

Lessons and Opportunites Following the COVID-19 Pandemic Transport Policies for Intoxicated Patients Ambulance Usage, Age, and Gender

The Official Peer-Reviewed Journal of the National Collegiate Emergency Medical Services Foundation





# The Journal of COLLEGIATE EMERGENCY MEDICAL SERVICES

The Official Journal of the National Collegiate Emergency Medical Services Foundation

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# Lessons Learned and Opportunities for CBEMS Growth Following the COVID-19 Pandemic

### Adhitya Balaji, EMT-B; Jacob Robishaw-Denton, BS, EMT-B

Keywords: collegiate-based emergency medical services; covid-19; coronavirus | Corresponding Author and Author Affiliations: Listed at the end of this article.

n our last editorial, published in December of 2020 in Volume 3, Issue 2, we expressed our hope and belief that the collegiate or campus-based EMS (CBEMS) community would persevere through the unprecedented challenges imposed by COVID-19. Now, two and a half years later, we would like to share some of the highlights of stories shared with us by CBEMS agencies across the country and discuss potential areas of growth for CBEMS agencies moving forward.

It is an understatement to say that the current COVID-19 pandemic has changed many aspects of our current world, with the resulting changes directly causing the struggles and obstacles encountered by the collegiate EMS community over these past two and a half years. Decreased enrollment of new students on college campuses has led to reduced membership applications for some agencies, leading to staffing shortages and increased burnout among providers. The impact of decreased recruitment success was only compounded by an increased attrition rate seen by many agencies, with graduating students being joined by many collegiate providers that chose not to return to their respective agencies when the time came. Financially, many standby-only agencies found their revenue streams greatly diminished by a severe decline in the number of on-campus events. When combined with the decreased call volumes many CBEMS organizations have experienced, opportunities to directly interact with patients have plummeted, negatively impacting the ability of agencies to adequately train new members.

Whether transport or standby-only, ALS or BLS, the long-lasting consequences of the COVID-19 pandemic were still seen after 2020, particularly regarding membership. The nature of CBEMS itself necessitates constant recruitment of new undergraduate members to facilitate continued operations, and any changes to membership intake can have dire effects on the long-term stability of an agency. However, while many college campuses saw a vast decrease in on-campus enrollment, the total number of enrolled undergraduate students only decreased by 3.6%, with a projected increase of 9% by the end of the year 2030.<sup>1</sup> With many universities returning to in-person instruction, we hope the issue of recruitment and retention will be temporary.

Although CBEMS participation decreased during the pandemic,

the greatest impact by COVID-19 might be seen in the increase of applications to graduate medical programs. Medical school applications have been steadily increasing over the past twenty years, but the increase seen in the 2021-2022 application class was extraordinary; There was a 17% increase in the number of overall applicants, mostly the result of a 21% increase in firsttime applicants.<sup>2</sup> PA school applications did not enjoy as dramatic an increase, but applications increased by 9% for the 2020-2021 application cycle, with a small decrease by 2% the following year (2021-2022).<sup>3</sup> CBEMS systems are in an unique position to introduce interested students to direct patient care and strengthen their overall applications when the time comes. Therefore, this rise in applicants to medical graduate programs is promising for CBEMS agencies.

Provider turnover is not just a problem unique to CBEMS, but to the field of pre-hospital emergency medicine. Burnout is a constant struggle for many EMS providers, a function of the highstress environment, and the addition of staffing shortages only accelerates many providers' exit from the field. While training has been shown to help ease the likelihood of burnout, the onset of a worldwide pandemic has overwhelmed many, and has led to a shortage of providers willing to work4; one report from 2021 showed that in Texas, over 70% of credentialed providers were not actively working in EMS.5 Herein lies an unique opportunity for CBEMS to support their communities, and help ease the struggles of nearby agencies, through expansion of response zones or supplementing staffing at special events covered by other agencies. One specific example of this can be seen at Indiana University Bloomington, where Intra Collegiate Emergency Medical Service at IU (IC-EMS) was able to work alongside IU Health LifeLine, the county's 911 provider, to supplement staffing at IU Athletics events. With the addition of IC-EMS's providers, IU Health LifeLine was able to redirect their providers to staff street ambulances, or to more specialized roles at the event, ensuring that 911 coverage didn't lapse, while still providing key medical coverage at IU football and basketball games. Opportunities like these let CBEMS agencies directly help their community and can potentially lead the way to increased trust and further collaboration with community EMS systems.

