Launching a Veteran-Centered Medical Home Through Improved Care-Coordination Protocols

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Introduction

Veterans comprise a vulnerable patient population with unique experiences and backgrounds that affect their health. The unique needs of veterans can create barriers to access and quality of care, ultimately affecting outcomes. Veterans represent approximately 7% of patients in our Lehigh Valley Health Network's primary catchment area. The Veterans Administration (VA) health system is not presently equipped to meet all the needs of this complex patient population. It is critical for health networks such as our own to provide comprehensive care to veterans in conjunction with services provided by the VA. Our goal is to promote a veteran-centric culture and to educate clinical staff to address the needs of veterans.

Problem Statement

The purpose of this capstone project was to evaluate the needs of our veteran population in order to guide the creation of a Military Medicine Clinic and referral protocols for veteran patients.

Methodology

A retrospective analysis based on chart reviews and database aggregation of calendar year (CY) 2014 inpatient data was performed in order to compare the veteran patient population to the general patient population. Unique patients admitted during CY 2014 allowed the determination of veteran identity and representation within the patient population. CY 2014 inpatient admission data based on primary ICD-9 code and DRG code were also included in the compiled database. The top ten ICD-9 codes and DRG codes for veterans and the general population were compared which provided an opportunity to realize any discrepancies in admission rates. Veteran data were further stratified into age groups representing historical conflict periods in order to identify any unique effects from different conflict exposures. Data were also stratified by sex, to account for the predominance of male veterans in our primary catchment area. Admission rates by primary ICD-9 code and DRG were determined, and compared with a chi-squared analysis.

Results

Compiled data revealed that 10% of unique patients admitted were veterans. Veterans also comprised 11% of total inpatient admissions for CY 2014. Analysis of admission rates between veterans and the general population revealed significant differences. Veterans had higher admission rates for complications of musculoskeletal disorders, cardiovascular disease, chronic obstructive pulmonary disease, and renal disease. These differences remained when male veterans were compared to male non-veteran patients (Table 1 and Table 2). Veterans were also more likely to be readmitted than non-veteran patients. Age stratification revealed earlier development of musculoskeletal, pulmonary, and cardiovascular disorders in veterans compared to the non-veteran patient population.

Results

Table 1: Calendar year 2014 inpatient admission data including male and female patients. Based on the primary billed ICD-9 code for each admission. This data includes only the first admission for each code for unique patients.
*Denotes significance at p<0.05.

Comparision of Veteran vs. Non-Veteran Inpatient Utilization by Primary Billed ICD-9 Code

ICD-9 Code		% Veteran Admissions	% Non-Veteran Admissions
Atrial fibrillation	427.31	3.12*	1.43
Osteoarthritis, localized, Leg	715.36	3.09*	2.09
AAC on CHR Syst Hrt Failure	428.23	1.73*	0.57
NSTEMI	410.7	2.27*	0.96
CRBL ART OCL NOS W INFRC	434.91	1.93*	1.05
Obstructive Chronic Bronchitis	491.2	1.42*	0.66
CHR DIA heart failure	428.32	1.30*	0.52
Acute renal failure	584.89	1.36*	0.49
Pneumonia, NOS	486	1.05*	0.60
Coronary Atherosclerosis Native Coronary	414.01	1.16*	0.48

Table 2: Calendar year 2014 inpatient admission data. A sub-group analysis was performed to determine if the predominance of male veterans affected the results obtained. This data is based on DRG codes billed for admissions for unique patients.
* Denotes significance at p<0.05.
**Denotes significance at p<0.05.

