

Florida Department of Health

Florida Occupational Injury & Illness: Examining Chronic Disease

Total Gross Charges From Hospital Inpatient Discharge and Emergency
Department Data, 2006–2010

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Overview

Occupational injuries and illnesses result in substantial medical costs each year. According to the Florida Department of Financial Services Worker's Compensation Claims Database (http://www.myfloridacfo.com/WCAPPS/Claims_Research/Stats_Search.asp), from 2006 to 2010 there were over 300,000 worker's compensation cases resulting in medical costs totaling over \$4.5 billion.

As the American workforce ages, concerns about the impact of chronic medical conditions on productivity, insurability and overall health care costs for these employed individuals have been noted. Chronic conditions are among the leading causes of morbidity and mortality in Florida and the nation. Four chronic diseases -- cardiovascular disease (CVD), cancer, chronic lower respiratory disease (CLRD), and diabetes -- are among the ten leading causes of death. Data from the 2010 Florida Annual Vital Statistics Report show that cancer and heart disease are two of the five leading causes of death among adults and among those 15–74 years of age (ages most likely to be employed). Diabetes is one of the five leading causes of death among those 55–74 years of age and CLRD is one of the five leading causes of death among those 65–74 years of age. Arthritis is the leading cause of disability in the nation. According to data from the 2007–2009 Nation Health Interview System (NHIS), 22% of US adults have arthritis and 9% of adults have arthritis-related limitations (http://www.cdc.gov/arthritis/data_statistics.htm). Among those individuals 18–64 years of age who have arthritis, 21% report activity limitations and 8% report work limitations.

This report provides a description of the total gross charges for occupational injury and illness discharges from Florida hospital inpatient discharge (HID) and emergency department (ED) data from January 1, 2006 through December 31, 2010 with any diagnosis code for the following five diseases: CVD, cancer, CLRD, diabetes, and arthritis. The goal of this report was to examine how these chronic conditions may impact overall hospital charges for occupationally-related hospital inpatient and ED visits.

Data

Florida HID data have been collected by the Agency for Health Care Administration (AHCA) since 1988 and ED data have been collected since 2005. The data include information reported by all facilities licensed under Chapter 395, Florida Statutes, as provided by Section 408.061, Florida Statutes, and according to the rules outlined by 59E-7 and 59B-9, Florida Administrative Code. Data from facilities that do not require licensure under Chapter 395, F.S., such as state-operated, federal, and Shriner's hospitals are excluded. AHCA collects HID data from 269 out of 294 acute care, short-term and long-term psychiatric, and comprehensive rehabilitation facilities. ED data are collected from 215 emergency departments. The current description of these data sources can be found at www.floridahealthfinder.gov/Researchers/OrderData/order-data.shtml under "data dictionary".

Throughout this report, each HID and ED record identified as "occupational injury/illness" will be referred to as a "case". Each case represents a HID/ED record and does not necessarily equate to an individual. The data used for this report are public-use and all identifying variables have been removed from the records. Therefore, individuals may have multiple HID or ED records.

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However, each event is represented in only one of the data sources, either the ED or HID, whichever facility type was the terminal site of care at discharge. The use of the phrase "chronic disease" refers only to the five chronic diseases examined for this report. CD-case refers to cases with any chronic disease diagnosis code in the record. NONCD-case refers to cases without a chronic disease diagnosis code in the record.

Case Definition

In both data sets, records related to occupational injury/illness were identified as those meeting the following criteria:

- Individuals residing in Florida aged 15–74 years and any of the following:
 - Payer listed as "workers' compensation," or
 - Principle diagnosis coded with any of the E-codes in Appendix I, or
 - Principle diagnosis coded with any V-code in Appendix I.

The chronic diseases examined for this report and their corresponding ICD-9 CM codes are listed in Appendix II, Table 1. Five leading chronic conditions (CLRD, cancer, CVD, arthritis, and diabetes) were selected. All diagnosis codes for each discharge record were examined for the occurrence of these codes. Therefore, individuals may have multiple chronic conditions.

