DEPARTMENT OF THE ARMY
BROOKE ARMY MEDICAL CENTER
3551 ROGER BROOKE DRIVE
FT SAM HOUSTON, TX 78234

Final Report

A Retrospective Review of Emergency Department Visits That May Be Appropriate for Management in Non-Emergency Settings

July 19th, 2021

Reporting Period: **September 2019- August 2020, January 2021**

Prepared for:
Defense Health Agency
7700 Arlington Boulevard Suite 5101
Falls Church, VA 22042-5101

Submitted by
Steven G Schauer, MAJ, DO, Principal Investigator
(210)-292-1017, email: steven.g.schauer.mil@mail.mil

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
07/19/2021	Final Report	Sept 2019- Aug 2020

4. TITLE AND SUBTITLE

TITLE: A Retrospective Review of Emergency Department Visits That May Be Appropriate for Management in Non-Emergency Settings

SHORT TITLE: A retrospective review of non-emergent visits

5a. CONTRACT NUMBER

5b. GRANT NUMBER

DS20CR01

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Ashley D Tapia, BS (1, 2), Jeffrey T Howard, PhD (2, 3, 4), Natasha L. Bebo, BSN, RN (5), James A Pfaff, MD (5), Eric J Chin, MD, MBA (5, 6), Wesley A Trueblood, MD (5, 6), Michael D April, MD, DPhil (6, 7), Brit Long, MD (5, 6), Adrianna Long, MD (5, 6), William Fernandez, MD (8), Steven G Schauer, DO, MSCR (1, 5, 6, 8)

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Brooke Army Medical Center, 3551 Roger Brooke Drive, JBSA Fort Sam Houston, Texas, 78234 USA

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Brooke Army Medical Center, 3551 Roger Brooke Drive, JBSA Fort Sam Houston, Texas, 78234 USA

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Emergency departments (ED) continues to struggle with overcrowding, increasing wait times, and a surge in patients with non-urgent conditions. Patients frequently choose the ED for non-emergent medical issues or injuries that could readily be handled in a primary care setting. We analyzed encounters in the ED at the BAMC to determine the percentage of visits that could potentially be managed in a pcp setting. We conducted a retrospective chart review of patients from Sept 2019 to Aug 2020 which represented equidistance from the start of the COVID-19 pandemic. We defined visits to be primary care eligible, if they were discharged home and received minimal interventions. We queried data on 75,205 patient charts. We categorized 59% of visits as primary care eligible within our chart review. However, the proportion of patient visits that qualified as primary care eligible was generally consistent. We assessed over half of all emergency department admissions could be primary care eligible. Our findings suggest that our patient population may benefit from offering additional lower-cost, appointment-based healthcare delivery to decompress the ED.

15. SUBJECT TERMS

Emergency Department, overcrowding, non-urgent, COVID, pandemic

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Ashley D. Tapia
U	U	U	U	22	19b. TELEPHONE NUMBER *(Include area code)* 207-450-2543

Figures: 3
Tables: 3
References:15
Words: 4,303
Pages: 22

TITLE: A Retrospective Review of Emergency Department Visits That May Be Appropriate for Management in Non-Emergency Settings

SHORT TITLE: A retrospective review of non-emergent visits

AUTHORS

Ashley D Tapia, BS (1, 2)
Jeffrey T Howard, PhD (2, 3, 4)
Natasha L. Bebo, BSN, RN (5)
James A Pfaff, MD (5)
Eric J Chin, MD, MBA (5, 6)
Wesley A Trueblood, MD (5, 6)
Michael D April, MD, DPhil (6, 7)
Brit Long, MD (5, 6)
Adrianna Long, MD (5, 6)
William Fernandez, MD (8)
Steven G Schauer, DO, MSCR (1, 5, 6, 8)

(1) US Army Institute of Surgical Research, JBSA Fort Sam Houston, Texas, USA
(2) Oak Ridge Institute for Science and Education (ORISE), Oak Ridge, Tennessee, USA
(3) University of Texas at San Antonio, San Antonio, Texas, USA
(4) Consequences of Trauma Working Group, Center for Community-Based and Applied Health Research, University of Texas at San Antonio, San Antonio, Texas, USA
(5) Brooke Army Medical Center, JBSA Fort Sam Houston, Texas, USA
(6) Uniformed Services University of the Health Science, Bethesda, Maryland, USA
(7) 40th Forward Resuscitative Surgical Team, Fort Carson, Colorado, USA
(8) University of Texas Health San Antonio, San Antonio, Texas, USA

KEYWORDS: emergency department, overcrowding, non-urgent patients, military, coronavirus, COVID-19, pandemic

FUNDING: Our study was supported by a grant from the Defense Health Agency (grant DS20CR01).

