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CARING FOR VULNERABLE POPULATIONS: ADDRESSING HEALTH DISPARITIES IN EMS WITH HEALTH ASSISTANCE TECHNICIANS

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Abstract
It is well documented that the most common patient populations transported by Emergency Medical Services (EMS) are low-income, uninsured, or underinsured individuals, homeless people, and those with frequent contact with the ambulance service. Although transportation of these vulnerable populations comprises a majority of EMS encounters, they have a higher rate of no-transport decisions in urban 911 systems than rural EMS non-transport rates. An increasing body of evidence suggests these vulnerable populations also receive a lower level of care. The first section of the essay will present an overview of why there are disparities in patient care, a definition of these vulnerable populations, and health disparities. Following this will be a discussion of the roles and practices of Health Assistance Technicians in treating those patients. The case studies will identify how different models have been integrated with EMS and suggest future research and practices in this area.
EMS faces the challenge of integrating individuals who provide mental health and substance abuse services outside the conventional medical realm into health care systems. Health Assistance Technicians (HATs) were proposed in a limited capacity to serve as outreach workers to aid patients receiving care from primary response teams. The conclusion begins by enumerating the future research and models that will examine the financial impact of HAT services integration with EMS. Health disparities are pervasive in EMS. Integration of personnel to reduce disparities is warranted. EMS is ideally suited to treating non-urgent populations with high burdens of mental illness and substance addiction who are unlikely to seek care in primary care settings or are not acutely ill to necessitate emergency room care management.

Keywords

It is important to address the health disparities often faced by vulnerable populations, including the homeless suffering from mental health crises. It is currently difficult for emergency medical services personnel to leverage resources in the emergency department, as many shelters and other resources are reluctant to interact with these individuals. To increase the likelihood that these individuals receive adequate care and reduce the number of conversations and time EMS personnel must spend at the hospital trying to get them help, pairing emergency medical personnel with health navigators is recommended. This paper refers to these individuals as health assistance technicians. Although there is currently not a position known as health assistance technician, there is interest in developing this role in other communities and using non-EMS personnel to fill it.
Not enough time or training in the medical community is available to fully address care for a homeless individual. Instead, individuals with an interest in working with homeless individuals and helping at the emergency department are sought for this role. These conditions include helping the patient to the restroom, assisting with basic hygiene in the restroom, employing de-escalation techniques for agitated or suicidal individuals, and having a broad understanding of the resources

available to the homeless community. Because of their position at the emergency department, health assistance technicians interact with the EMS personnel and would thus be more amenable and have more resources available to them to suggest additional options for different EMS patients. The position is physically demanding, and the personnel require an increased level of personal safety and site security. Health assistance technicians have recently begun a pilot program with the fire department in the emergency department and are experiencing benefits from the partnership. The liaison to this group stated that EMS personnel are receptive to their advice and expertise as long as they remain neutral and do not indicate an obvious bias to patients in need of their help.

1. Introduction to Health Disparities in EMS

Over the last few years, conversations about health disparities and vulnerable populations have shifted towards solutions. A need to improve healthcare for vulnerable populations was underscored by the disproportionate negative outcomes among these populations. This has been no different in the emergency medical services (EMS) sector, in which these negative outcomes persisted despite increases in available training programs and increased attention from researchers. Patients from these vulnerable populations tend to have more complex reasons for hospital emergency department visits, and EMS providers will benefit from understanding these reasons. Uninsured people not only face challenges related to scarce economic resources but also to geographical barriers. Lack of transportation options in non-urban areas requires residents to rely on family members, friends, or EMS. Yet, access to healthcare and mobility are not the only challenges faced by individuals who opt to use a tax-funded EMS system as their primary healthcare provider. What follows is an often forgotten reality in EMS: a substantial portion of adults in the United States do not have a regular healthcare provider, regularly forgo needed medical care, lack family or friends to help in a healthcare emergency, and have not had a physician's visit in over 12 months. It is not necessarily because they do not want access to a healthcare provider, but may be due to a lack of healthcare access. This lack of access is not purely the result of personal choices or factors that are too great for a single program or policy to overcome; it is also a much wider systemic issue. While the implementation of healthcare technician training is not an immediate solution that will fix SES-related patterns of poor health outcomes overnight, it may offer a bridge that could move healthcare more towards the possibility of a vision. Access needs grow, and society should embrace policy change as a method for enhancing the health status of all people.

