

Summer 2015

Geropsychiatric Medical Problems

Daniel Giorgio

University of Akron Main Campus, djg52@zips.uakron.edu

Please take a moment to share how this work helps you [through this survey](#). Your feedback will be important as we plan further development of our repository.

Follow this and additional works at: http://ideaexchange.uakron.edu/honors_research_projects

 Part of the [Emergency Medicine Commons](#), [Geriatrics Commons](#), and the [Psychiatric and Mental Health Commons](#)

Recommended Citation

Giorgio, Daniel, "Geropsychiatric Medical Problems" (2015). *Honors Research Projects*. 228.

http://ideaexchange.uakron.edu/honors_research_projects/228

This Honors Research Project is brought to you for free and open access by The Dr. Gary B. and Pamela S. Williams Honors College at IdeaExchange@UAkron, the institutional repository of The University of Akron in Akron, Ohio, USA. It has been accepted for inclusion in Honors Research Projects by an authorized administrator of IdeaExchange@UAkron. For more information, please contact mjon@uakron.edu, uapress@uakron.edu.

Geropsychiatric Medical Problems

Daniel Giorgio

The University of Akron

Buchtel College of Arts and Sciences

Major: Natural Sciences

Project Sponsor: Dr. Jennifer Frey

Number of Credits: 3

Abstract

With a growing elderly population in the United States, the development of efficient methods to ensure high-quality care for geriatric patients is more important than ever. In the emergency department (ED), geriatric patients account for up to 24% of stays. Many of these patients come to the ED for neuropsychiatric reasons and some are admitted to geropsychiatric units. These patients require medical screening to identify issues that may in part account for their mental state. The purpose of this study was to characterize the patients who were admitted from the Summa Health System ED to geropsychiatric units. It was hypothesized that more than 50% of geriatric patients admitted to the psychiatric unit from the ED would have a prior medical history of psychiatric disease and that less than 10% of these patients would have a new medical condition identified in the psychiatric unit. Charts for study subjects were retrospectively abstracted and analyzed to characterize the subjects. The first hypothesis was supported with 56% of subjects having a previous history of psychiatric disease. The second hypothesis was not supported as 82% of subjects had a new medical issue found in the geropsychiatric unit.

Introduction

The elderly population of the United States is growing quickly, with the number of people over 65 years old expected to double between 2012 and 2050 (Ortman & Velkoff, 2014). This increase will almost certainly be accompanied by an increase in geriatric patients, making geriatrics a fast growing field. With this rapid growth, problems that currently exist in the field of geriatrics will become more troublesome if they are not corrected.

Geriatric patients comprise between 12% and 24% of emergency department (ED) stays, a number that increases as the elderly population increases. The most prevalent reason for ED visits by geriatric patients is falls, followed closely by neuropsychiatric disorders (Samaras et al., 2010).

In relation to the emergency department, the elderly represent a more complex group compared with younger patients in many respects. For example, elderly patients are more likely than younger patients to visit the emergency department and arrive by ambulance (Samaras et al., 2010; Pitts et al., 2008). Additionally, elderly patients are more likely to be more seriously ill and to be misdiagnosed than are younger patients (Aminzadeh & Dalziel, 2002; Singal et al., 1992). Many of the complexities arise due to the fact that elderly patients often have abnormal symptoms and comorbidities (Samaras et al., 2010).

A particularly troublesome area of emergency geriatrics involves psychological illness. About 25% of geriatric patients arriving at the emergency room present an impaired mental state, and approximately 10% of the elderly suffer from delirium (Hustey & Meldon, 2002). Delirium is ambiguously defined, with symptoms such as

disordered thinking and perceptions (McCusker et al., 2003). Many geriatric patients presenting signs of mental illness in the emergency room are later admitted to geropsychiatric units; however, the impaired mental state of some of these patients is at least in part caused by underlying medical issues, including drug withdrawal, hypoglycemia, and inflammation (Lorenzl, Fusgen & Noachtar, 2012). Even if the patient's symptoms are due to a psychiatric disorder, patients may have concurrent medical illness. These concurrent medical illnesses may need treated prior to transfer to a Geropsychiatric unit for admission. This problem is exacerbated by the fact that there is no standard for medically clearing geropsychiatric patients in the ED before they are moved to the geropsychiatric unit (Corl et al., 2008).