DISCLOSURES: None

ETHICS: We submitted a research determination to the Regional Health Command – Central regulatory office. They reviewed our project and determined it met the primary definition of process improvement and did not require institutional review board oversight.

DISCLAIMER: The views expressed in this article are those of the authors and do not reflect

the official policy or the position of the US Army Medical Department, the Department of the Army, or the US Government.

ACKNOWLEDGEMENTS: None

ABSTRACT

Background: Emergency departments (ED) continues to struggle with overcrowding, increasing wait times, and a surge in patients with non-urgent conditions. Patients frequently choose the ED for non-emergent medical issues or injuries that could readily be handled in a primary care setting. We analyzed encounters in the ED at the Brooke Army Medical Center – the largest hospital in the Department of Defense – to determine the percentage of visits that could potentially be managed in a lower cost, appointment-based setting.

Methods: We conducted a retrospective chart review of patients within our electronic medical record system from September 2019 to August 2020 which represented equidistance from the start of the COVID-19 pandemic resulting in a shift in ED used based on previously published data. %). Our study also compared the number of ED visits pre-covid vs. post-covid. We defined visits to be primary care eligible, if they were discharged home and received no computed tomography imaging, ultrasound, magnetic resonance imaging, intravenous medications, or intramuscular controlled substances.

Results: During the 12-month period, we queried data on 75,205 patient charts. We categorized 59% (n=42,647) of visits as primary care eligible within our chart review. Most primary care eligible visits were ESI level 4 (59.2%). The largest proportion of primary care eligible patients (28.3%) were seen in our fast-track area followed by our pediatric pod (21.9%). The total number of ED visits decreased from 7,477 pre-covid to 5,057 post-covid visits. However, the proportion of patient visits that qualified as primary care eligible was generally consistent.

Conclusions: We assessed over half of all emergency department admissions could be primary care eligible. Our findings suggest that our patient population may benefit from offering

additional lower-cost, appointment-based healthcare delivery to decompress the ED.

INTRODUCTION

Background

Overcrowding in (EDs) has increased over the years, leading to delays in care and an increase in negative patient outcomes [1]. Overcrowding is defined as “the situation in which ED function is impeded primarily because of the excessive number of patients waiting to be seen, undergoing assessment and treatment, or waiting for departure comparing to the physical or staffing capacity of the ED” [2]. A major culprit of this increase is a surge of non-urgent patients presenting to the emergency department (ED). Previous studies have estimated that 13-27% of ED civilian visits are primary care eligible visits that could be managed in an appointment-based setting [3, 4].

Previous studies have reported possible motives as to why non-emergent patients choose the ED over primary care providers. Patients often choose the ED over other facilities due to various reasons including easy accessibility and the convenience of being an easy solution to comprehensive healthcare problems with the ability to perform rapid workups and evaluations [5, 6]. During the COVID-19 pandemic, most patients reported having difficulties scheduling an appointment or self-reported as having an emergent condition (Tapia et al, pending publication, US Army Medical Journal).

Several negative consequences have been associated with ED overcrowding. A major consequence is longer wait times leading to delays in care, which not only affect the non-urgent patients but also the critically ill patients [7].According to the CDC, 10% of non-urgent patients wait over an hour to see a physician [8]. Longer delays can cause serious complications such as decreased patient safety, reduced quality of care, and an increase in mortality rate [2].

Overcrowding also causes an increase in length of stay (LOS) and an increase in patients leaving without being seen, both of which cause losses in revenue [9].

ED overcrowding has a costly effect on the Military Health System (MHS), with ED visits not only being more expensive than primary care appointments but those beneficiaries also have prolonged periods of lost work time. Misuse of ED resources for routine care delivery contributes to unnecessary inefficiencies and monetary costs associated with ED operations required to plan for surges in visits that are often unpredictable. These issues have a negative effect on military readiness by diluting the proportion of ED visits requiring emergency care and other interventions relevant to the deployment mission. Based on internal data from BAMC, 30-40% of daily visits were triaged as Emergency Severity Index (ESI) 4s and 5s, which represent non-urgent visits [10]. Meanwhile, the number of unbooked primary care appointments typically sits above 10% on average. These data sets display inefficient ED resource utilization. Patients frequently experience prolonged ED wait times for minor issues, that could have been easily handled at their primary care providers.

Goal of this Study

We seek to determine the proportion of patients that visited the ED at BAMC which were primary care eligible and would presumably be readily manageable in an appointment-based setting.

METHODS

Ethics

We submitted a research determination to the Regional Health Command – Central regulatory office. They reviewed our project and determined it met the primary definition of process improvement and did not require institutional review board oversight.