Variable Definitions

Several demographic variables were constructed for this descriptive report. Individuals were grouped into six, 10-year age groups: 15–24, 25–34, 35–44, 45–54, 55–64, and 65–74. Records with ages less than 15 years and more than 74 years were excluded from the analysis.

Individuals were also categorized into the following race/ethnic groups: non-Hispanic white, non-Hispanic black, Hispanic, and Other, which includes all other race/ethnic indicators. The patient county of residence and gender were reported as they appeared in the data records.

Cost Adjustment

Total gross charges were used to calculate the cost statistics (sum, mean, and median). Total gross charges for 2006–2009 data were adjusted to 2010 prices using the U.S. Bureau of Labor Statistics, Consumer Price Index (CPI) for medical care (www.bls.gov/cpi). Using the CPI, medical costs increased 6.6% from 2006–2007, 7.0% from 2007–2008, 6.4% from 2008–2009, and 7.0% from 2009–2010. *All costs reported in this document are adjusted costs.*

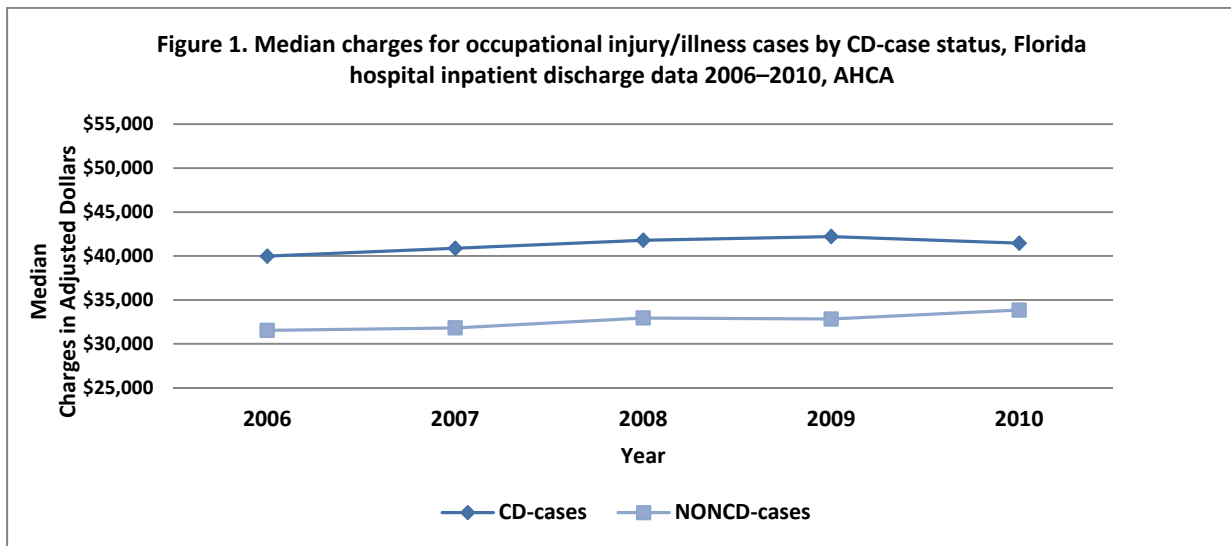
Chronic Disease Occurrence

Table 2 in Appendix II shows the number of cases with and without chronic disease and the percentage of all cases with a chronic disease. Overall, the number of NONCD-cases decreased with each passing year in both data sources. The number of CD-cases decreased with each passing year through 2009, but increased from 2009–2010. Among HID cases, the percentage of CD-cases increased from 48% in 2006 to 57.1% in 2010. Among ED cases, the percentage of CD-cases increased from 15.6% in 2006 to 20.1% in 2010.