This study was performed with the goals of examining the emergency department evaluations that lead to patients being admitted to psychiatric units, evaluating the frequency of medical problems found in older psychiatric unit patients admitted through the emergency department, and characterizing the identified medical problems in this population. Additionally, the following two hypotheses were tested: more than 50% of older patients admitted from the ED to the psychiatric unit have a prior medical history of psychiatric disease, and less than 10% of older patients admitted from the ED to the psychiatric unit have a new medical condition identified in the psychiatric unit.

Methods

Study subjects were 65 years or older and admitted to a Summa Health System (SHS) geropsychiatric unit after being seen at a SHS ED between January 1, 2008 and September 30 2012. Subjects were excluded if they were admitted to a SHS geropsychiatric unit within 30 days prior to the visit to be used for this study. Data were recorded without the subject's name and instead coded using a study identification number.

Using the methods described by Gilbert et al. (1996), data were abstracted retrospectively from the electronic medical records of 100 subjects. Methods from Gilbert et al. (1996) included abstractor training, explicit definition of variables, and use of standardized abstraction data forms. The data were first recorded on paper data sheets and then transferred to a Research Electronic Data Capture (REDCap) database hosted at Summa Health System (Harris et al., 2009). Redcap is an online tool for securely storing clinical information for studies. All data entry into Redcap was reviewed by a second team member for accuracy. Abstracted data collected from Emergency Department (ED) templates included demographics, past medical history, ED vital signs, and ED evaluations. Data collected from geropsychiatric units inpatient records included medical issues that were identified while the subject was staying in the geropsychiatric unit. The data collection sheets can be found in the appendix.

Data were analyzed using SPSS and reported as means or proportions. Inferential statistical methods were also performed with an α -level of 0.05. The chi-square test was used to determine if there was an association between two categorical variables. This test

was performed with the assumptions that all expected cell counts were greater than 1 and at least 80% of expected cell counts were greater than 5. The two-sample t-test was used to determine if there was a significant difference between means for two categories. This test was performed assuming that variances were unequal, populations were not normally distributed but sample sizes were large, and that the samples were independent.

Results

Demographics

In order to characterize the study subjects, demographic data were analyzed and reported in Figures 1 and 2. The majority of patients were white, with a mean age of 78 years. There was not a large gender gap.

Gender	Female	Male		
	58%	42%		
Race	White	Black	Latino	
	89%	9%	2%	
Age	Minimum	Maximum	Mean	Std. Deviation
	65	99	78	8.4

Figure 1: Demographics.

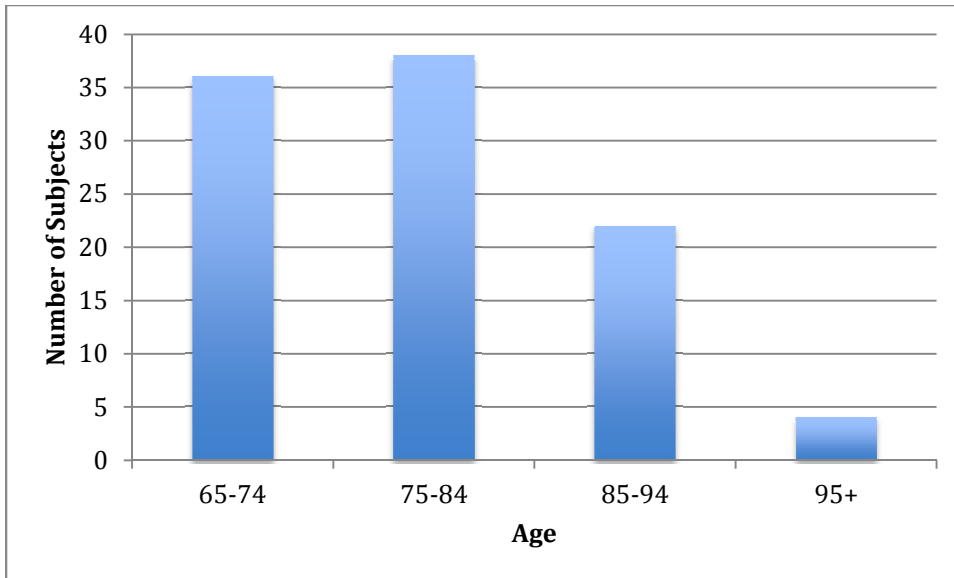


Figure 2: Age distribution. Age of subjects displayed as frequencies.