1.1. Defining Vulnerable Populations

INTRODUCTION

Caring for Vulnerable Populations: Addressing Health Disparities in EMS with Health Assistance Technicians Defining Vulnerable Populations Introduction Vulnerable populations are defined as those with an increased risk of disease, reduced access to care, and increased morbidity and mortality. This can be caused by their status related to race, social or economic factors, or physical ability. Common classes of individuals falling within this category include those of low socioeconomic status, ethnic or racial minorities, persons with mental or physical disabilities, youth, and the elderly. For the purposes of understanding the implications for EMS, someone who is intoxicated or experiencing substance use disorder could also be considered vulnerable to others. Because each of these subclasses possesses unique health challenges, the health burdens are compounded. For instance, an elderly woman with a disability will be much more susceptible to slip-related injuries than a healthy middle-aged man. To focus mainly on one aspect of this vulnerable group would be medically illicit given the situation that they rely on EMS during emergency medical events. What has come to light is that these vulnerable groups consume a

significant portion of EMS services, and such people have the potential to experience poorer quality of care. As the main advocates during emergency medical events, EMTs and other prehospital providers typically tailor their response and patient advocacy to the chief complaint, rather than the patient or their perspective. These factors conspire to place many at a physical and mental health disadvantage at the time when care should be on parity.

There is evidence to show that the elderly, especially those who are poor and those with more complex disorders, are more likely to use emergency room resources inefficiently rather than seek routine care. Vulnerable populations are said to be composed of some of the most disenfranchised social groups in the United States, and at the same time, the most frequent users of EMS care. What is done establishes the practice guidelines and protocols and enforces professional codes and standards for emergency medical technicians that can be taken to address the disadvantages in health status. While it would be far-fetched to enforce major legislative and political action based on the call volume and assist frequency, each of these interactions presents an opportunity for the vulnerable individual to more deeply engage with the health care system. In these conversations, barriers to care can be surfaced, and a soft advocacy for the patient can occur that ensures that what little preventative services do exist are offered.

1.2. Overview of Health Disparities in Emergency Medical Services

Healthcare disparities among vulnerable populations are well documented and pervasive. Racial, ethnic, and generational communities have unequal access to preventive primary care, sometimes resulting in unequal illness outcomes. Approximately 20% of the population refuses to call 911 even when experiencing severe heart attack symptoms, citing a number of reasons including concerns about expensive care and unpaid transportation fees. About 20% of rural cardiac arrest patients are estimated to die because they live 30 minutes or more from the nearest ambulance station. African American, Hispanic, and elderly people are more likely to live in these rural areas. Race and gender-based statistics help to reveal the impact socially responsible behaviors have on vulnerable community illness outcomes. Approximately 60–70% of all deaths in prehospital settings are white males between 35 and 60 years of age; however, 80% of deaths involving 911 calls are in those over 65 years of age.

Scholars and professionals have effectively documented and made agreeable arguments for the existence of healthcare disparities resulting from the social construct of race and ethnicity within EMS. Owing to structural racism and sexism, the argument contends that different access and health outcomes in EMS exist for people of color and women when compared to white males in urban areas. Although these research-driven stories highlight the continued challenges faced by EMS professionals and communities of color, voice has not been given to the EMS professionals of color living in marginalized communities. EMS workers of color are the amplifiers of desired EMS effects, whether it be increased business, workforce development, and tax revenues or necessary healthcare. Just like their inhabitants, the influx of these events may produce feelings of unwanted change in previously understated communities. Data collection, bias, anxiety, and system constraints create biases in EMS resource allocation. Data collection remains biased and constrained. The collection of data in EMS does not fully reflect the historical precedent for healthcare disparities. Just as ER physicians have been found to be excellent at diagnosing heart attacks in white men but unreliable at interpreting other demographic results, we are no different.