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Overall Charges

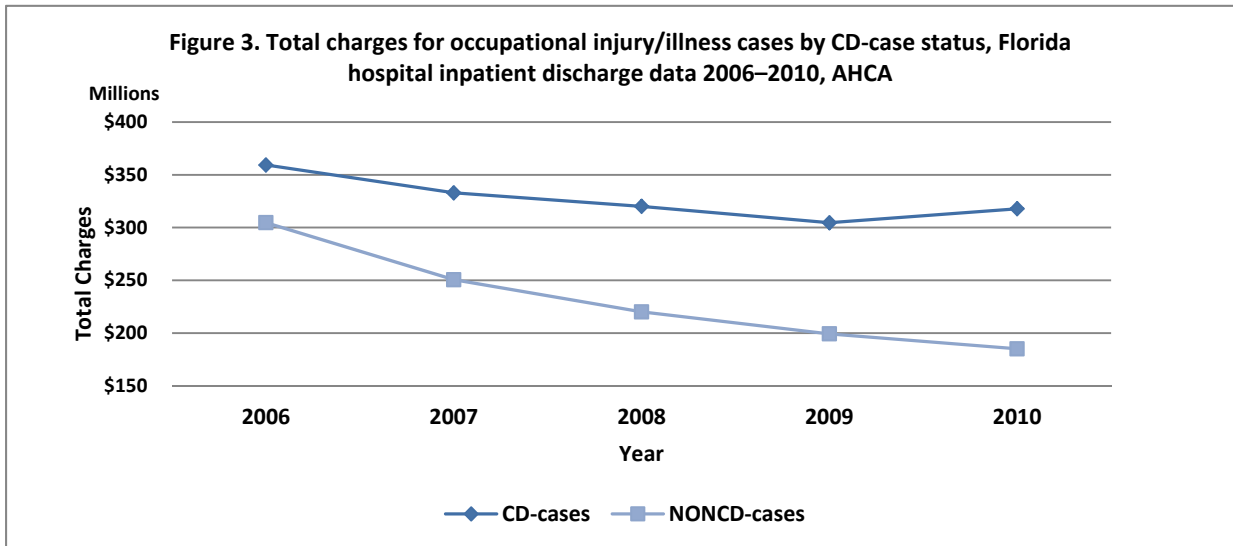
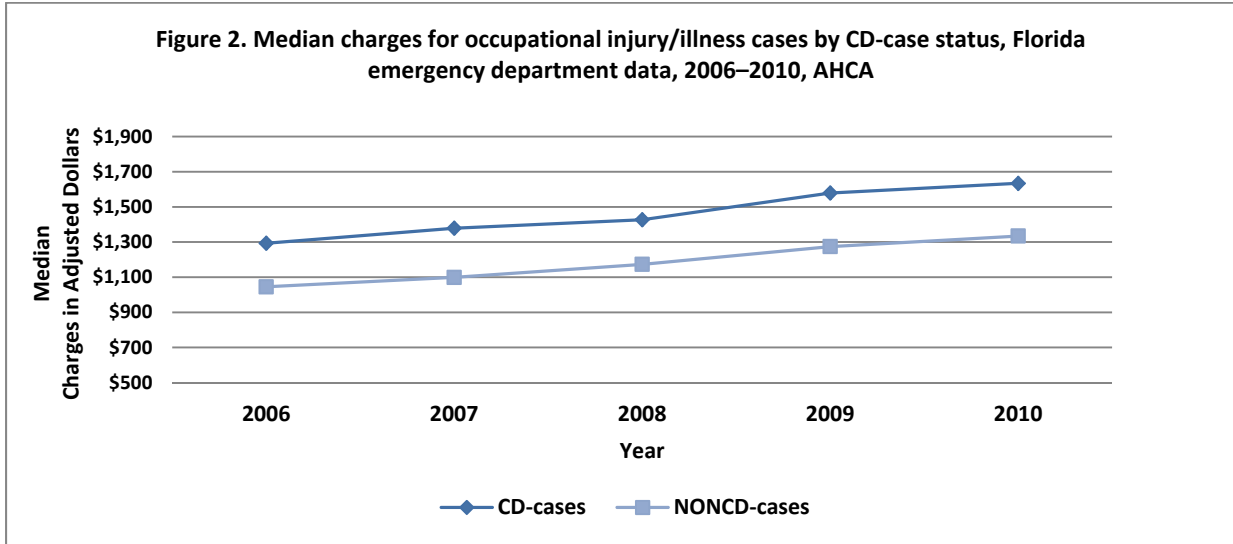
The total charges in both datasets are not normally distributed; therefore, although means are reported in the detailed tables, median costs will be discussed in this summary in conjunction with total charges. Figures 1–4 summarize Table 3 in Appendix II and show the median and total charges for occupational injury/illness cases by CD-case status and data source. More than half of total charges for HID cases were for patients with one or more chronic diseases (range 54.1%–63.2%). More than 20% of total charges for ED cases were for patients with one or more chronic diseases (range 19.5%–25.8%). For each year examined, HID and ED median charges were higher among CD-cases compared to NONCD-cases.