Subjects and Settings

Our study setting took place at the Brooke Army Medical Center (BAMC) at Joint Base San Antonio, Texas over a 12-month period, from September 1, 2019 through August 31, 2020. BAMC is the only level 1 trauma center in the DoD. The ED had nearly 84,000 visits during the last calendar year. The facility also serves as a public regional trauma center. The ED in BAMC is comprised of sections called "pods" with each area having a specific patient focus; fast track, pediatrics, adult high- and moderate-acuity, and traumas/resuscitations. The department features an emergency medicine residency program with 16 residents per year over the 3-year program split between the Army and Air Force. The residency program also supports ultrasounds, emergency medical services, and hyperbaric fellowship programs. BAMC is the largest hospital in the DoD with the largest Graduate Medical Education system.

Data Acquisition

We conducted a retrospective chart review of patient encounters triaged as non-emergent to determine what proportion could likely undergo management in a non-ED setting. We queried

the electronic medical record (EMR) system, T-System™ (Plano, TX), for encounters during the outlined study period. T-System is the EMR system in use in our ED which relies primarily on specific data entry fields (dates, times), and checkbox-type charting (complaints, physical exam, predefined medical decision-making pathways, etc). Data was extracted automatically from EMR fields that are based on specific data entry type (date, time), checkbox (e.g. review of systems, physical exam), and limited free text entry (e.g. chief complaint) into spreadsheet database by way of extraction parameters predefined for performance improvement analyses and department metric tracking.

Measures

The primary outcome for the study was the determination of whether each patient could be managed in a non-ED setting, which we referred as primary care eligible. Patients were identified as primary care eligible if they were discharged to home, were not given any intravenous (IV) medications, and had no advanced diagnostic imaging, including computed tomography (CT), magnetic resonance imaging (MRI) or ultrasound (US); otherwise, patients were considered not primary care eligible. Patient characteristics included acuity level, arrival mode, final treatment area, procedures, complaints, and discharge status. Acuity level was measured as categories from 1 (most urgent) to 5 (least urgent) or missing. Arrival modes were categorized as ambulance, automobile, helicopter, not available, police, walk-in, unknown/other. The final treatment areas were categorized as pediatric, adult, observation, fast track, and waiting room. Procedures were grouped into IV medications and advanced diagnostic imaging. Patient complaints/diagnoses were grouped into categories-based text entry and then rank-ordered into the ten most frequently occurring complaints. Patient discharge status was categorized as admit,

discharge, left (against medical advice/unseen/prior to registration), transfer to other facility, expired, not available or missing. Additionally, to compare the number of visits and patient characteristics before and after the onset of the COVID-19 pandemic. We grouped patients with arrival dates from September 2019 through February 2020 as pre-covid, and patients with arrival dates from March 2020 through August 2020 as post-covid.

Data Analysis

We performed all statistical analyses using IBM SPSS StatisticsWA (version 27, Chicago, IL). We presented continuous variables as means with standard deviation (SD). We presented nominal variables as percentages and 95% confidence intervals (CI). We used the nonparametic Mann-Whitney U test for non-normally distributed continuous variables, and the Chi-square test for nominal variables.

RESULTS

During the 12-month period, we queried data from the EMR on 75,205 patient charts. Within our dataset, shown in Table 1, there were 59% (n=42,647) that were primary care eligible. Out of those encounters, 59.2% were ESI 4 and 6.4% were ESI 5. When reviewing the top 10 complaints or diagnosis for primary care eligible patients indicates the biggest proportion is respiratory infections at 28.7%. Followed by 10% for injuries, 7.6% for heart/chest pain and all others under 5%, shown in Table 3.

Dividing our data into areas, the largest proportion of non-urgent patients were in the adult areas at 49.1%, followed by fast track at 28.3% and the pediatric pod at 21.9%, leaving less than 1% for both observation and the waiting room. We had a mean of 3,554 primary care eligible patients a month at the low point of our study.

Our study also compared the number of ED visits pre-covid vs. post-covid. The total number of ED visits decreased from 7,477 pre-covid to 5,057 post-covid visits per month. However, the proportion of patient visits that qualified as primary care eligible stayed approximately the same, pre-covid 68.4% (n=3,104 and 60.8% (n=1,643). This trend continued in the number of ED visits in each pod, with a majority of patients in the adult pods (47.4% pre-covid and 51.8% post-covid) followed by the pediatric area at 22.9% pre-covid and 20.4% post-covid, then fast track patients at 29% pre-covid and 27% post-covid.

Our data shows the total number of monthly visits at the start of our data collection at approximately 7,130 visits, reaching its peak at approximately 8,143 visits in January 2019. The start of the COVID-19 pandemic is apparent as the number of ED visits starts to drop drastically in March to its lowest point at approximately 3,758 visits in April 2019.