The pandemic has provided CBEMS organizations with new opportunities and responsibilities in other areas as well. After the initial wave of the pandemic, almost every university in the country (as well as globally) began mandating regular COVID-19 PCR testing for any in-person students and faculty. These testing

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sites required many staff members, preferably with medical training, to accommodate the sizable number of swabs being performed. These staffing needs only increased when many universities opened their campuses as vaccination sites once the vaccine became available nationwide. This need was able to be filled in part by some CBEMS agencies, especially as many states expanded the EMT scope of practice to include IM vaccine administration. Specifically, University of Texas - Dallas EMS was one such agency who were able to provide staffing for COVID-19 vaccination clinics in collaboration with UT-Southwestern; this came as a result of their hiring of a full-time EMS medical director, which allowed integration of the organization into UT-Dallas. While some states have since rescinded the authorization for EMTs to provide IM vaccinations, as is the case in Arizona, others have added the IM vaccination to the EMT scope of practice in the case of future public health emergencies, as is the case in Massachusetts.<sup>6,7</sup> Additionally, the National Highway Traffic Safety Administration issued updates to the National EMS Scope of Practice to include nasal swab collection at the EMT level.8 These changes, if permanent, could be an avenue for growth for many CBEMS agencies, potentially as partners with campus health systems in the administration of the non-COVID-19 vaccines and nasal swab testing that many college students receive every year.

While the pandemic has led to many challenges, including decreased call volumes on college campuses, new membership concerns, and increased EMS provider burnout, there is hope for the future. Increased interest in graduate health professions should result in an increased interest in CBEMS. Staffing shortages in community EMS systems provides an avenue for CBEMS agencies to partner with new organizations, providing an avenue for further growth. The changes in the EMT scope of practice to include IM vaccinations could lead to new roles for CBEMS agencies as vaccination administrators on a regular basis. The versatility that CBEMS agencies offer their collegiate and surrounding communities is unique and highlights one of the many reasons that supporting CBEMS is more important now than ever before.

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# Ambulance Usage on a Collegiate Campus as a Function of Age and Gender

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### ABSTRACT

Introduction: While the impact that the social determinants of health have on a patient's healthcare experience have been repeatedly proven<sup>1</sup>, there is little existing literature describing how these determinants impact a patient's willingness to engage with and their perception of the healthcare system, particularly with regards to emergent transport to an emergency department. Study Objective: The goal of this experiment is to determine if age and gender exert significant influence on a patient's decision to utilize ambulatory transport to the emergency department. Methods: Data from PCRs generated by the University of Arizona Emergency Medical Services from September 2018 to April 2021 was collected and used to sort each PCR by patient age, gender and final transport decision. Statistical analysis (through a x2 test of independence and logistic regression) was performed to determine if statistically significant variations in transportation rates exist as a result of age and gender differences. **Results:** The  $\chi$ 2 test of independence for gender demonstrated a high likelihood that the variation observed was due to chance (p = 0.140), while the logistic regression test regarding age and transportation decision revealed a strong correlation between age and ambulance usage (p= 0.0007). **Conclusion:** For the calls analyzed herein, age potentially has a strong linear association with a patient's decision to utilize an ambulance for transportation to the emergency department, with the likelihood of transport increasing as a patient's age increased. Gender was found to have no significant relationship in transport outcome.

Social determinants of health refer to the specific conditions of a patient's life (education, living environment, financial status, etc.) that directly and indirectly affect a patient's healthcare experience.<sup>2</sup> The effects that social determinants of health inflict upon a person contribute to health inequalities. Only recently have studies focused on the role these factors play.<sup>1,3</sup> Recent research has shown connections between a patient's determinants and their healthcare-related outcomes; this is the case for clearly-defined metrics (life expectancy) and more intangible measurements (such as a patient's overall stress).<sup>1</sup> These factors have also been associated with varying perspectives on a patient's healthcare interactions,<sup>4</sup> potentially resulting from poorquality care received in the past.<sup>5</sup> This resulting hesitancy to engage with healthcare resources can compound healthcare inequalities.<sup>6</sup> While some research has been performed regarding the effect age has on a patient's decision to utilize emergent transport after motor-vehicle accidents,<sup>7</sup> and the decision to pursue alternative destinations to the Emergency Department for medical care,<sup>8</sup> the impact of age and gender remains poorly-researched.