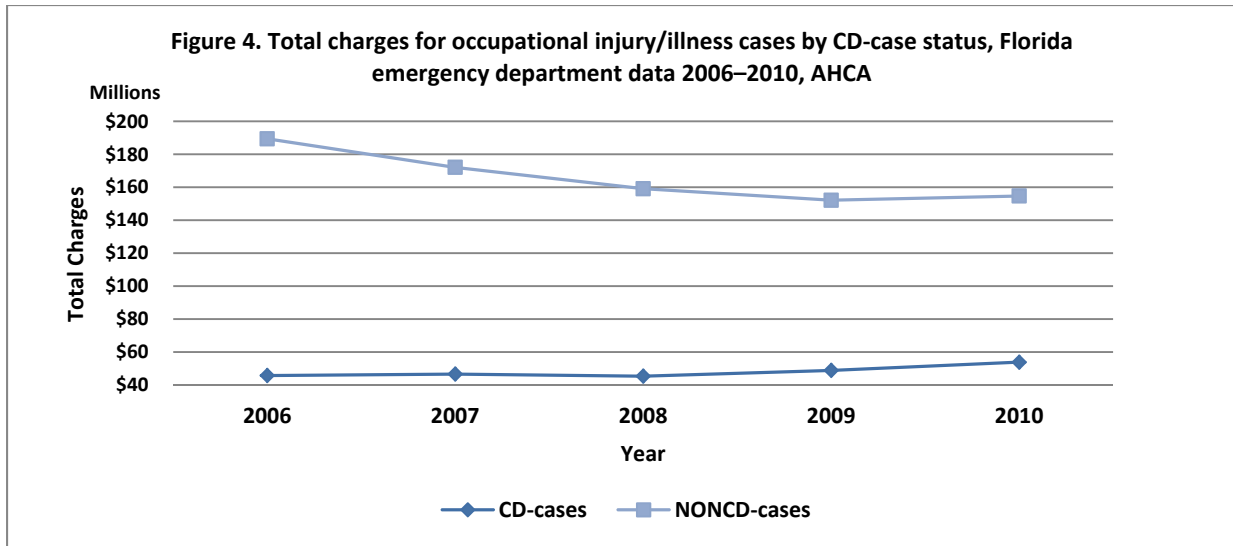
Median charges for HID CD-cases were 3.7% higher and NONCD-cases were 7.3% higher in 2010 compared to 2006. Median charges for ED CD-cases were 26.3% higher and NONCD-cases were 27.6% higher in 2010 compared to 2006. Total charges for HID CD-cases and NONCD-cases declined comparing 2006 to 2010. Total charges for HID CD-cases decreased 11.5% from about \$359 million in 2006 to about \$318 million in 2010. Total charges for HID NONCD-cases decreased 39.3% from about \$305 million in 2006 to about \$185 million in 2010.

Median charges for ED CD-cases increased 17.7% from about \$46 million in 2006 to about \$54 million in 2010. Median charges for ED NONCD-cases decreased 18.3% from about \$189 million in 2006 to about \$155 million in 2010.

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Charges by Demographic Characteristics

Figure 5 summarizes Table 4 in Appendix II and shows the percentage of total gross charges attributable to CD-cases by sex and data source. In each year examined regardless of data source, the proportion of total gross charges attributable to CD-cases was higher among females compared to males. From 2006–2010, more than 60% (range 60.4%–65.6%) of HID total gross charges among females and more than 50% (range 52.5%–62.4%) of HID total gross charges among males were attributable to CD-cases. Using ED data, the proportion of total gross charges attributable to CD-cases ranged from 17.8% to 24.6% among males and from 23.1% to 27.9% among females. On average HID and ED median charges were lower among females compared to males.