Psychological Previous Medical Histories

The psychological previous medical histories (PMH) of the subjects were recorded and displayed in Figure 3. The most common diagnosis was dementia, with 80% of the subjects having a previous diagnosis. Overall 56 of the subjects had one of the three shown previous psychological diagnoses, compared to the hypothesized 50 or greater. Figure 4 displays psychological previous medical histories by gender. Chi-square testing was performed with a null hypothesis that presence of a psychological PMH was not associated with gender and an alternative hypothesis that presence of a psychological PMH and gender are related. The assumptions described in the methods were met. This test resulted in a p-value of 0.067, so the null hypothesis could not be rejected. It could not be concluded that having a psychological PMH and gender were related.

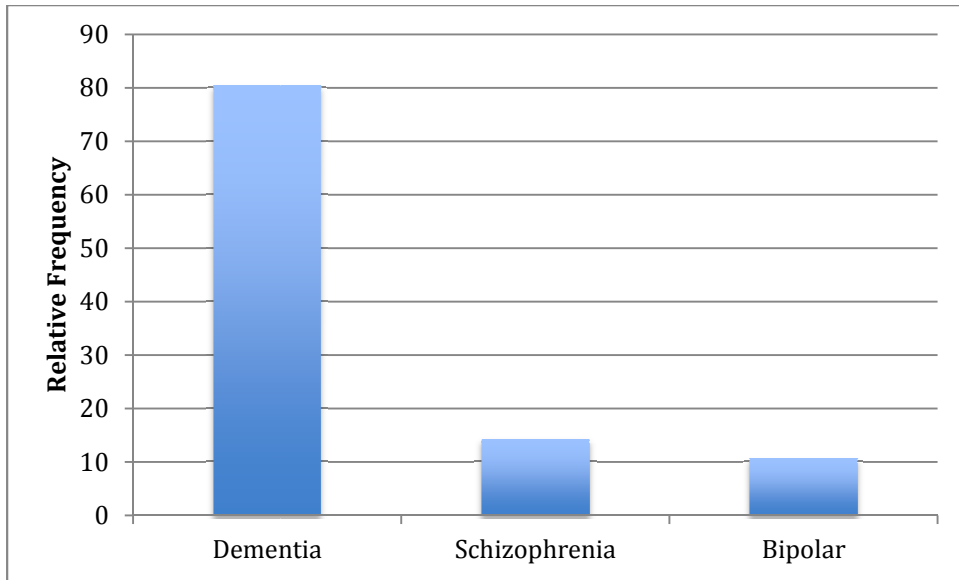


Figure 3: Psychological Previous Medical Histories. Previous diagnoses represented as relative percents of subjects with psychological previous medical histories.

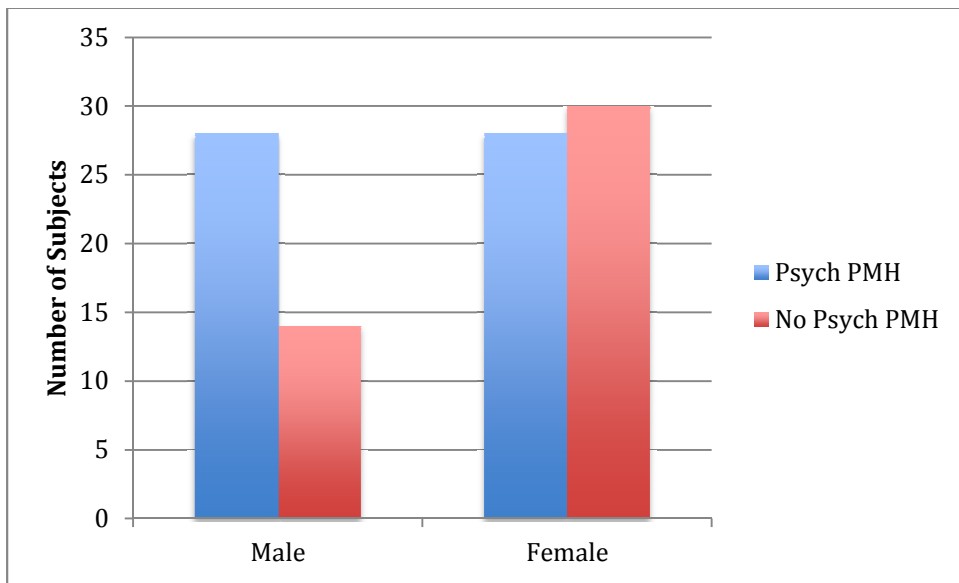


Figure 4: Psychological Previous Medical Histories by Gender.