Comparison of Veteran vs. Non-Veteran Inpatient Utilization by DRG Code

| DRG Code		% Veteran Admissions	% Non-Veteran Admissions	% Veteran Male Admissions	% Non-Veteran Male Admissions
Major joint replacement or reattachment of lower extremity w/o MCC	470	5.02*	3.80	3.69**	2.45
Heart failure & shock w CC	292	2.69*	0.94	3.08**	1.23
Esophagitis, gastroent & misc digest disorders w/o MCC	392	2.32	2.50	2.26**	1.42
G.I. hemorrhage w CC	378	1.73*	0.69	1.94**	0.64
Simple pneumonia & pleurisy w CC	194	1.84*	0.87	1.97**	0.94
Renal failure w CC	683	1.53*	0.64	1.83**	0.81
Perc cardiovasc proc w drug-eluting stent w/o MCC	247	2.44*	1.46	1.77	1.65
Cellulitis w/o MCC	603	1.70	1.58	1.65**	1.15
Chronic obstructive pulmonary disease w CC	191	1.05*	0.64	1.48**	0.65
Syncope & collapse	312	1.28*	0.59	1.39**	0.55
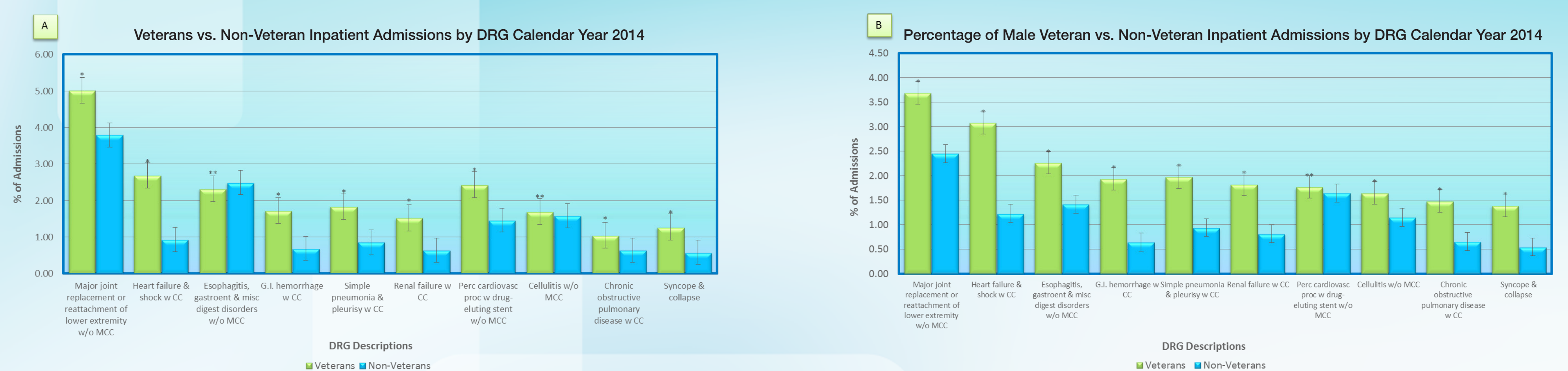
Figure 1: Calendar year 2014 inpatient admission data including male and female patients (A). A sub-group analysis was performed to determine if the predominance of male veterans affected the results obtained (B). These data are based on diagnosis-related group (DRG) codes billed for admissions of unique patients.
*Denotes statistical significance at p<0.05.
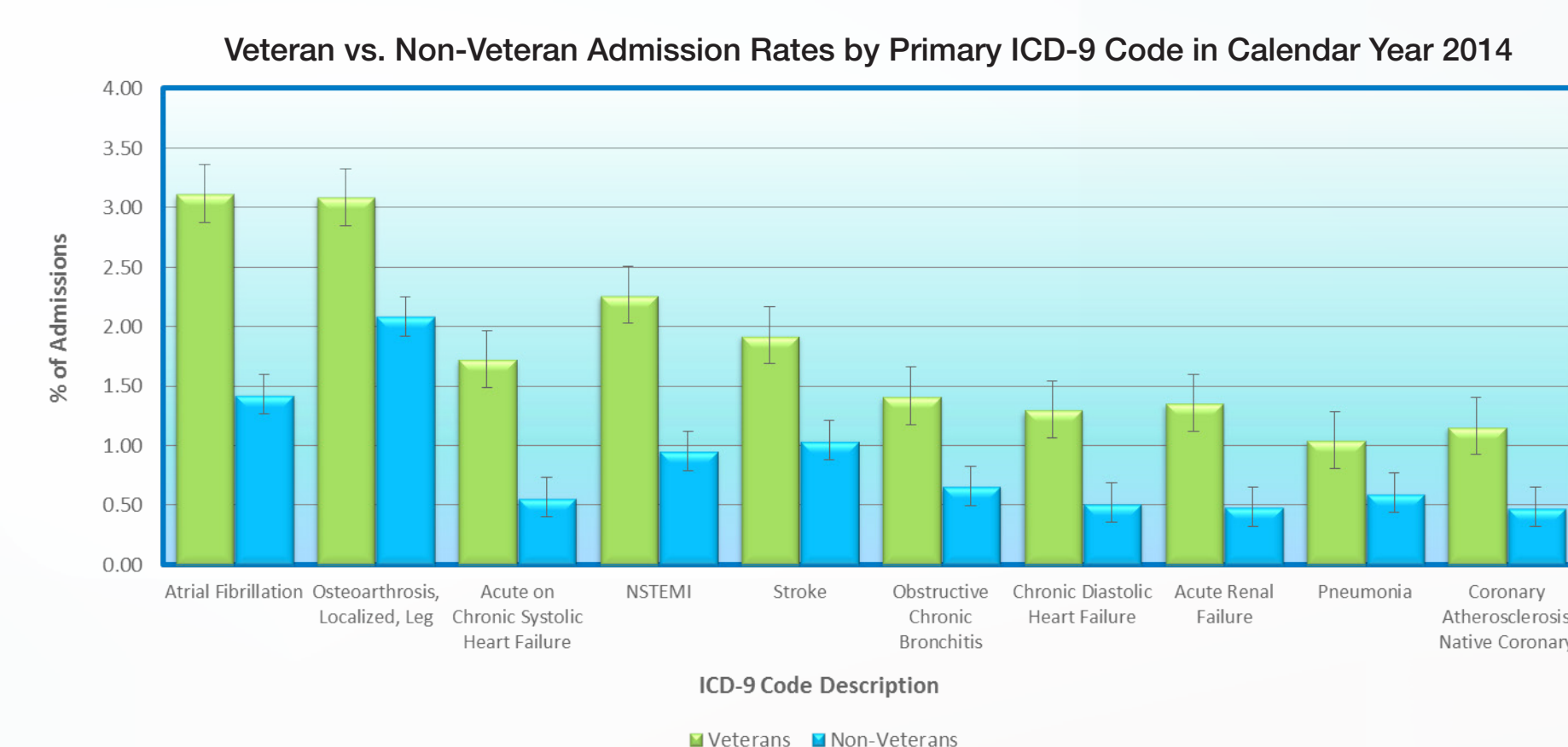**Denotes data not statistically significant with p>0.05.