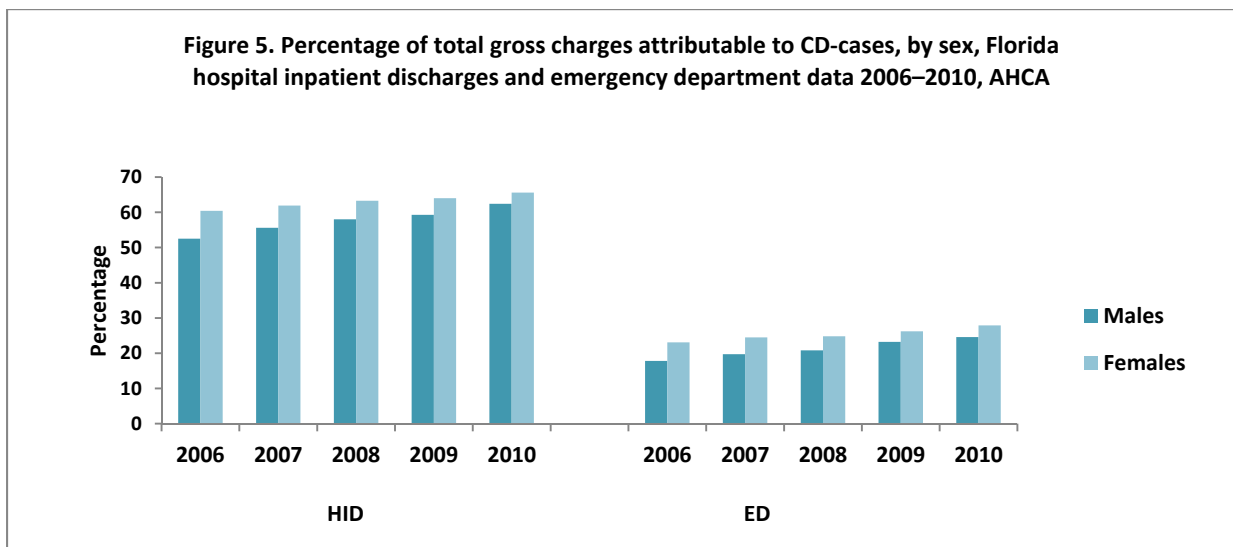


Figure 6 summarized Table 5 in Appendix II and shows the percentage of total gross charges attributable to CD-cases by race/ethnicity and data source. In each year and each data source,

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the proportion of total gross charges attributable to CD-cases was highest among non-Hispanic blacks (HID range 62.1%–72.7%; ED range 22.9%–31.7%) followed by non-Hispanic whites (HID range 56.3%–65.0%; ED range 19.9%–25.8%). In all years and both data sources the median charges were higher for CD-cases compared to NONCD-cases and higher for HID records compared to ED records.