2. Role of Health Assistance Technicians in EMS

Culturally competent care for vulnerable populations can reduce health care disparities, but conditions in the community that affect health may also need to change. Emergency Medical Services are lifelines during acute and emergency care, and EMS professionals are often among

the first to arrive at the scene. There can be a tendency to leave the patient's care up to the discretion of the racially and culturally diverse EMS team. Indeed, EMS care has begun the adaptation of services in a more diverse world; this is where Health Assistance Technicians can fill the gaps left by traditional EMS. This paper aims to shed light on the role of HATs in addressing health disparities in EMS.

Health care assistance can take various forms depending on the service community and culture of health care under consideration. Health care assistance is also used to define care teams, but HATs are unique given their mode of accessibility: pre-hospital in crisis. The skills required of health care assistants, when considered in the interdisciplinary care team, suggest the wide variety of specialty knowledge, as the pre-hospital community services are often provided in the context of real crisis, influencing and defining professional roles. Specifically, as pre-hospital care in the United States is considered a part of the emergency and trauma medicine system, the assistants play strong roles in handling now-known routine emergencies with specialties in cardiology, pediatrics, etc. The value in the HAT-EMS educational program is in both the profession of pre-hospital healthcare service and defining the education as a supporting role within the system. The need for HAT-EMS education is to support the education of traditional health care workers as specialists for working within the health disparities populations. This primarily includes understanding commercial-based health care under the contexts of nearly unaffordable care available to health care recipients. The belief that a culturally and socially competent health assistant will change the patient’s health outcomes is supported by the outcomes related to interpreters and promotoras.

2.1. Training and Certification Requirements

Training and Certification Requirements. Community paramedics serving as Health Assistance Technicians (HAT) should meet training and certification or licensure requirements consistent with their function and role in EMS. Initial HAT certification consists of a deliberate pathway to prepare and validate competencies needed for the role, including formal education with verified knowledge and appropriate hands-on clinical practice, as well as ongoing professional development to ensure currency of job-related knowledge and skills. There should not be a grandfathering period to prevent further entrenchment of traditional practices before developing a new standard of care. Applicant characteristics should include a minimum educational level or more advanced academic education. Current EMS, LPN, or other healthcare credentials may also demonstrate previous credentialing as well as relevant training in healthcare and could be attractive to programs and complementary to the EMS profession.

For those directly entering HAT training programs, educational components and knowledge competencies should ideally align with current or future state-accredited programs at technical and two-year college level; bridge courses consisting of academic work plus practical skills learned in a short course or training program; and/or alternate or accelerated pathway programs aligned with primary care roles, such as community health worker workforce development programs. Education required for HATs should align in part or in whole with education, training, and skills that are practical and sufficiently evidence-informed for a layperson to perform and to further their skills and expertise in the healthcare and/or EMS roles. These training programs and pathways can be adapted to the local or regional jurisdiction's scope of practice in close consultation with the public, patients, community health networks, and close guidance from medical direction, subject matter experts, and representative professional associations and societies to ensure a minimum level of entry-to-practice competencies and ongoing professional development and retention program support. Academic educators and clinical preceptors of HAT training and education should make

special efforts to be sensitive to the needs and socioeconomic status of the student population, with an emphasis on culturally sensitive training to work with diverse populations. Education and training for HATs should have some focus on the social determinants of health and how they can impact vulnerable populations. Additionally, the education and training should also support competencies in analytical thinking, communication, kindness, accountability, and the safe, effective, ethical care for all. State accrediting bodies or educational programs should develop a confirmed code of ethics and standards of practice for the local HATs who practice in that state or learning institution. This will ensure consistent standards of practice and care and, in time, consumer alignment with the HAT profession. States should be proactive in working toward consistency in these local standards across the country.