Physiological Prior Medical Histories

Previous medical diagnoses of hypertension (HTN), diabetes mellitus (DM), coronary artery disease (CAD), asthma and chronic obstructive pulmonary disease

(COPD), thyroid conditions, and cerebrovascular accident and transient ischemic attack (CVA/TIA) were recorded. As shown in Figure 5, hypertension was the most common diagnosis. Figure 6 displays physiological PMHs by gender. Chi-square testing was performed for each PMH with null hypotheses that the presence of each physiological PMH was not associated with gender and alternative hypotheses that the presence of each physiological PMH is related to gender. Assumptions were met for all but the test for CVA/TIA, which had 75% of cells with an expected value of 5 or greater. None of the p-values were less than .05, so none of the null hypotheses could be rejected. It could not be concluded that having a physiological PMH was related to gender.

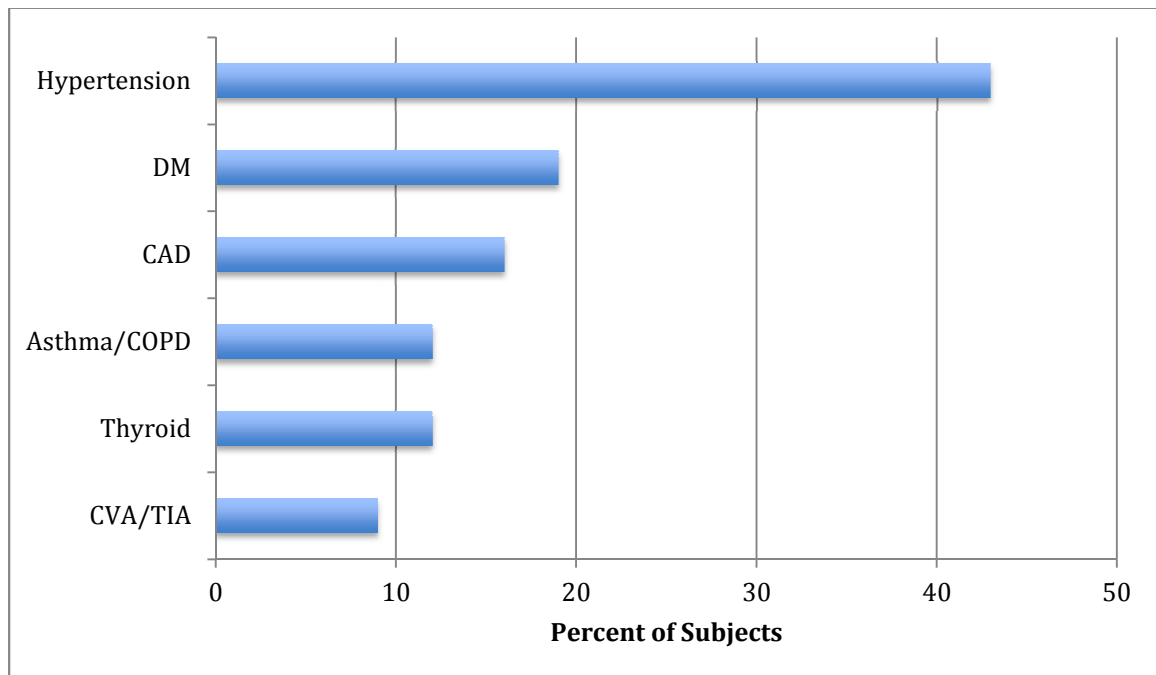


Figure 5: Physiological Previous Medical Histories. Previous diagnoses represented as percentages of the total study population.