DISCUSSION

In this study, we analyzed 72,205 emergency department visits of which over half of the encounters we determined were primary care eligible. “According to our findings, nearly 3 of 5 patients during the study period were deemed ‘primary care eligible’ and could have been managed without resorting to an ED visit. With the average time of stay at the ED being over 3 hours, these unnecessary ED visits are costly for those within the workforce. This highlights a potential population of visits where determining the needs of the military beneficiaries may

result in better access to care, reduced missed time from work, and reduced emergency department utilization. Most importantly, appropriate ED utilization would result in system - wide cost savings for the MHS and the DHA.

We also compared the difference in patient volume pre and post COVID-19 pandemic. While the total number of average monthly visits decreased from 7,477 pre-covid visits to approximately 5,057 visits post-covid, the proportions of patients triaged ESI 4 or 5 remained about the same at over half of primary care eligible patients. Suggesting that even with a pandemic going on, the same proportion of total visits to the ED were non-urgent patients. A previous study done at BAMC showed a higher proportion of ESI level 1-3 and a drop in ESI level 4 patients (Long et al, pending publication, Military Medicine). Our study analyzed the combination of both ESI level 4 in proportion to the total level of ED visits. The proportion stayed in the same range while there was a decline in the total number of visits during COVID. Previous studies show the significant decrease in non-serious visits during the pandemic was a worldwide occurrence and was most likely due to fear of being infected by COVID-19 and the fears of contributing to the EDs at risk for becoming overwhelmed with volume [6, 11].

The increase in use of the ED affects the quality of services in the ED. The quality of care is highly impacted on the resources available, including the staff on shift and the medical equipment available with longer wait times due to a finite number of rooms and staff. Fast track or minor care areas represent a strategy to alleviate this issue, a system put into place to help those patients with minor injuries or illness [11]. Our dataset showed 28.3% of ED encounters were sent to fast track, suggesting most of the primary care eligible patients could be seen quickly without taking resources or time from urgent patients.

Previous studies done by military audit agencies reported that military hospitals provide care for mostly non urgent, low acuity care often for the convenience of military health beneficiaries [12, 13]. A GAO report analysis of emergency data from six military emergency departments showed that between 54 to 95 percent of the services provided were for nonemergency or non-urgent conditions [14]. The presence of emergency department is often justified based on readiness or training requirements or the fact that civilian emergency care is not readily available near the military treatment facility [14].

Solutions to decrease overcrowding have been shown in previous studies. Many hospitals have started to implement fast-tracking, which is currently being used at BAMC. However, during peak times when fast-track or rapid treatment areas are full, another strategy could be implementation of an appointment-based system that is readily accessible across "teams" of care and locations within the MHS [15]. These strategies might alleviate overcrowding, but other studies have focused on improving other parts of healthcare to tackle the source of the problem. Easier access to their primary care clinic with ready-access to available appointments may allow less visits to the ED. Examples such as late weeknight appointments or even weekend appointment availability can lower the non-urgent visits to the ED (Tapia et al, pending publication). Other options include; off-hours telehealth visits; a system that eliminates the need for prolonged phone calls and difficult-to-navigate bureaucratic systems, such as an appointment tracker system would be beneficial; and allowing patients to be seen by other primary care clinics with open appointments that may not be their primary location would ensure that empty appointments get filled across the San Antonio Military Health System (SAMHS).

The Coronavirus (COVID-19) pandemic impacted our study, starting from March 2020 to the end of our data extraction in September 2020. The pandemic caused a drastic drop in

patient visits starting in March and continued to drop to its lowest in April 2020 at a mere 3,758 patient visits. People were encouraged to stay home by government and health officials and local hospitals and clinics offered telemedicine appointments to accommodate patients with non-urgent conditions or needs. The ED at BAMC never closed but had to adapt to the health crisis.

Our study had several limitations. Starting with the most obvious, the pandemic leading to a decrease in ED visits leading to a decrease in patient data available in our time span. We only analyzed data prior to a patient's discharge, excluding any possible related return visits and how that may have altered their primary care eligibility. The use of ESI 4 and 5 to define non-urgent patients could have affected our data because this scoring system estimates nursing resources needed and not necessarily the acuity of their disease or illness. Meaning, it is possible we missed patients that may have warranted a higher ESI level. Our low percentages for observation and waiting room could be due to patients being discharged from the waiting room or they could have left without being seen. Additionally, we must highlight that we are performing this based on data in retrospective method, which is limited in that we can only assess variables captured within the EMR. Some complaints may have exceeded the comfort level of the medical personnel in the primary care setting but would still appear to be low-risk by our inclusion criteria.