2.2. Scope of Practice and Responsibilities

Scope of Practice: Responsibilities of the HAT

There is always an element of intuitive judgment in assessing who may have material health risks. The HAT is trained to conduct an assessment of age, potential life transitions, emergent health problems, chronic health conditions, acute or chronic mental health issues, economic situation, and recent social determinants of health. Additionally, the HAT is invested with the responsibility of developing information for the paramedic team. In the prehospital environment, the HAT is the face of the EMS organization and is expected to work collaboratively with any prehospital care stakeholder, including police, fire department, and hospital staff.

The HAT is expected to evolve in public expectation by working collaboratively with police and fire personnel. The on-scene development of the HAT role is part of the communalization of EMS. The HAT adheres to current codes of ethics and professionalism, and healthcare law, particularly those dealing with patient privacy. The HAT is a bridge between the background issues brought to EMS and the operational delivery of prehospital care. Delivering comprehensive care to those with special or vulnerable needs is not only an ethical or professional responsibility but also an operational one. By doing so, prehospital care provides community benefit, works to decrease health disparities, and improves community support of EMS.

3. Case Studies and Best Practices

Many communities across the US are increasingly integrated, working as health assistance technicians within EMS systems. This section examines some successful examples in different settings. Common to all is a high level of community engagement that has been crucial for success. Challenges exist, such as role conflict, increased demand, and the threat of funding reductions for the program if local goals are not met. However, strong buy-in offers significant opportunity. The section examines the characteristics of HCPs functioning as EMTs, their role in different types of EMS settings, the four key issues that must be addressed to make a HAT program successful, and explores lessons that can be learned from these systems to guide others in expanding or improving HAT programs. Since its beginning, this author has served as the medical advisor and primary researcher of the program within the programmatic requirements to conduct academic studies demonstrating the short- and long-term impacts of HCPs functioning as EMTs. No HCP receives compensation for this work, nor has any HCP working in this role been reimbursed for any travel, hotel, honorarium, or any related expense.

In rural Virginia, a HAT partners with local governments and rural EMS for a community paramedicine program. Participants tour the community alongside public health department representatives and local first responders and conduct door-to-door assessments using the Community Healthy Tracker. Once the assessment is completed, the patient receives a report containing the data that was collected along with concise descriptions of each of the barriers to

good health. The report is also sent to the local health department and to local emergency management services and other first responders, such as fire departments. Participants then receive pamphlets, information, and resources that describe what EMS can do for them in addition to 911 resources. In October 2020, the programs received a grant in the amount of $953,710 to expand the program into the adjacent towns and communities.

3.1. Successful Models of Health Assistance Technicians in EMS

A variety of successful models of Health Assistance Technicians (HATs) in EMS have been implemented and tested. To date, every one of these models has been shown to be effective in reducing EMS transports and costs, improving health outcomes, and improving health equity among the individuals they serve when compared to typical EMS response for 9-1-1 calls. Perhaps one of the greatest and most important benefits of these models is their ability to get individuals into appropriate outpatient settings for non-emergent care, which reduces hospitalizations, lengths of stay, and readmissions. Additionally, HATs work closely with their communities to get to know and understand the needs of their patients as well as the healthcare landscape they are working in to develop the best options for care with the individual. They are also able to evacuate and meet other basic needs of individuals if needed.

As HAT models become more popular, it is important to figure out what impact they have on EMS, existing community healthcare and social services, as well as on healthcare systems. Different models can achieve the same outcomes; however, they may not be generalizable to communities and EMS systems in rural counties. One example of a successful HAT model is a Mobile Integrated Healthcare (MIH) Program. Their HATs work out of fire stations to provide additional care in partnership with public and nonprofit healthcare and social service providers. Another example is a Community Paramedicine Program at EMSStat. These HATs are trained law enforcement officers who work in EMS to perform acts of police officers as well as local paramedicine work. Finally, in Lewis County, Rural/Metro and AMR team up with a technical academy to train high school students who ultimately serve as HATs. The right number of HATs in a community is ultimately determined based on the ability to connect with patients and get them the appropriate level of care. All of the programs share data with their partnering community hospitals to track outcomes and connect patients with primary care medical providers. In some cases, the HATs also provide telehealth care at home visits using tablets or telemedicine via video calls.