The goal of this experiment is to explore further the relationship a patient's social determinants have on their medical decisionmaking process; specifically, the purpose of this study is to examine the impact that age and gender have on a patient's decision to utilize emergent transportation to an emergency department at the conclusion of a 9-1-1 call made from a university campus. While this decision represents a small part of a patient's overall interaction with the healthcare system, it provides a simplistic binary result, facilitating comparisons across patient demographic groups.

#### Materials and Methods

A total of 2,283 Patient Care Reports were generated by the University of Arizona Emergency Medical Services (UAEMS)

Keywords: collegiate-based emergency medical services, ambulance, age, gender

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between September 2018 and April 2021; UAEMS is the University of Arizona's collegiate EMS agency that responds to medical 9-1-1 calls originating on and directly adjacent to the college campus.<sup>9</sup> Data from these call records was extracted using the Report Writer functionality of ImageTrend, an interface that allows for generating reports containing the minimal information requested.<sup>10</sup> The data collected did not include identifiable markers, and as a result, exposure to Personal Health Information was avoided using this method.

Further criteria were imposed to ensure each PCR involved an incident in which the patient was determined to be competent and able to make an informed healthcare decision. In any situation where the patient does not possess the capacity to make an informed healthcare decision, transport determination is usually deferred to the healthcare providers on the scene.<sup>11</sup> When notated, all calls with an assessment other than Alert on the Alert, Verbal, Painful, Unconscious Scale (AVPU Scale) were excluded from this study as a result. Additionally, PCRs involving patients with an inhibited level of consciousness were also excluded from this study. Assessment of this is performed on-scene by medical providers through four questions designed to discern alertness and orientation to the patient's name, current location, current time, and current event; any patient assessed as "confused" or otherwise altered from normal mental baseline was considered to have an inhibited level of consciousness, causing exclusion. Finally, any calls in which the final transport decision was not notated were excluded from this study.

Of the 2,283 PCRs generated by UAEMS between September 2018 and April 2021, 1,153 calls fit the above inclusion criteria. Each patient's gender and age were collected from each PCR and collated into categories separated by transport decision. This data was then evaluated using a  $\chi 2$  test of independence<sup>12</sup> and logistical regression analysis to determine if there was a linear pattern.

#### Results

Table 1 contains the distribution of patients with regards to gender. The values in parentheses represent the "expected" distribution of patients for each respective category. The resulting p-value from the  $\chi^2$  test of independence is 0.140.

Table 1: All 1,153 patients sorted by gender and final transport decision, with "non-transport" referring to any decision not involving emergent transportation via ambulance to an emergency department

|        | Transport    | Non-Transport | Total |
|--------|--------------|---------------|-------|
| Male   | 245 (232.70) | 332 (344.30)  | 577   |
| Female | 220 (232.30) | 356 (343.70)  | 576   |
| Total  | 465          | 688           | 1,153 |

Figure 1 illustrates age compared to transportation outcome. Per the analysis, the calculated percentage of emergent transports to the hospital increases from 32.35% to 57.42% from birth to age 95 (the oldest patient included in this study). The p-value of the regression is 0.0007, representing an extremely strong association.

Figure 1: The graphed logistic regression of transport outcome as a binary function of age (emergent transport corresponding to a value of 1, all other outcomes to a value of 0)



#### Discussion

While the cut-off for a "statistically significant" *p*-value is variable, 0.05 has been found to be a reasonable set point for determining statistical significance.<sup>13</sup> With a *p*-value of 0.14, we are unable to conclude that the variation in ambulance usage rates between gender isn't due to random chance. Due to the high *p*-value from the test of independence regarding gender, we are unable to reject the null hypothesis that gender has no significant impact on a patient's decision to utilize emergent transportation. The significantly lower *p*-value from the logistic regression in Figure 1 (0.0007) allows us to conclude that age has a statistically significant impact on a patient's decision to utilize emergent transportation, specifically a linear relationship increasing the likelihood of emergent transport as patient age increases. Increased prehospital resource usage with older populations has been shown to be a result of increased medical problems rather than traumatic calls;<sup>14</sup> however, further research must still be performed to see if this is applicable for the increased transport rate of older patients.