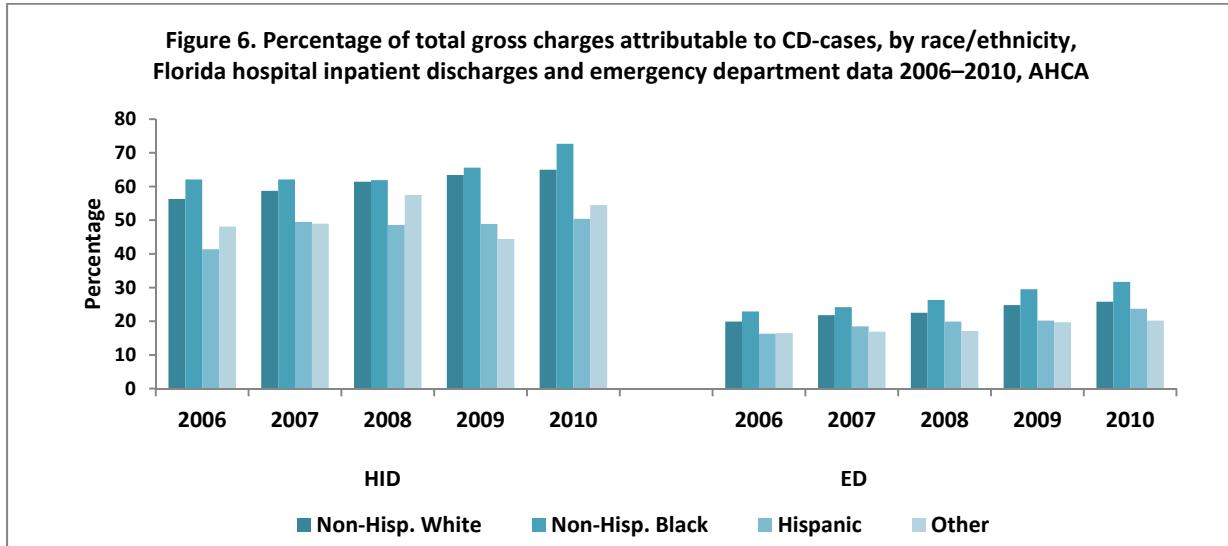
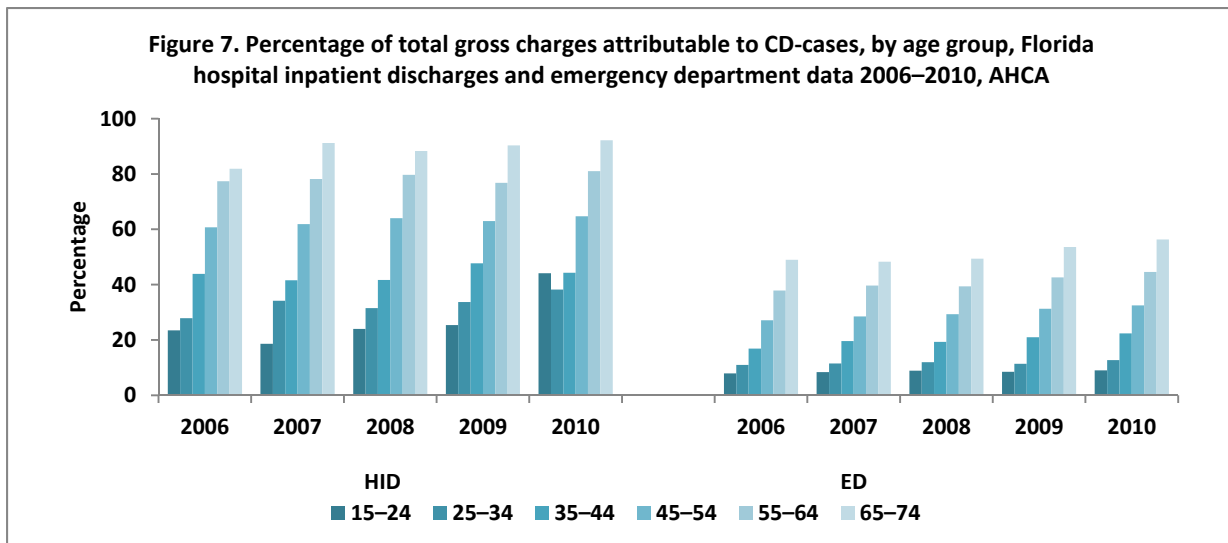


Figure 7 summarized Table 6 in Appendix II and shows the percentage of total gross charges attributable to CD-cases by age group and data source. Overall, the proportion of total gross charges attributable to CD-cases for all years and both data sources increased with increasing age. The median charges also increased with increasing age group for all years using ED data. A discernible pattern was not present using HID median charges.



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Charges by Number of Chronic Diseases

Figure 8 summarizes Table 7 in Appendix II and shows the percentage of CD-cases by the number of chronic conditions listed in each patient record and data source. Most of the CD-cases have one chronic condition listed of the five examined. Data from the 2006–2010 HID data show that about one-in-three (range 30.8%–34.4%) cases are comprised of CD-cases with one chronic condition, about 15% (range 13.5%–17.5%) are comprised of CD-cases with two chronic conditions and about 5% (range 3.7%–5.2%) are comprised of CD-cases with three or more chronic conditions. Data from the 2006–2010 ED data show that about 15% (range 13.0%–16.3%) cases are comprised of CD-cases with one chronic condition, about 3% (range 2.3%–3.4%) are comprised of CD-cases with two chronic conditions and about 0.3% (range 0.2%–0.4%) are comprised of CD-cases with three or more chronic conditions.