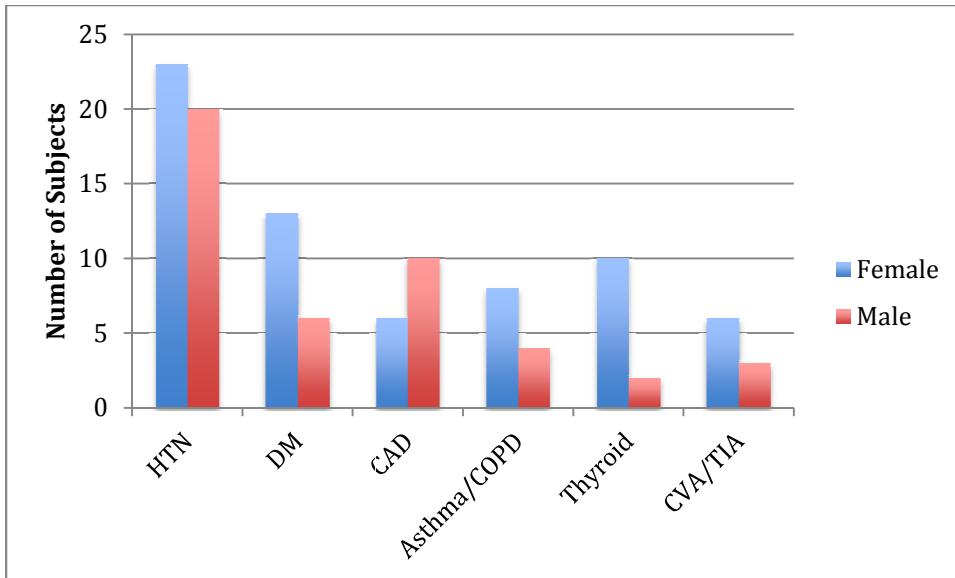


Figure 6: Physiological Previous Medical Histories by Gender.

Emergency Department and Geropsychiatric Unit

The average amount of time the subjects spent in the ER before discharge to the psychiatric unit was 297 ± 19.1 minutes. A two-sample t-test was performed to determine if there was a significant difference between the mean decision to admit times for subjects with and without psychological PMHs. The assumptions described in the methods were met. The null hypothesis was that the means were equal and the alternative hypothesis was that they were not. The test resulted in a p-value of 0.165, so the null hypothesis could not be rejected. It could not be concluded that the means were significantly different. Figure 7 displays a scatterplot comparing subject age with decision to admit time. The correlation coefficient was calculated to be 1.9×10^{-4} , revealing no correlation between age and decision to admit time.

As shown in Figure 8, the most common physician diagnosis prior to subject transfer to the geropsychiatric unit was dementia or complications of dementia, such as dementia with behavioral disturbances. A total of 43 subjects were diagnosed with

dementia, followed by 25 with depression and 23 with suicidal ideation or attempts.

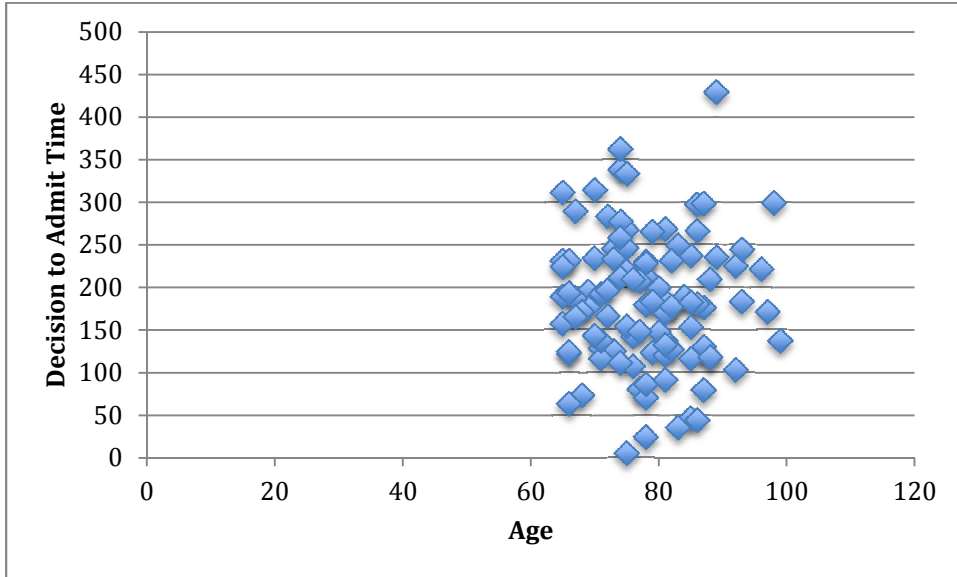


Figure 7: Decision to admit time by age.