#### Limitations

While UAEMS responds to emergency medical calls outside the University of Arizona campus, the majority of patients seen by UAEMS are related to the University of Arizona and are likely college students. As a result, it is possible that the results found in this study may be affected by unique confounding factors present on higher education campuses or even factors specific to the Tucson, Arizona area. Additionally, the collegiate nature of UAEMS's response zone limits the number of pediatric and geriatric patients seen, resulting in smaller sample sizes. Patient decisions beyond emergent transport outcomes were not recorded, and as such the utilization of alternative destinations is unable to be investigated. Finally, while the mental status of a patient was a controlled variable for this experiment, the severity of the injury causing a 911-response was not; it is possible that older patients may present with more emergent injuries/medical conditions, skewing the percentage of patients who chose emergent transportation.

#### Conclusion

For the patient population present at the University of Arizona campus, age potentially has a statistically significant, and linear, impact on a patient's decision to utilize emergent transport to the Emergency Department; gender has no statistically significant impact on this decision.

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**Original research is prioritized.** Case reports, reviews, and articles featuring perspectives and commentary are also invited.

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# **Evaluation of Transport Policies for Intoxicated Undergraduate Students by Undergraduate Emergency Medical Services Agencies**

Jamie Shah, BA; William Qu, MD; Anise Bowman, BA; Eleanor Wilson, BA; Jeffrey Luk, MD, MS, FACEP, FAEMS

### ABSTRACT

Background: Management of intoxicated undergraduate students is challenging for higher education institutions. Refusal of care can be problematic due to the intoxicated undergraduate students' lack of decisionmaking capacity. This study's objective was to compare existing and desired transport policies for intoxicated undergraduate students among collegiate EMS agencies. Methods: A thirteen-question online survey was sent via e-mail to the medical directors of the 232 undergraduate emergency medical services agencies listed in the database of the National Collegiate Emergency Medical Services Foundation (NCEMSF). The e-mail provided a link to complete the survey. Follow-up phone calls and e-mails were performed after the initial email to assist with survey completion. The study occurred from April 2013 to March 2014. All of the responses were anonymous, and participation in the survey was voluntary. Responses for questions were totaled and percentages were calculated. Written responses were also reviewed. Two-sided tests of significance (p < 0.05) were performed on preference for transport policy. **Results:** The survey was sent to 232 agencies with 99 responding and 67 had an active undergraduate emergency medical services agency. Twenty-four percent require transport to the nearest emergency department (ED) (Option A); 24% allow for refusal of care with medical command (Option B); 48% allow for refusal of care without medical command (Option C); and 4% stated that the patient must be transported to a location other than the nearest ED (Option D). Among the 20 agencies who desired a change in current transport polices to preferred ones, there was a significant increase observed in preference toward medical command input (p = 0.03). Twenty percent stated that laws prevented policy modification. The policies or wishes of higher education institutions made alterations challenging in 50% of agencies. Conclusion: Variation in policies suggest that higher education institutions may have specific needs due to their unique campus operations and/or differences in state and local laws. Thirty percent of responding collegiate EMS agencies desired to change their transport policies. Further research should determine the specific barriers to implementing the preferred transportation policy of the medical director as well as the advantages and disadvantages of the various transport policies.

**Keywords:** collegiate-based emergency medical services, intoxication, transport

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A loohol consumption is a condition that can lead to serious health consequences and injuries, which often necessitate prehospital emergency medical care for undergraduate students.<sup>1,2</sup> Current undergraduate drinking culture encourages

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Collegiate EMS agencies are a unique model of delivering prehospital care because they function only in a university campus setting.<sup>5</sup> Higher education institutions are responsible for the actions of collegiate EMS and their crews as well as for providing adequate resources. Alcohol misuse places resource demands on colleges and universities, often requiring the provision of medical services to intoxicated students, such as ambulance use and advanced life support. One in six campus-based ambulance runs is associated with alcohol misus.<sup>6</sup> For higher education institutions

supporting collegiate EMS agencies who provide free medical care, this cost becomes even more pronounced.

The presence of collegiate EMS on college campuses may promote a culture conducive to increased reporting behavior of intoxicated students, which leads to a safer, more transparent campus.<sup>7</sup> Alcohol amnesty policies gradually implemented at universities are designed to protect the health of students by assuring them that they will not be subject to serious disciplinary or legal actions for obtaining medical care in their intoxicated state. However, such policies on campuses may possibly lead to more EMS transports of intoxicated undergraduate students since students may be more willing to call for medical assistance knowing that they will receive amnesty by doing so. This possibly signals the need for a better transport policy to appropriately care for this patient population.