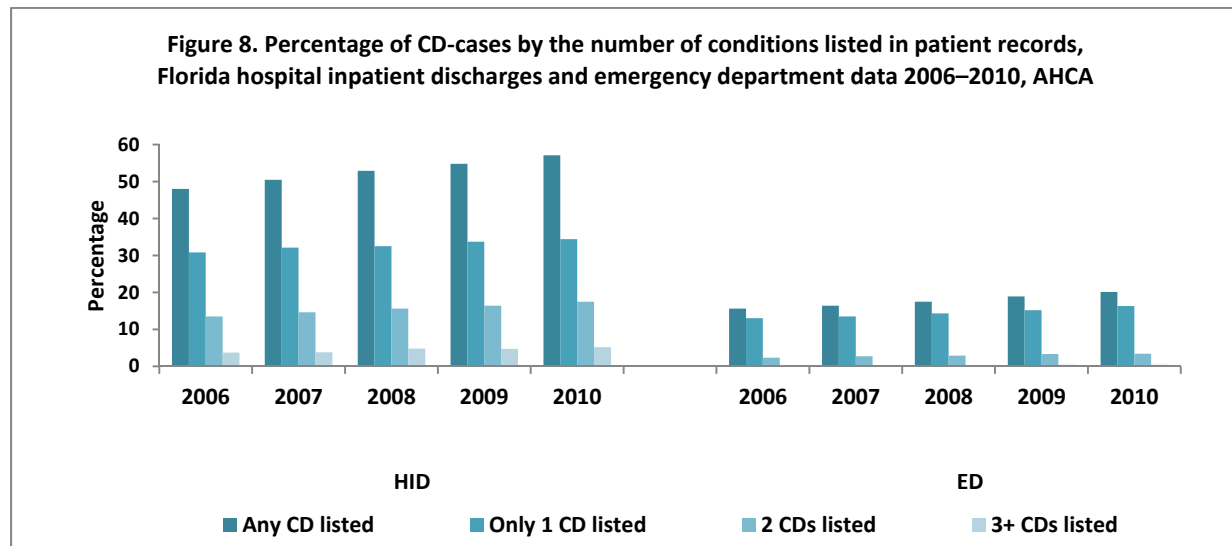


Table 8 in Appendix II shows the mean, median, and total charges by the number of chronic conditions in each patient record, year, and data source. Using 2006–2010 HID data, the median charges for those with three or more chronic conditions is about 60% (range 47.7%–69.7%) higher than the median charges for those with no chronic conditions listed. Using ED data for the same time period, the median charges for those with three or more conditions is about 40% (range 33.0%–49.3%) higher than the median charges for those with no chronic conditions listed.

Charges by County

Tables 9 and 10 in Appendix II show the mean, median, and total charges by CD-case status, county, year, and all years combined. In total for the 2006–2010 study period, the top five counties based on CD-case total gross charges (HID and ED combined) were: Miami-Dade with 12,668 CD-cases totaling about \$232 million, Broward with 9,012 CD-cases totaling about \$149 million, Hillsborough with 8,556 CD-cases totaling about \$139 million, Palm Beach with 5,492 CD-cases totaling about \$130 million, and Pinellas with 6,305 CD-cases totaling about \$105 million.

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The top five counties based on the percentage of CD-cases were: Lee with 31.7% CD-cases, Wakulla with 30.2% CD-cases, Leon with 29.3% CD-cases, Jefferson also with 29.3% CD-cases, and Suwannee with 28.9% CD-cases. The top five counties based on the percentage of total gross charges attributable to CD-cases were: Gilchrist with 70.7% of total gross charges attributable to CD-cases, Bradford with 66.0% of total gross charges attributable to CD-cases, Holmes with 63.7% of total gross charges attributable to CD-cases, Hamilton with 63.5% of total gross charges attributable to CD-cases, and Gadsden with 58.2% of total gross charges attributable to CD-cases.