CONCLUSION

We assessed over half of all emergency department admissions could be primary care eligible. Our findings suggest that our patient population may benefit from offering additional lower-cost,

appointment-based healthcare delivery to decompress the ED.

REFERENCES

[1.] Morley, C., et al., *Emergency department crowding: A systematic review of causes, consequences and solutions.* PLoS One, 2018. **13**(8): p. e0203316.

[2.] Yarmohammadian, M.H., et al., *Overcrowding in emergency departments: A review of strategies to decrease future challenges.* J Res Med Sci, 2017. **22**: p. 23.

[3.] Enard, K.R. and D.M. Ganelin, *Reducing preventable emergency department utilization and costs by using community health workers as patient navigators.* J Healthc Manag, 2013. **58**(6): p. 412-27; discussion 428.

[4.] Weinick, R.M., et al., *Emergency Department Patient Experience of Care Survey: Development and Field Test.* Rand Health Q, 2014. **4**(3): p. 5.

[5.] Coster, J.E., et al., *Why Do People Choose Emergency and Urgent Care Services? A Rapid Review Utilizing a Systematic Literature Search and Narrative Synthesis.* Acad Emerg Med, 2017. **24**(9): p. 1137-1149.

[6.] Ojetti, V., et al., *Non-COVID Diseases during the Pandemic: Where Have All Other Emergencies Gone?* Medicina (Kaunas), 2020. **56**(10).

[7.] Di Somma, S., et al., *Overcrowding in emergency department: an international issue.* Intern Emerg Med, 2015. **10**(2): p. 171-5.

[8.] McKenna, P., et al., *Emergency department and hospital crowding: causes, consequences, and cures.* Clin Exp Emerg Med, 2019. **6**(3): p. 189-195.

[9.] Pines, J.M., et al., *The financial consequences of lost demand and reducing boarding in hospital emergency departments.* Ann Emerg Med, 2011. **58**(4): p. 331-40.

[10.] Shelton, R., *The Emergency Severity Index 5-level triage system.* Dimens Crit Care Nurs, 2009. **28**(1): p. 9-12.

[11.] Pata, D., et al., *A COVID-19 outbreak's lesson: Best use of the paediatric emergency department - Authors' reply.* Acta Paediatr, 2021. **110**(4): p. 1371.

[12.] Agency, A.F.A., *Report of Audit: Air Force Emergency Room Operations* in *Project 96051010.* 1997.

[13.] Agency, A.A., *U.S. Army Medical Command Emergency Room Operations* in *AA 99-77*. 1998.

[14.] GAO, *HEHS-00-63R Military Emergency Departments*. 2000.

[15.] Chan, S.S., et al., *Strategies and solutions to alleviate access block and overcrowding in emergency departments.* Hong Kong Med J, 2015. **21**(4): p. 345-52.

Table 1. Descriptive statistics of emergency department visits by primary care eligibility status, September 2019 through August 2020 (N=75,205).

