and Unspecified Sites	919
Burn confined to eye and adnexa	940
Burn of Face Head and Neck	941
Burn of Trunk	942

Burn of Upper Limb Except Wrist and Hand	943
Burn of Wrist(s) and Hand(s)	944
Burn of Lower Limb(s)	945
Burns of Multiple Specified Sites	946
Burn of Internal Organs	947
Burns Classified According to Extent Body Surface Involved	948
Burn unspecified site	949
Conflagration in Private Dwelling	E890
Conflagration in Other and Unspecified Building or Structure	E891
Conflagration not in Building or Structure	E892
Accident caused by Ignition of clothing	E893
Ignition of highly flammable material	E894
Accident Caused by Controlled Fire in Private Dwelling	E895
Accident Caused by Controlled Fire in Other and Unspecified Building or Structure	E896
Accident Caused by Controlled Fire not in Building or Structure	E897
Accident Caused by other Specified Fire and Flames	E898
Accident Caused by unspecified Fire	E899
Accident Caused by Hot Substance or object caustic or corrosive material and steam	E924
Assault by Other and Unspecified means	E968
Injury by other and unspecified means undetermined whether accidentally or purposely inflicted	E988
Crushing Injury	
Late Effect of Crushing	906.4
Crushing of Injury of Face Scalp and Neck	925
Crushing injury of Trunk	926
Crushing injury of Upper Limb	927
Crushing Injury of Lower Limb	928
Crushing injury of Multiple and unspecified Sites	929
Dislocations	
Dislocation of Jaw	830
Dislocation of Shoulder	831
Dislocation of Elbow	832
Dislocation of Wrist	833
Dislocation of Finger	834
Dislocation of Hip	835
Dislocation of Knee	836
Dislocation of Ankle	837
Dislocation of Foot	838
Other Multiple and Ill-defined Dislocations	839
Exposure to Elements	
Effects of Reduced Temperature	991
Effects of Heat and Light	992
Fractures	

Fracture of Vault skull	800
Fracture of Base of Skull	801
Fracture of Face Bones	802
Other and unqualified skull fractures	803
Multiple Fractures involving skull or face with other bones	804
Fracture of Vertebral Column without mention of spinal cord injury	805
Fracture of Vertebral Column with spinal cord injury	806
Fracture of rib(s) sternum larynx and trachea	807
Fracture of pelvis	808
Ill-defined Fractures of Bones of Trunk	809
Fracture of Clavicle	810
Fracture of Scapula	811
Fracture of Humerus	812
Fracture of Radius and ulna	813
Fracture of carpal bone(s)	814
Fracture of metacarpal bone(s)	815
Fracture of one or more phalanges of hand	816
Multiple fractures of hand bones	817
Ill-defined fractures of upper limb	818
Multiple fractures involving both upper limbs and upper limb with rib(s) and sternum	819
Fracture of Neck of Femur	820
Fracture of Other and unspecified parts of Femur	821
Fracture of Patella	822
Fracture of tibia and fibula	823
Fracture of ankle	824
Fracture of one or more tarsal and metatarsal bones	825
Fracture of one or more phalanges of foot	826
Other multiple and ill-defined fractures of lower limb	827
Multiple fractures involving both lower limbs and upper limb and lower limb(s) with rib(s) and sternum	828
Fracture of unspecified	829
Late Effect of musculoskeletal and connective tissue injuries	905
Fracture cause unspecified	E887
Hemorrhage	
Subarachnoid hemorrhage	430
Intracerebral hemorrhage	431
Other and unspecified intracranial hemorrhage	432
Injury to Blood Vessels	
Injury to Blood vessels of head and neck	900
Injury to Blood vessels of thorax	901
Injury to Blood vessels of abdomen and pelvis	902
Injury of Blood Vessels of upper extremity	903
Injury of Blood Vessels of Lower extremity and unspecified sites	904
Injury to Nerves and Spinal Cord	