Managing intoxicated undergraduate students is a challenge for higher education institutions due to issues of legal liability. Higher education institutions have a responsibility to provide a safe environment for their students to learn, but also to live and mature. Transporting intoxicated students to the nearest emergency department would ensure the greatest level of safety and minimize liability, but require involvement from more resources.

Refusal of medical care can also become problematic due to the intoxicated patient's possible lack of decision-making capacity. Determining the transport destination policies of collegiate EMS agencies may be difficult due to the unique responsibilities of the higher education institutions for their students as listed in Table 1. EMS protocols for facilitating refusal of medical care vary based on state, local, and agency-specific/medical command-specific guidelines. Generally, in order to refuse medical care in the prehospital environment, a patient must be an alert and fully oriented (person, place, time, and event) adult of 18 years of age or older. The patient must also display decision-making capacity in

 Table 1: Questions for Transport Policy Considerations

Where should the patient be transported?

Can the patient refuse medical care?

Is online of offline medical command needed?

What do state and local laws require?

What does the higher education institution require?

Can the patient be released?

To whom can the patient be released?

Is there a difference in policy for patients under 21 years old versus over 21 years old?

Is there a difference in policy based on where the student lives?

the refusal process – the ability to recognize that they may suffer severe injury or loss of life if they refuse EMS care and/or transport. Patients showing any signs of altered mental status due to the consumption of drugs or alcohol may not be considered competent in their intoxicated state, and thus may not have legal capacity to refuse care (even if they are a fully alert and oriented adult).<sup>8</sup>

The biggest obscurity in this process lies in how an EMS provider determines whether drugs or alcohol have impaired their patient's ability to make informed medical decisions. A mini-mental exam could be used in the assessment of a potentially altered patient's ability to refuse medical care. Failure of the exam identifies the patient as currently unable to make medical decisions, and only specific orders from on-line medical command would refute these findings. Fundamentally, the patient would need to demonstrate decision-making capacity, which would consist of being awake, alert, and oriented to person, place, time, and event in addition to being lucid and capable of making an informed decision by demonstrating understanding, appreciation of the situation, reasoning, and the ability to express choice.

Alcohol-related illness and/or injury places increased burden on collegiate EMS agencies, their respective higher education institutions, and neighboring emergency departments, but it is important to acknowledge this for the betterment of collegiate EMS transport and patient outcomes. The objective of this study was to compare the existing and desired transport policies for intoxicated undergraduate students among undergraduate emergency medical services agencies across the United States.

#### Methods

A thirteen-question online survey (Supplementary Figure 1) was sent via e-mail to the medical directors of the 232 undergraduate emergency medical services agencies listed in the database of the National Collegiate Emergency Medical Services Foundation (NCEMSF). The survey focused on undergraduate students who were at least 18 years of age, intoxicated with alcohol, and who were evaluated by the undergraduate EMS agency. Patients who ingested other illicit substances were not referenced.

If an e-mail address was not available on the NCEMSF website, the e-mail address on the agency's website was used if available. The e-mail provided a link to complete the survey. Follow-up phone calls using publicly available phone numbers and e-mails to the original email addresses were performed after the initial email to assist with survey completion using a formal script depending on whether the call was answered (Supplementary Figure 2).

The study occurred from April 2013 to March 2014. All of the responses were anonymous, and participation in the survey was voluntary. Responses for questions were totaled and percentages were calculated. Free text responses were also reviewed for context. Two-sided tests of significance (p < 0.05) were performed on preference for transport policy. The University Hospitals Institutional Review Board (IRB) deemed this study exempt.

#### Results

Of the 99 agencies that responded to the survey, 67 had an active undergraduate emergency medical services agency. Collegiate EMS policies regarding the transport of alcohol-intoxicated patients varied widely. As shown in Figure 1, sixteen agencies (24%) must transport the intoxicated student to the nearest ED (Option A). Another 16 agencies (24%) allow the patient to refuse medical assistance, but on-line medical command must be contacted and approve the refusal (Option B). Thirty-two agencies (48%) allow the patient to refuse medical assistance without on-line medical command approval (Option C). Three agencies (4%) stated that the patient must be transported, but to a location other than the nearest ED (Option D). State or local laws govern the policies of 21 of the responding agencies (31%) while the policies in 24 agencies (36%) are required by the higher education institution that operates the collegiate EMS agency.