Characteristics	Total (N=75,205)	Primary Care Eligible (n=42,647)	Not Primary Care Eligible (n=32,558)	P value
Visits per month, mean (SD)	6,267 (1,398)	3,554 (1,005)	2,713 (458)	0.057
Acuity Level, Categories, % (95% CI)				<0.001
1	0.8 (0.7, 0.9)	0.2 (0.2, 0.2)	1.6 (1.5, 1.7)	
2	13.2 (13.0, 13.5)	6.2 (5.9, 6.4)	22.5 (22.0, 22.9)	
3	42.2 (41.8, 42.5)	27.9 (27.5, 28.3)	60.9 (60.3, 61.4)	
4	36.7 (36.4, 37.1)	59.2 (58.7, 59.6)	7.3 (7.1, 7.6)	
5	3.7 (3.6, 3.9)	6.4 (6.1, 6.6)	0.3 (0.2, 0.3)	
Missing	3.3 (3.2, 3.5)	0.2 (0.2, 0.3)	7.4 (7.2, 7.7)	
Arrival Mode, % (95% CI)				<0.001
Ambulance	6.6 (6.5, 6.8)	1.7 (1.6, 1.8)	13.1 (12.7, 13.5)	
Automobile	3.0 (2.8, 3.1)	3.1 (2.9, 3.2)	2.8 (2.6, 3.0)	
Helicopter	0.4 (0.3, 0.4)	0.0 (0.0, 0.1)	0.8 (0.7, 0.9)	
N/A	84.2 (84.0, 84.5)	89.2 (88.9, 89.5)	77.7 (77.3, 78.2)	
Police	0.1 (0.0, 0.1)	0.0 (0.0, 0.1)	0.1 (0.1, 0.2)	
Walk-in	5.7 (5.5, 5.9)	5.9 (5.7, 6.2)	5.3 (5.1, 5.6)	
Unknown/Other	0.0 (0.0, 0.1)	0.0 (0.0, 0.0)	0.1 (0.1, 0.1)	
Pod, % (95% CI)				<0.001
Pediatric Area	16.1 (15.9, 16.4)	21.9 (21.5, 22.3)	8.6 (8.3, 8.9)	
Adult Area	64.7 (64.4, 65.0)	49.1 (48.6, 49.6)	85.1 (84.7, 85.5)	
Observation	1.2 (1.1, 1.2)	0.4 (0.3, 0.5)	2.2 (2.0, 2.4)	
Fast Track	16.3 (16.1, 16.6)	28.3 (27.8, 28.7)	0.7 (0.6, 0.8)	
Waiting Room	1.7 (1.6, 1.8)	0.3 (0.3, 0.4)	3.4 (3.2, 3.6)	
Procedures, % (95% CI)				n/a
IV Medications	26.7 (26.4, 27.1)	0.0 (0.0, 0.0)	61.8 (61.2, 62.3)	
CT/MRI/US	20.7 (20.4, 21.0)	0.0 (0.0, 0.0)	47.7 (47.2, 48.3)	
Discharge Status, % (95% CI)				n/a
Admit	17.3 (17.1, 17.6)	0.00 (0.00, 0.00)	40.0 (39.5, 40.5)	
Discharge	79.5 (79.2, 79.7)	100.0 (100.0, 100.0)	52.5 (52.0, 53.1)	
Left (AMA/Unseen/Prior to Registration)	1.5 (1.4, 1.6)	0.00 (0.00, 0.00)	3.5 (3.3, 3.7)	
Transfer to Other Facility	1.0 (0.9, 1.0)	0.00 (0.00, 0.00)	2.2 (2.1, 2.4)	
Expired	0.1 (0.1, 0.1)	0.00 (0.00, 0.00)	0.2 (0.2, 0.3)	
N/A or Missing	0.7 (0.6, 0.7)	0.00 (0.00, 0.00)	1.5 (1.4, 1.7)	

Table 2. Descriptive statistics of emergency department visits by primary care eligibility status and pre- vs. post- COVID-19 time periods, September 2019 through August 2020 (N=75,205).

Characteristics	Primary Care Eligible			Not Primary Care Eligible		
	Pre-COVID-19 September 2019-February 2020	Post-COVID-19 March 2020-August 2020	P Value	Pre-COVID-19 September 2019-February 2020	Post-COVID-19 March 2020-August 2020	P Value
Visits per month, mean (SD)	4406 (371)	2702 (585)	0.002	3071 (133)	2355 (368)	0.002
Acuity Level Categories, % (95% CI)			<0.001			<0.001
1	0.2 (0.1, 0.2)	0.2 (0.2, 0.3)		1.5 (1.3, 1.7)	1.7 (1.5, 1.9)	
2	5.5 (5.2, 5.8)	7.3 (6.9, 7.7)		21.9 (21.4, 22.5)	23.2 (22.5, 23.9)	
3	25.7 (25.2, 26.2)	31.5 (30.8, 32.2)		61.5 (60.8, 62.2)	60.1 (59.3, 60.9)	
4	62.3 (61.7, 62.9)	54.0 (53.3, 54.8)		7.8 (7.4, 8.2)	6.8 (6.4, 7.2)	
5	6.1 (5.8, 6.4)	6.8 (6.4, 7.2)		0.2 (0.2, 0.3)	0.3 (0.2, 0.4)	
Missing	0.2 (0.1, 0.3)	0.2 (0.2, 0.3)		7.0 (6.7, 7.4)	8.0 (7.5, 8.4)	
Arrival Mode, % (95% CI)			<0.001			<0.001
Ambulance	1.3 (1.2, 1.4)	2.4 (2.2, 2.6)		11.1 (10.7, 11.6)	15.7 (15.1, 16.3)	
Automobile	3.0 (2.8, 3.2)	3.2 (2.9, 3.4)		2.6 (2.4, 2.9)	3.1 (2.8, 3.3)	
Helicopter	0.0 (0.0, 0.1)	0.0 (0.0, 0.1)		0.6 (0.8, 0.8)	1.1 (0.9, 0.2)	
N/A	90.3 (89.9, 90.6)	87.5 (87.0, 88.0)		80.6 (80.1, 81.2)	73.9 (73.2, 74.6)	
Police	0.0 (0.0, 0.1)	0.0 (0.0, 0.1)		0.1 (0.0, 0.1)	0.1 (0.1, 0.2)	
Walk-in	5.4 (5.1, 5.6)	6.9 (6.5, 7.3)		4.8 (4.5, 5.1)	6.1 (5.7, 6.5)	
Unknown/Other	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)		0.1 (0.0, 0.2)	0.1 (0.1, 0.2)	
Pod, % (95% CI)			<0.001			<0.001
Pediatric Area	22.9 (22.4, 23.4)	20.4 (19.8, 21.0)		8.2 (7.8, 8.6)	9.0 (8.6, 9.5)	
Adult Area	47.4 (46.8, 48.0)	51.8 (51.0, 52.5)		84.0 (83.4, 84.5)	86.7 (86.1, 87.2)	
Observation	0.6 (0.5, 0.7)	0.1 (0.1, 0.1)		3.6 (3.3, 3.9)	0.4 (0.3, 0.5)	
Fast Track	29.0 (28.5, 29.6)	27.0 (26.4, 27.7)		0.7 (0.6, 0.9)	0.6 (0.5, 0.8)	
Waiting Room				3.5 (3.2, 3.8)	3.3 (3.0, 3.6)	