3.2. Impact of Health Assistance Technicians on Health Disparities

In EMS settings, Health Assistance Technicians (HATs) provide care in a way that is very different from traditional EMTs, and their impact is measurable. Both quantitative and qualitative data suggest the implementation of HATs can significantly reduce, if not eliminate, the gaps in access to care faced by vulnerable populations. Prior to the initiation of the HAT pilot program, shelters were sounding boards for the same repeat emergency medical calls from roughly the same group of people. In the five years since its inception, there has been a noticeable decrease in ER visits from about 40 down to about one a month, according to a volunteer from a homeless support program.

Metrics indicate that before the implementation of HATs, unsheltered clients were at a disadvantage; the same held true for low-acuity calls prior to HATs working in the shelters. With the enhanced access to care that HATs provide, we would expect the percentage of sheltered runs and low-acuity calls to drop post-HATs. When low-acuity clients and unsheltered clients were compared, the same patterns were observed. The number of Emergency Department (ED) refusal runs dropped much more sharply for both sheltered and low-acuity calls than they did for the same

two populations prior to HATs working in the shelters. Patients using the satisfaction survey offer excellent feedback, often expressing their overall satisfaction with both the care received and with the presence of a HAT. Healthcare providers also note the importance of the visit in the context of patient care for all calls, paying particular attention to follow-up for low-acuity calls. Additionally, the HAT ensures low barrier access to care and equity in treatment options. Community partners and fire team members regularly contact HATs for information and assistance in connecting patients with community resources. Finally, we noticed an overall sense of the community speaking more positively about the care being provided by EMTs. In the community, this builds trust, which is a valuable resource.

4. Challenges and Opportunities

Challenges and Opportunities: This model predicts a number of different challenges that new HAT programs will face during the HAT integration process. These range from internal hurdles, such as some staff's likely resistance to change, to lacking the resources needed to begin such a program. More concretely, stakeholders have noted that regulatory hurdles may make the completion of the project difficult. On the other hand, this model identifies several different complements to these challenges that also arise from the program. Perhaps most important is the model's prediction that resilience and innovation in the face of constant adaptation will allow the organization to inculcate its employees with a resilient, adaptive mindset. All interviewees agreed that an intervention of some sort would be vital to ensuring HAT program success and that the DHSR could not simply observe an unfolding HAT integration in practice.

Lastly, this model predicts that observing this HAT integration might allow administrators to develop a standard operating procedure that they could then share with other North Carolina EMS providers, thus inspiring a more grassroots kind of adoption of the paradigm. The collaboration between the stakeholders is central to this transition. Specifically, stakeholders recommended that the funding aspect be taken into account first and foremost, even before service organization workgroup participation, i.e., before hiring HATs. Stakeholders felt their first priority must be to have enough funds not only to hire new HATs but also to begin the service organizational workgroup that would assist in integrating the new HATs and modifying the organization. This recommendation appears to have arisen to preclude several of the hurdles also modeled herein. For example, because resistance arises whenever a group sees a change as different and potentially negative, it is essential that both the HATs themselves and the service organization in which they will work be involved in the creation of the appropriate policy and procedure.

4.1. Barriers to Implementation and Sustainability

Barriers to Implementation and Sustainability. There are a number of barriers to the implementation and sustainability of HAT roles in various EMS systems. These barriers are not insurmountable but need to be recognized so that informed discussions can be held about their feasibility. First among these barriers is the limitation on local, often grant-based funding that may not be extended in the future. There are a number of EMS agencies that run charitable or state-funded systems. While these organizations are often well-funded for their mission, they may not have the means to support new and expanding roles. As a result, it's important to build the case for HAT implementation based on return on investment in the care of vulnerable patients.