Among those respondents that chose Option D, one agency responded that if no medical emergency exists, the student is transported to its higher education institution's 24/7 Primary Care Center staffed by two nurses. Another higher education institution had an on-campus inpatient unit staffed by nurses under online medical direction from a local hospital. Ambulatory intoxicated students are transported to this inpatient unit and those students who register above a blood alcohol level of 0.3 upon evaluation at the infirmary must be transported by ambulance

Figure 1: Distribution of Current EMS Transport Policies

to the local ED. A third agency responded that its higher education institution has a college health center, but patients must be able to ambulate to the health center on their own.

When asked about their preferred transportation policy, out of the 67 agencies who responded, 13 agencies (19%) chose Option A; 22 agencies (33%) chose Option B; 26 agencies (39%) chose Option C; and 6 agencies (9%) chose Option D (Figure 2). Among those agencies that chose Option D, two respondents preferred that the patients be taken to the campus health center to be supervised by a nurse unless other issues existed. Three other respondents preferred an on-campus detoxification center supervised by medical providers.

Twenty of the responding 67 agencies (30%) desired to change their current transport policies for intoxicated undergraduate students. Among these 20 agencies, 6 (30%) selected Option A; 3 (15%) chose Option B; 10 (50%) allowed for Option C; and one (5%) selected Option D (Figure 3). When asked about their preferred transportation policy, 3 (15%) selected Option A; 9 (45%) chose Option B; 4 (20%) allowed for Option C; and 4 (20%) selected Option D (Figure 4). Comparing current transport policy to desired transport policy, there was a significant increase observed toward medical command input for refusal of care (p = 0.03).

As shown in Figure 5, of the same 20 agencies, 6 (20%) stated that state/local laws prevented reform of their current transportation policy, while the policies or wishes of higher HEIs were



Figure 3: Distribution of Current Transport Policies for Agencies who Desire to Change Transport Policies to Preferred Transport Policies



Figure 2: Distribution of Preferred EMS Transportation Policies



Figure 4: Distribution of Preferred Transport Policies for Agencies who Desire to Change Transport Policies to Preferred Trasport Policies







obstacles in 10 (50%) of agencies. Only 2 agencies (10%) felt that lack of adequate training for their EMS crew was a primary challenge to transportation policy reform. Two agencies (10%) indicated that both polices were the same even though their choices to the previous relevant questions showed a difference between their current and preferred EMS transport policies.

In 32 of the 67 responding agencies (48%), an undergraduate student over 18 years old can be released into the custody of a friend and/or roommate for observation. In only 26 agencies (39%) can the undergraduate student over 18 years old be released into the custody of a dorm resident advisor/counselor.

Fifty-nine agencies (88%) did not have differing policies for students who are under 21 years old versus students who are over 21 years old. Among those agencies that did have differing policies, one agency stated that an intoxicated student over 21 years old can be released to a sober friend over 21 years old as long as no life-threatening emergency exists. One agency stated that its higher education institution has a medical amnesty policy for all students, but those under 21 years of age have to meet with the dean. At a different higher education institution, students under the age of 21 years old may face disciplinary actions and possible legal charges per the university student agreement with police. Another agency responded that intoxicated students between 18 and 21 years of age require transport to the nearest healthcare facility, unless they are determined not to be acutely intoxicated following a medical assessment, while those patients over 21 years of age would be turned over to the police department if found to be acutely intoxicated and refused transport to the nearest healthcare facility; police would place them in protective custody if warranted. At one higher education institution, students older than 21 years old can sign a refusal if they meet certain criteria, but medical control must be contacted and approve the refusal.

Six of the responding agencies (9%) had differing policies based on where the student lives, such as a dorm, fraternity or sorority housing, or off-campus housing. One agency stated that those who live off-campus are not subject to the higher education institution's policy in which the patient cannot be left with a friend to monitor sobriety. Another agency responded that since fraternity and sorority housing is located outside of university property, students who live in these houses are subject to the city code rules and regulations on intoxication. At another higher education institution, off-campus housing is not under the jurisdiction of campus police, so the city fire/ambulance service responds. The local police at one higher education institution requests that campus security, who are nonsworn officers, must call the local police for any off campus housing emergency, including calls related to intoxication. The police on scene will then request that the town fire department transport the patient to the emergency department or allow the campus EMS agency to bring the student to the on-campus infirmary after the student has been issued a citation and/or summons.