	0.1 (0.1, 0.2)	0.7 (0.6, 0.8)				
Procedures, % (95% CI) IV Medications CT/MRI/US	 0.0 (0.0, 0.0) 0.0 (0.0, 0.0)	 0.0 (0.0, 0.0) 0.0 (0.0, 0.0)	n/a	 60.3 (59.6, 61.0) 53.1 (52.4, 53.8)	 63.7 (62.9, 64.5) 40.7 (39.9, 41.5)	<0.001
Discharge Status, % (95% CI) Admit Discharge Left (AMA/Unseen/Prior to Registration) Transfer to Other Facility Expired N/A or Missing	 0.00 (0.00, 0.00) 100.0 (100.0, 100.0) 0.00 (0.00, 0.00) 0.00 (0.00, 0.00) 0.00 (0.00, 0.00) 0.00 (0.00, 0.00)	 0.00 (0.00, 0.00) 100.0 (100.0, 100.0) 0.00 (0.00, 0.00) 0.00 (0.00, 0.00) 0.00 (0.00, 0.00) 0.00 (0.00, 0.00)	n/a	 37.5 (36.8, 38.2) 55.1 (54.4, 55.8) 3.8 (3.5, 4.1) 2.2 (2.0, 2.4) 0.2 (0.2, 0.3) 1.2 (1.1, 1.4)	 43.3 (42.5, 44.1) 49.2 (48.4, 50.0) 3.1 (2.8, 3.4) 2.3 (2.0, 2.5) 0.2 (0.2, 0.3) 1.9 (1.7, 2.1)	<0.001

Table 3. Percent of Top 10 complaints/diagnosis groups by primary care eligibility status, September 2019 through August 2020 (N=75,205).

Characteristics % (95% CI)	Total (N=75,205)	Primary Care Eligible (n=42,647)	Not Primary Care Eligible (n=32,558)	P value
Respiratory Infection	21.4 (21.1, 21.7)	28.7 (28.2, 29.1)	11.9 (11.6, 12.3)	<0.001
Injury	12.8 (12.6, 13.1)	10.0 (9.8, 10.3)	16.5 (16.1, 16.9)	<0.001
Heart/Chest Pain	10.8 (10.6, 11.0)	7.6 (7.4, 7.9)	14.9 (14.6, 15.3)	<0.001
Abdominal Pain/Vomiting/ Diarrhea	9.6 (9.4, 9.9)	4.4 (4.2, 4.6)	16.5 (16.1, 16.9)	<0.001
Urinary Tract Infection	3.8 (3.7, 4.0)	3.5 (3.3, 3.7)	4.3 (4.1, 4.5)	<0.001
Fever	3.0 (2.8, 3.1)	3.4 (3.3, 3.6)	2.4 (2.2, 2.5)	<0.001
Headache	2.9 (2.8, 3.1)	1.2 (1.1, 1.3)	5.2 (5.0, 5.5)	<0.001
Dizziness/Syncope	2.8 (2.7, 3.0)	1.3 (1.2, 1.5)	4.8 (4.6, 5.1)	<0.001
Allergy	2.3 (2.2, 2.4)	3.3 (3.2, 3.4)	1.0 (0.9, 1.1)	<0.001
Mental Health (Depression, Anxiety, Suicidal Ideation)	2.0 (1.9, 2.1)	1.3 (1.2, 1.5)	3.0 (2.8, 3.2)	<0.001