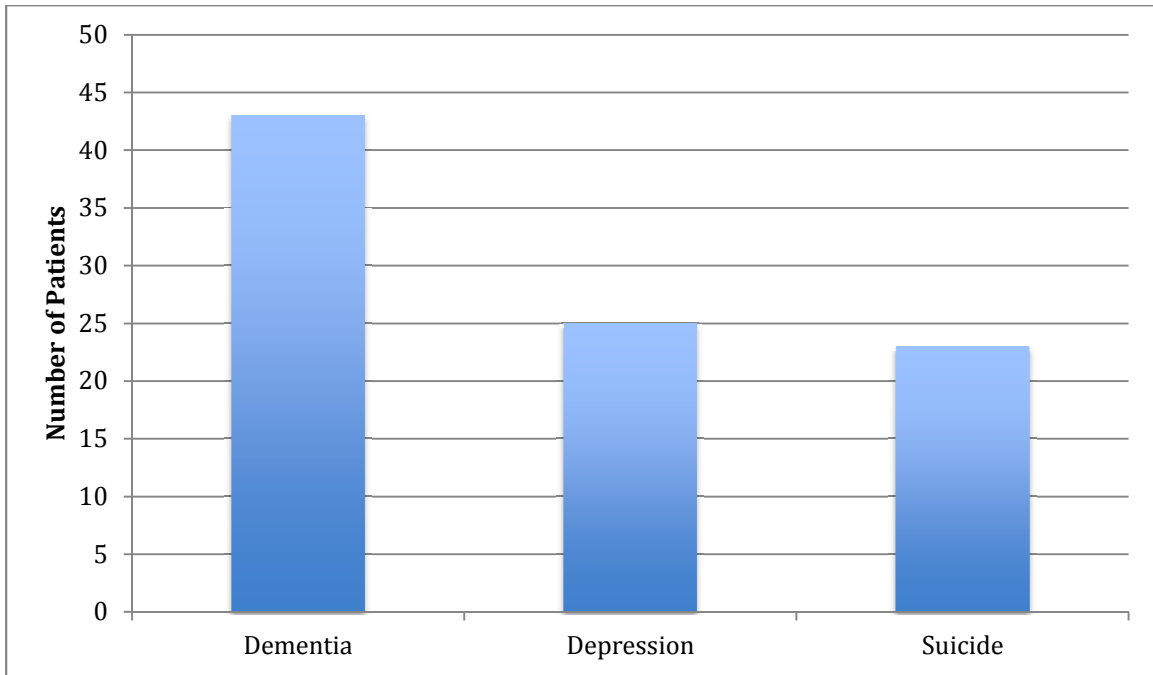


Figure 8: Physician diagnoses. Physician diagnoses prior to subject transfer to geropsychiatric units are represented as frequencies within the total study population.

New issues Identified by the Geropsychiatric Unit

82 (82/100) subjects had a new medical issue identified in the geropsychiatric unit, compared to the hypothesized 10% or less. Of these subjects, 25 had issues that were acute, most of which were urinary tract infections. Acute renal failure was also identified in three subjects. Vitamin deficiencies were the most common chronic condition, with 24 deficiencies identified in the geropsychiatric unit. Other common chronic conditions included hypertension and chronic pain. A two-sample t-test was performed to determine if the length of time between ED admission and transfer to the psychiatric unit was related to the finding of new issues in the psychiatric unit. The null hypothesis was that the mean time was the same for patients who had new issues found the psychiatric unit and those who did not, while the alternative hypothesis was that there was a significant difference between mean times. The assumptions described in the methods were met except for the large sample size, as the number of patients who did not have new issues found was 18. The t-test resulted in a p-value of 0.45, so the null hypothesis could not be rejected. It could not be concluded that the means were significantly different.

Discussion

Geriatric psychiatry will become increasingly important as the elderly population grows. Because of this, it is crucial to ensure that procedures involving elderly patients are standardized and effective. The aim of this study was to characterize geriatric patients who were admitted to the geropsychiatric unit from the ED and to evaluate and mark the frequency of medical problems in these patients. It was hypothesized that more than 50% of geriatric patients admitted from the ED to the psychiatric unit would have a prior medical history of psychiatric disease, and that less than 10% of older patients admitted from the ED to the psychiatric unit would have a new medical condition identified in the psychiatric unit.