#### Discussion

Approximately 30% of responding undergraduate EMS agencies have a current alcohol transport policy their respective medical directors would like to amend. Of the 20 agencies desiring a change in policy, most prefer a policy that allows for refusal of care. Of the agencies that want to include refusal as an option, a majority want this refusal process to be completed under the oversight of an on-line medical command physician. When transport becomes pertinent, no preference was shown between transport to the nearest ED or to an alternate location (detoxification center, other ED, etc.). Barriers towards eliciting these desired protocol changes reportedly lie within the current policies/wishes of respective higher education institutions and somewhat within the current state and local laws.

Many intoxicated patients are taken to the emergency department. One study examined demographic and clinical features of alcoholrelated visits for patients who were enrolled as undergraduates at a 4-year public higher education institution during 2 academic years.<sup>1</sup> Enrollment was approximately 12,500 undergraduates per year. The authors found that of all undergraduate emergency department related. Of all undergraduate students visits, 13% were alcoholwho presented to the ED, 0.7% presented with alcohol-related medical conditions each year. Injuries accounted for 53% of all visits. Acute intoxication accounted for 34% of all visits. Only nine of 185 patients were hospitalized. Men 21 years and older had the highest odds of visiting the ED, and trauma occurred more frequently among men, students > 18 years old, and white students with 84% due to accidents an 16% due to fights. Acute intoxication occurred more frequently among women, students < 18 years old, and nonwhite students.

Many students transported to the ED do not always need emergent care. A 2017 study investigated the extent to which intoxicated patients transported by South Korean EMS received ED treatment once at the hospital.<sup>9</sup> Separated into non-intoxicated (n=120) and intoxicated (n=92) groups, 70.7% of the intoxicated patients did not receive ED treatment against medical advice: 10.9% refused, 52.2% were uncooperative, and 7.6% wanted a transfer to another hospital. Of the 29.3% of intoxicated patients who did not receive care based on physician recommendation, 5.4% were simply in a drunken state, 10.9% could be treated in an outpatient department, and 13% showed the same symptoms on repeated visits.

A study conducted in 2005-2006 reviewed medical records of University Health Service (UHS) admissions with McLean Hospital and Harvard University.10 One hundred students were admitted in the after-hours acute care service for alcohol intoxication, with 78% of students below the legal drinking age and 48% of students being freshmen. Five students were sent to the ED for further care, and 30 students were sent directly to the ED without even being seen first at UHS due to higher intoxication levels or increased combativeness. 65% of students did not go to the ED. 10% of students were admitted to urgent care more than once during the study period of approximately 6 months. Complete medical records of some of these students were utilized, with 31.3% reporting anxiety in the 2 weeks prior to admission. This study is encouraging in the development of a 24-hour acute care service on campuses that can treat and manage a majority of students admitted for alcohol intoxication. The use of this university service would release EDs from some of the localized burden of undergraduate drinkers, while still allowing for students to detox in a medically supervised, university-approved manner, thus relieving liability concerns. This proposed solution requires further thought into how exactly an EMS provider can determine the appropriate destination for their intoxicated student with a proper level of care.

A study conducted between the academic years of 2007 and 2011 evaluated undergraduate students transported to local EDs with data compiled by Boston Medical Center.<sup>11</sup> 92% of students ( $n_{total}$ =971) had their alcohol content measured either by breath or blood. Almost all students were over the legal limit to drive a car in the United States (if they were of age) and a fifth of students were at least 3.1 times the legal limit. For EMS personnel, the use of blood alcohol concentration (BAC) readings is often not the first priority, as each individual will process similar amounts of alcohol differently and present with varying levels of impairment. Despite the possible inconsistency with BAC and a patient's competency level, the addition of blood alcohol content measurements to evaluate intoxication in college undergraduates warrants further study.

Few studies address a possible lack of education or need for further training of all EMS agencies (not just collegiate EMS agencies) on refusal proceedings for the intoxicated patient. This is not stated in a negative way or as to put EMS providers' decisions in question. It is possible that a more specific set of guidelines for refusal of the intoxicated patient needs to be developed, and that the current methods, as outlined previously, are too ambiguous for a consistent standard of care to be maintained.