Injury to other cranial nerve(s)	951
Spinal Cord injury without evidence of spinal bone injury	952
Injury to nerve roots and spinal plexus	953
Injury to other nerve(s) of trunk excluding shoulder and pelvic girdles	954
Injury to peripheral nerve(s) shoulder girdle and upper limb	955
Injury to peripheral nerve(s) of pelvic girdle and lower limb	956
Injury to other and unspecified nerves	957
Internal Injury of Chest, Abdomen, and Pelvis	
Traumatic pneumothorax and hemothorax	860
Injury to heart and lung	861
Injury to other and unspecified intrathoracic	862
Injury to gastrointestinal tract	863
Injury to liver	864
Injury to spleen	865
Injury to kidney	866
Injury to pelvic organs	867
Injury to other intra-abdominal organs	868
Internal injury to unspecified or ill-defined organs	869
Intracranial Injury (excluding skull injury)	
Concussion	850
Cerebral laceration and contusion	851
Subarachnoid subdural and extradural hemorrhage following injury	852
Other and unspecified intracranial hemorrhage following injury	853
Intracranial injury other and unspecified nature	854
Late Effects of Injuries, Poisonings, or Toxic Effects, and other External Causes	
Late Effects of Musculoskeletal and connective tissue injuries	905
Late effects of injuries to skin and subcutaneous tissues	906
Late effects of injuries to the Nervous System	907
Late Effects of Other and unspecified injuries	908
Late Effects of Other and unspecified external causes	909
Open Wound of Head, Neck, and Trunk	
Open wound of ocular adnexa	870
Open Wound of eyeball	871
Open Wound of Ear	872
Other open wound of head	873
Open wound of neck	874
Open Wound of Chest (wall)	875
Open wound of back	876
Open wound of buttock	877
Open wound of genital organs (external) including traumatic amputation	878
Open wound of other and unspecified sites except limbs	879
Open Wound of Lower Limb	

Open Wound of hip and thigh	890
Open Wound of knee leg (except thigh) and ankle	891
Open wound of foot except toe(s) alone	892
Open wound of toe(s)	893
Multiple and unspecified open wound of lower limb	894
Traumatic amputation of toe(s) (complete) (partial)	895
Traumatic amputation of foot (complete)(partial)	896
Traumatic amputation of leg(s) (complete)(partial)	897
Open Wound of Upper Limb	
Open Wound of Shoulder and Upper Arm	880
Open wound of Elbow Forearm and Wrist	881
Open Wound of Hand Except Finger(s) alone	882
Open Wound of Finger(s)	883
Multiple and unspecified open wound of upper limb	884
Traumatic amputation of thumb (complete)(partial)	885
Traumatic amputation of other finger(s) (complete) (partial)	886
Traumatic amputation of arm and hand (complete)(partial)	887
Poisonings by drugs, medicinals, and biological substances	
Poisoning by other anti-infectives	961
Poisoning by hormones and synthetic substitutes	962
Poisoning by primarily systemic agents	963
Poisoning by agents primarily affecting blood constituents	964
Poisoning by Analgesics antipyretics and antirheumatics	965
Poisoning by Anticonvulsants and anti-parkinsonism drugs	966
Poisoning by sedatives and hypnotics	967
Poisoning by other central nervous system depressants and anesthetics	968
Poisoning by psychotropic agents	969
Poisoning by central nervous system stimulants	970
Poisoning by drugs primarily affecting the autonomic nervous system	971
Poisoning by agents primarily affecting the cardiovascular system	972
Poisoning by agents primarily affecting the gastrointestinal system	973
Poisoning by water mineral and uric acid metabolism drugs	974
Poisoning by agents primarily acting on the smooth and skeletal muscles and respiratory system	975
Poisoning by agents primarily affecting skin and mucous membrane ophthalmological otorhinolaryngolgical and other dental drugs	976
Poisoning by other and unspecified drugs and medicinal substances	977
Poisoning by bacterial vaccines	978
Poisoning by other vaccines and biological substances	979
Sprains and strains of joints and adjacent Muscles	
Sprains and strains of shoulder and upper arm	840

Sprains and strains of elbow and forearm	841
Sprains and strains of wrist and hand	842
Sprains and strains of hip and thigh	843
Sprains and strains of knee and leg	844
Sprains and strains of ankle and foot	845
Sprains and strains of sacroiliac region	846
Sprains and strains of other and unspecified parts of back	847
Other and ill-defined sprains and strains	848
Superficial Injury	
Superficial Injury of Face Neck and Scalp except eye	910
Superficial Injury of Trunk	911
Superficial Injury of Shoulder and Upper Arm	912
Superficial Injury of Elbow Forearm and Wrist	913
Superficial Injury of Hand(s) except finger(s) alone	914
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