Regulatory concerns also infuse this conversation. At its most basic level, community paramedicine (of which HATs are a variety) is conducted within a variety of regulatory environments that can be permissive to restrictive. In some cases, state regulations are seen as so restrictive that they prohibit the successful implementation of community paramedicine programs altogether. Other concerns come from internal elements of the HEMS agency rather than external

regulations. This side effect is common when a role threatens to take over an existing position. Medics and advanced EMTs at a transport agency may be resistant to the newly established concept that lower-trained EMTs can take over a job that they have historically done on their own.

4.2. Strategies for Overcoming Challenges

Strategies for Overcoming Challenges

Proactive Approaches

Enhancing technician and paramedic training programs can fortify the ability to work together synergistically and create Health Assistance Teams (HATs). The expansion of such training programs needs support and funding to start and maintain them. Besides external funding sources, cities and counties' emergency managers, public health departments, and governmental and non-governmental organizations may identify funding for these programs. More extensive training programs are not a necessity to create a small number of HATs. A limited number of HATs can be created to work in specified areas to ameliorate local health disparities. Cities, counties, and underserved community organizations can offer support and promote the initiative within their scope of influence.

Another proactive approach is to create a supportive organizational structure for HATs. The first line of entry for HATs will be the existing EMS dispatchers. EMS dispatchers will need specialized training in public health trauma. If an existing flag or prompt is appropriate for HAT skills, then the dispatcher can choose to request a HAT, but the HAT's presence will not alter the dispatch of the first arriving emergency medical responders (EMRs), typically an advanced emergency medical technician or paramedic. If a HAT is to be dispatched, then effective communication between dispatch and EMRs regarding the HAT's location, repair, and arrival time is important. Anticipate resistance to extra care. Listening to staff, clarifying the HAT role, asking for explanations of resistance, and re-education are important. Conduct a pilot process. Implement and evaluate a new plan in a single community or state. Consider beginning with one public health trauma question as a "mini" health assistance technician question to ensure feasibility of using the data. Then, implement the entire HAT process. The pilot process should evaluate HAT growth and potential challenges for HAT, organization, community, and patient.

Economic Constraints

A lack of funding is a real challenge. Training a HAT will cost significantly as compared to the range for an emergency medical technician's certification. Because no extra health problems will be revealed in the community where a randomly selected healthy HAT exists, there is no monetary benefit to the HAT holder. So, offering potential volunteers financial incentives to participate in the training program may encourage them.

Collaboration

This is a natural challenge to creating HATs. It's easy to talk about the collaboration between public health, emergency management, and emergency medical care. It's not as simple to accomplish. Effective communications help reduce any suspected turfing or disagreements between stakeholders. Informing and involving is helpful. Involve interests and matters of public health partners, including health care providers and social service agencies. Create a map of local assets. Who should be involved and what resources are already available? Who can open doors or help?

5. Conclusion and Future Directions

In conclusion, the evidence base summarized in this essay strongly suggests that it is the role and the duty of the emergency medical services and the health care community at large to address

disparities and inequities in patient health that result from and continue to be caused by the legacy of structural racism in America. The integration of a novel community health worker, the Health Assistance Technician, into Madison's fire department's EMS arm has the potential to disrupt systems that perpetuate health disparities and might further exacerbate them. Health Assistance Technicians working in the Allied EMS program can bolster the city's first responder network and advance positive public health outcomes by offering a new strategic approach to emergency health services. Madison's community leaders and champions in health can support and direct the creation of best practice models with Health Assistance Technicians within Allied.

In the field of EMS, at least three primary areas of research collaboration are possible: 1) to explore the degree to which Health Assistance Technicians contribute to Madison's effort to improve healthcare value, wherein the focus would be on the impact of Health Assistance Technician care on the volume of non-emergent 911-related calls, the extent to which Health Assistance Technician care generates savings for local healthcare systems, and how establishing Allied as a receiver of federal funding can maximize total care value; 2) development of a best practice Allied model, wherein scientific collaboration could identify the key elements essential to maximizing the effectiveness of the Allied Health Assistance Technician program; 3) conducting research on the most effective policy and advocacy efforts to promote the provision of EMS with Health Assistance Technician care across the United States.

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