As shown in Figure 1, there is not much of a difference between the number of males and females admitted to the geropsychiatric unit from the ED. Interestingly, the race percentages in Figure 1 more closely mirror the statewide Ohio percentages (83.2% white and 12.5% black) than the percentages in Akron (62.2% white and 31.5% black). Both the gender and race demographics found in this study were in line with the demographics found in another study (Blank et al., 2007).

In support of the first hypothesis, 56% of subjects had a previous medical history of psychiatric disease. Forty-five percent (45%) of subjects had dementia, making dementia the most prevalent mental disorder by far. This result matches with the results of previous studies (Samaras et al., 2010; Marianne, Specht, & Buckwalter, 2005). Schizophrenia (8%) and bipolar disorder (6%) were less prevalent.

The second hypothesis was not supported, as 82% of the patients had a new medical issue identified in the geropsychiatric unit, including acute conditions such as

UTIs and renal failure and chronic conditions like hypertension. Many of these issues, especially those that were chronic, could likely be treated in the geropsychiatric unit. However, some of the more severe acute conditions, like renal failure, may have needed to be treated within the medical unit of the hospital before transfer to the geropsychiatric unit.

Medical clearance of psychiatric patients in the ED has been examined in previous studies. There is no current standard for medical clearance of emergency patients before transfer to psychiatric units. While emergency physicians have the option to order laboratory testing before discharging patients to the psychiatric unit, this has been shown to be unnecessary and costly when performed with every patient (Janiak & Atteberry, 2012). Furthermore, full vital sign and medical history checks are almost always adequate means of finding acute medical conditions in emergency psychiatric patients (Korn, Currier, & Henderson, 2000; Olshaker et al., 1997).

While the SHS ED observed in this study did perform full vital checks on every subject, there were still at least two patients with severe acute conditions that went undiagnosed in the ED. Additionally, not every hospital follows the same procedure as the SHS ED. A study by Szpakowicz and Herd at another hospital found that only 42% of psychiatric patients age 50 and older transferred from the ED were given full vital checks (Szpakowicz & Herd, 2008). This, along with the number of new medical issues found in the geropsychiatric unit in this study, may reveal a need for a universally accepted standard of medical clearance for elderly psychiatric patients in the ED.

References

- Aminzadeh, Faranak, and William Burd Dalziel. "Older Adults in the Emergency Department: A Systematic Review of Patterns of Use, Adverse Outcomes, and Effectiveness of Interventions." *Annals of Emergency Medicine* 39.3 (2002): 238-47. Web.
- Blank, Karen, Laurel Hixon, Cindy Gruman, Julie Robison, Gene Hickey, and Harold I. Schwartz. "Determinants of Geropsychiatric Inpatient Length of Stay." *Psychiatric Quarterly* 76.2 (2005): 195-212. Web.
- Corl, Keith, et al. "Variations in laboratory testing during medical clearance of psychiatric patients in the emergency department." *Med Health RI* 91 (2008): 339-341.
- Gilbert, Eric H., Steven R. Lowenstein, Jane Koziol-Mclain, Diane C. Barta, and John Steiner. "Chart Reviews In Emergency Medicine Research: Where Are The Methods?" *Annals of Emergency Medicine* 27.3 (1996): 305-08.
- Harris, Paul A., Robert Taylor, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, and Jose G. Conde. "Research Electronic Data Capture (REDCap)—A Metadata-driven Methodology and Workflow Process for Providing Translational Research Informatics Support." *Journal of Biomedical Informatics* 42.2 (2009): 377-81.
- Hohl, Corinne Michèle, et al. "Polypharmacy, adverse drug-related events, and potential adverse drug interactions in elderly patients presenting to an emergency department." *Annals of emergency medicine* 38.6 (2001): 666-671.
- Hustey, Fredric M., and Stephen W. Meldon. "The prevalence and documentation of impaired mental status in elderly emergency department patients." *Annals of emergency medicine* 39.3 (2002): 248-253.
- Janiak, Bruce D., and Suzanne Atteberry. "Medical Clearance of the Psychiatric Patient in the Emergency Department." *The Journal of Emergency Medicine* 43.5 (2012): 866-70.
- Korn, Carrie S., Glenn W. Currier, and Sean O. Henderson. "'medical Clearance' of Psychiatric Patients without Medical Complaints in the Emergency Department." *The Journal of Emergency Medicine* 18.2 (2000): 173-76.
- Lorenzl, Stefan, Ingo Füsgen, and Soheyl Noachtar. "Acute confusional states in the elderly—diagnosis and treatment." *Deutsches Ärzteblatt International* 109.21 (2012): 391.
- McCusker, Jane, et al. "The course of delirium in older medical inpatients." *Journal of General Internal Medicine* 18.9 (2003): 696-704.