A study conducted on EMS agencies of El Paso County, Colorado tested the use of a "detoxification evaluation checklist" as a tool for determining intoxicated patients (with no other prominent presentation) as candidates for transport to a local detoxification center, as opposed to a hospital emergency department.<sup>12</sup> This checklist consists of 29 yes or no questions focusing on patient cooperation level, recognition of significant medical history, and outlining vital sign limitations. Requiring a crew signature,

receiving signature, and report number, this checklist clearly a clinical tool for clearing patients from ED specific care (a "yes" answer to any question disqualifies the patient from detoxification center transport). 19% of patients were able to go to the detoxification center, with only 3% of these patients having adverse effects that required subsequent ED transport. This study suggests that with specific guidelines, EMS is able to determine a patient's candidacy for alternative detox care. In the case of collegiate EMS agencies operating under higher education institutions, detoxification centers may not be present or included as an appropriate destination in higher education institution policy. Additionally, emergency departments are typically the only 24-hour care facilities available on or near campuses.

Medical amnesty programs at higher education institutions have also been controversial due to the tension between the responsibility of the higher education institution to enforce the minimum legal drinking age of 21 years ago as well as other applicable laws and policies vs. the need to remove barriers so that students will call for assistance in alcohol-related emergencies. One paper examining a single university's Medical Amnesty Protocol (MAP) showed an increase in the percentage of students who reported calling for help on behalf of an intoxicated person from 4.5% before the protocol to 6.8% during the first year of the protocol and 5.4% during the second year.<sup>13</sup> Furthermore, the MAP led to a decrease in students who reported that they did not call for help in an alcohol-related emergency because they "didn't want to get the person in trouble" from 3.8% before the protocol to 1.5% after two years of protocol implementation.<sup>13</sup> The authors also reported that the number of alcohol-related calls to the higher education institution's EMS increased each year after the implementation of the MAP, likely due to the MAP motivating students to call for help by reducing fear of judicial consequences rather than an increased number of severe intoxication cases.

Another study evaluated call volumes for a collegiate EMS agency before and after a MAP was initiated. They found a higher call volume per day (0.84 vs. 0.93 p < 0.01); requests for service that occurred earlier in the evening; and a reduction in ALS requests for alcohol-related emergencies (9.0% vs. 3.7%: OR 0.39; p < 0.01).14 Nevertheless, higher education institutions need to place greater attention on how MAPs are implemented, communicated, and interpreted. One study examined students' awareness of its MAP and the influence of this awareness on the expected consequences of bystander help seeking in alcohol-related emergencies among student-athletes and non-athletes.<sup>15</sup> Among 1,012 college students, 25% were unsure if their school had a MAP. Of these students, 67% attended schools with a MAP. These students who were unsure of an MAP were more likely to expect serious negative consequences of calling for help for both non-athlete peers (Beta = 1.152, p < (0.001) and student-athlete peers (Beta = 0.887, p = 0.001).

#### Limitations

Limitations of the study include a suboptimal response rate. In addition, this study was conducted several years ago. Accordingly,

collegiate EMS transport policies for intoxicated undergraduate students may have changed since this study was conducted. Another limitation is that only 67 of the 99 responding agencies have transport capabilities. It is possible that these non-transport agencies could have treatment and refusal of care policies for intoxicated students.

Other limitations include difficulties in capturing heterogeneity in policies and a lack of follow-up questions to better understand preferred transport policies. Such questions might have included what specific changes medical directors would like to make to current transport policies.

#### Conclusion

It is advisable for medical directors to communicate with HEI administrators to develop policies that are agreeable to both parties and have the patient's best interest in mind. Variation in policies suggest that higher education institutions may have specific needs due to their unique campus operations and/or differences in state and local laws. Nevertheless, consensus on national guidelines should be explored for the possible standardization of the transport of intoxicated undergraduate students. Further research should determine the specific barriers to implementing the preferred transportation policy of the medical director as well as the advantages and disadvantages of the various transport policies. The role of the collegiate EMS agency in forming transport policy guidelines should also be investigated through discussions at the national level and through national organizations regarding the best practices for the transport of intoxicated undergraduate students by collegiate EMS agencies.

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#### **Supplementary Materials**

Supplementary Figure 1: Online Survey (Available Online)

Supplementary Figure 2: Phone Call Script (Available Online)

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