Figure 1: *Number of visits per month of data collection.*

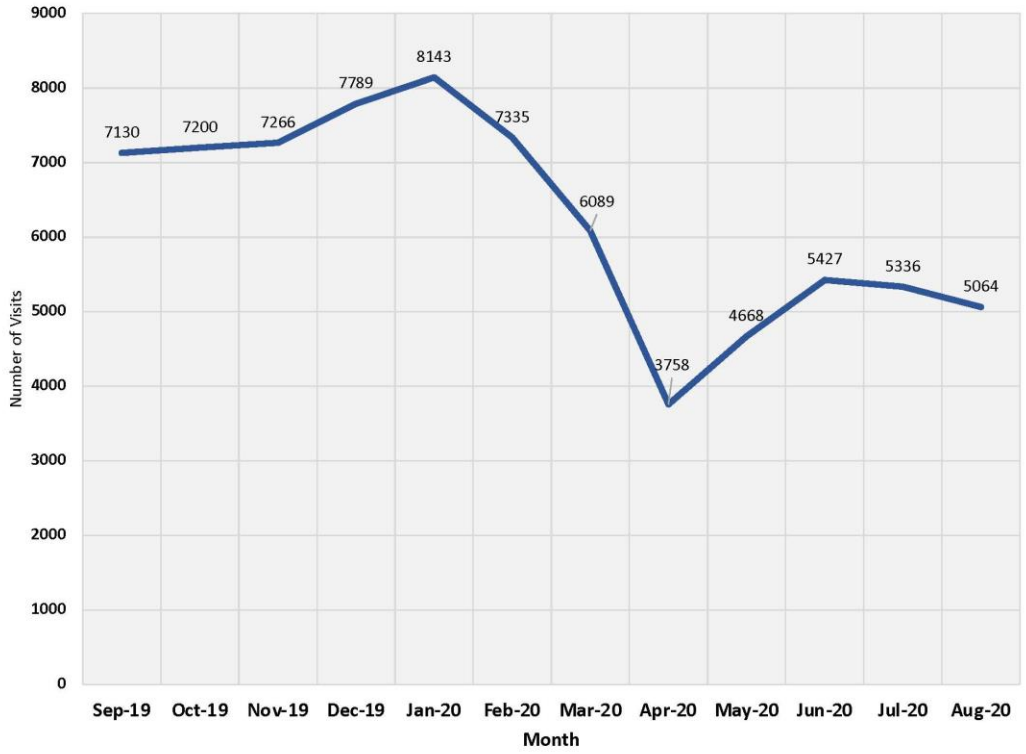

Figure 2: *Comparison between total number of visits and primary care eligible visits vs. non primary eligible*

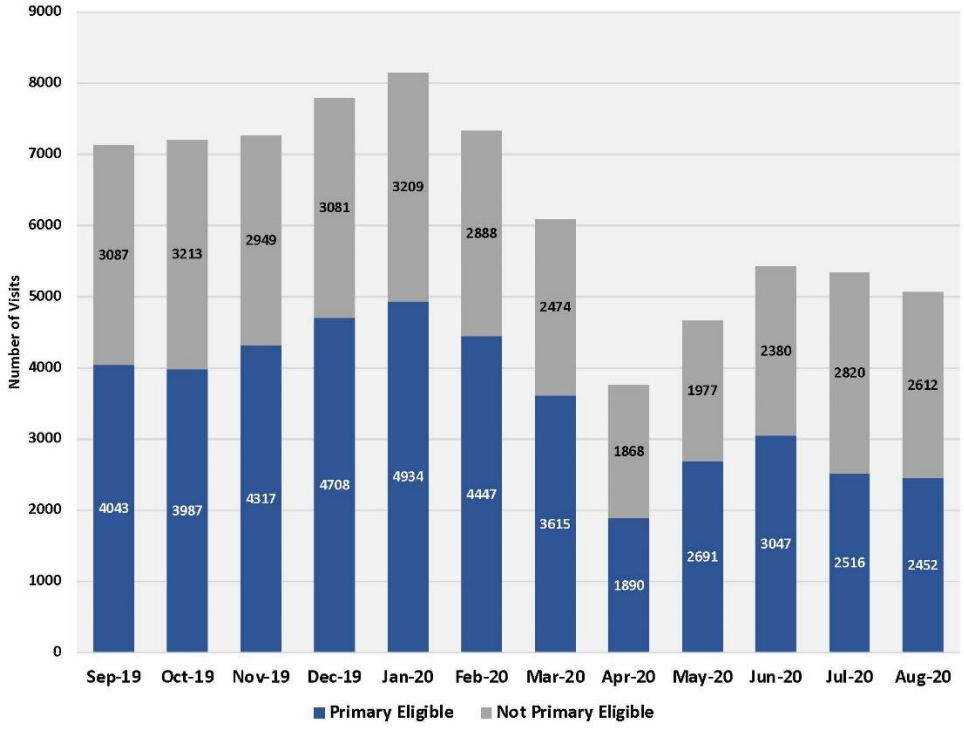

Figure 3: *Percentage of visits determined to be primary eligible.*