Figure 2: Calendar year 2014 inpatient admission data including male and female patients. Based on the primary billed ICD-9 code for each admission. This data includes only the first admission for each code for unique patients.
*Significant differences of p<0.05 were observed in all conditions compared in this chart.
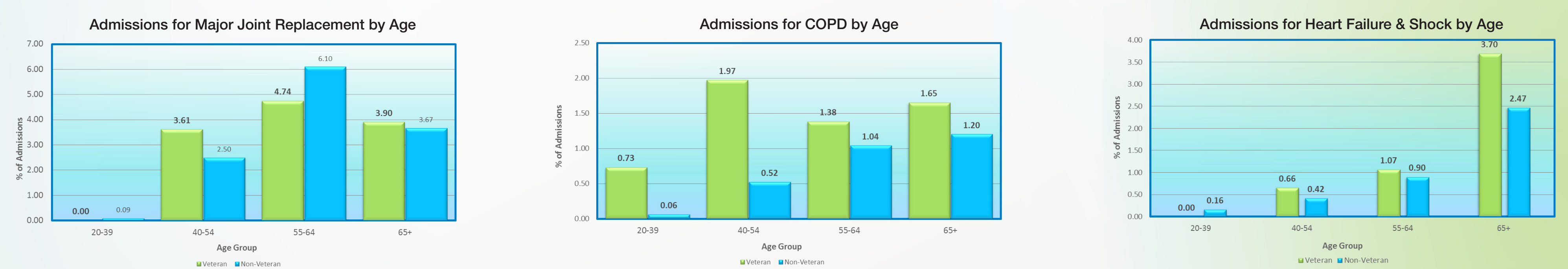

Figure 3: Admission rates by DRG for 471-Major Joint Replacement (A), 191-COPD (B), and 292-Heart Failure & Shock (C) broken down by age and veteran status. These data are from calendar year 2014 inpatient admission data.

Conclusions and Future Implications

This analysis has confirmed that veterans are a vulnerable population with higher admission rates that could be addressed in the primary care setting. Targeting cardiovascular, pulmonary, and renal disease in veterans in the outpatient setting is an area of great need. In order to appropriately manage these conditions, it is crucial to ensure that veterans are able to access appropriate primary care. Moving forward, an evaluation of outpatient data as well as relative comorbidities will guide our efforts to provide the best care to our veteran population.

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