Summary

The chronic conditions discussed in this report are among the leading causes of death and disability in Florida and the U.S. These conditions are prevalent among people in the workforce. Using 2006–2010 data, more than half of total charges for HID cases and more than 20% of total charges for ED cases were for patients with one or more chronic conditions. HID and ED median charges were higher among CD-cases compared to NONCD-cases. In each year examined regardless of data source, the proportion of total gross charges attributable to CD-cases was higher among females compared to males. The proportion of total gross charges attributable to CD-cases was highest among non-Hispanic black followed by non-Hispanic white and Hispanic workers. The proportion of total gross charges attributable to CD-cases for all years and both data sources increased with increasing age.

Data from the 2006–2010 HID data show that about one-in-three identified occupational injury/illness cases are comprised of CD-cases with one chronic condition listed in the record, about 15% are comprised of CD-cases with two chronic conditions listed and about 5% are comprised of CD-cases with three or more chronic conditions listed. Data from the 2006–2010 ED data show that about 15% of occupational injury/illness cases are comprised of CD-cases with one chronic condition listed, about 3% are comprised of CD-cases with two chronic conditions listed, and about 0.3% are comprised of CD-cases with three or more chronic conditions listed. Using HID data, the median charges for those with three or more chronic conditions is about 60% higher than the median charges for those with no chronic conditions listed. Using ED data, the median charges for those with three or more conditions is about 40% higher than the median charges for those with no chronic conditions listed.

These data show that workers with one or more chronic conditions have a significant impact on the median and total gross charges for hospital inpatient and emergency department discharges. Efforts to prevent, delay, and/or manage chronic conditions among workers have the potential to reduce occupational injury and illness expenditures.

APPENDIX I: ICD-9-CM E-codes indicating work-relatedness

E-code first 3 digits	4 th digit	Description
E800 - Railway accident involving collision with rolling stock E801 - Railway accident involving collision with other object E802 - Railway accident involving derailment without antecedent collision E803 - Railway accident involving explosion fire or burning E804 - Fall in on or from railway train E805 - Hit by rolling stock E806 - Other specified railway accident E807 - Railway accident of unspecified nature	0	Railway employee (federal railway employees covered by Federal Employers Liability Act and not WC; BART employees covered by WC)
E830 - Accident to watercraft causing submersion E831 - Accident to watercraft causing other injury E832 - Other accidental submersion or drowning in water transport accident E833 - Fall on stairs or ladders in water transport E834 - Other fall from one level to another in water transport E835 - Other and unspecified fall in water transport E836 - Machinery accident in water transport E837 - Explosion fire or burning in watercraft	2 6	Crew Dockers/stevedores (longshoremen/stevedores covered by the Longshore and Harbor Workers' Compensation Act, not WC)
E840 - Accident to powered aircraft at takeoff or landing E841 - Accident to powered aircraft other and unspecified E842 - Accident to unpowered aircraft E843 - Fall in on or from aircraft E844 - Other specified air transport accidents E845 - Accident involving spacecraft	2 8	Aircraft crew (state in which WC claims are filed varies) Ground crew
E846	N/A	Accidents involving powered vehicles used solely within the buildings and premises of industrial or commercial establishment
E849 - Place of occurrence	1 2 3	Farm accidents Mine and quarry accidents Accidents occurring in industrial places/premises

ICD-9-CM V-codes (supplementary codes) indicating work-relatedness

V-code first 3 digits	4 th digit	Description
V62 - Other psychosocial circumstances	1	Adverse effects of work environment
V71 - Observation and evaluation for suspected conditions not found	3	Observation following accident at work

ICD-9-CM E-codes indicating work-relatedness (Effective 1 October 2009)

E-code first 3 digits	4 th digit	Description
E000 - External cause status	0	Civilian activity done for income or pay
	1	Military activity

APPENDIX II: Detailed Tables

See Excel File