Olshaker, Jonathan S., Brian Browne, David A. Jerrard, Heather Prendergast, and Thomas O. Stair. "Medical Clearance and Screening of Psychiatric Patients in the Emergency Department." *Academic Emergency Medicine* 4.2 (1997): 124-28.

Ortman, Jennifer M., Victoria A. Velkoff, and Howard Hogan. "An aging nation: the older population in the United States." *Proc. Economics and Statistics Administration, US Department of Commerce* (2014).

Pitts, Stephen R., et al. "National hospital ambulatory medical care survey: 2006 emergency department summary." *Natl Health Stat Report* 7.7 (2008): 1-38.

Samaras, Nikolaos, et al. "Older patients in the emergency department: a review." *Annals of emergency medicine* 56.3 (2010): 261-269.

Singal, Bonita M., et al. "Geriatric patient emergency visits part I: comparison of visits by geriatric and younger patients." *Annals of emergency medicine* 21.7 (1992): 802-807.

Smith, Marianne, Janet Specht, and Kathleen C. Buckwalter. "Geropsychiatric Inpatient Care: What Is State Of The Art?" *Issues in Mental Health Nursing* 26.1 (2005): 11-22. Web.

Szpakowicz, Mikolaj, and Anthony Herd. "'Medically Cleared': How Well Are Patients with Psychiatric Presentations Examined by Emergency Physicians?" *The Journal of Emergency Medicine* 35.4 (2008): 369-72.

Vanpee, Dominique, et al. "Epidemiological profile of geriatric patients admitted to the emergency department of a university hospital localized in a rural area." *European Journal of Emergency Medicine* 8.4 (2001): 301-304.

Appendix

Appendix A: Geropsychiatric Data Collection from ED records

Study ID: _____

Study Team Member Initials:

Date of ED visit: _____

Age: _____

Gender: Female Male

Race: White Black Latino Asian Other _____

PMH (from ED template and ED electronic transcription):

Dementia Schizophrenia Bipolar HTN CAD

Asthma/COPD DM Thyroid CVA/TIA Other

ED Final/Preadmission Vital Signs:

BP _____ HR _____ Temp _____ RR _____ Pulse Ox _____

Number of Medications upon admission (abstracted from ED medicine reconciliation): _____

ED Course and Evaluation: if not done, please list date last done if available

CBC No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

BMP No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

LFT No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)

Abnormal Result values:

Lipase No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

Ammonia No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

UA No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

TSH No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

CXR No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

CT Head No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

Tox Screen No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

EtOH No Date last done: _____
Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

Delirium No Date last done: _____
Screen Yes Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Screen Type: _____
Abnormal Result values:

Drug No Date last done: _____
Level (A) Yes Which drug: _____
N/A Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

Drug No Date last done: _____
Level (B) Yes Which drug: _____
N/A Normal Abnormal (ED Action Taken) Abnormal
(No ED Action Taken)
Abnormal Result values:

ED Physician Diagnoses:

- 1.
- 2.
- 3.
- 4.
- 5.

Appendix B: Geropsychiatric Data Collection from Inpatient records

Study ID: _____

Study Team Member Initials:

Date Admitted to Geropsychiatric Unit: _____

Date Discharged/Transferred from Geropsychiatric Unit: _____

Was the patient transferred out of Geropsychiatric Unit secondary to a medical diagnosis? No Yes

Medical Issues identified on the Geropsychiatric Unit:

Infectious:

Metabolic (eg electrolytes or dehydration):

CNS (eg CVA/TIA/SDH):

Toxicological (eg polypharmacy, illicit substances, EtOH):

Other:

None