



CITY OF HOUSTON

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Emergency Telehealth - White Paper

911 Telehealth: Virtual Visits, Directed Pathways and Population Health Management

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ABSTRACT:

Emergency Medical Service (EMS) agencies transport thousands of patients within the United States via ambulance every day to over-crowded hospital emergency departments (ED), regardless of the severity of the patient's problem. Many of these patients are non-emergent and could be treated in an alternative setting; however, today many people utilize the local 911 system and the hospital ED, as they believe this is their only option for primary healthcare.

In 2008 the Houston Fire Department (HFD) began a nurse help-line located at the emergency dispatch center to redirect low acuity calls. Once the call-taker identifies the incoming call to be a specific low-acuity complaint type, the call was warm-transferred to the nurse and the patient was triaged to a non-emergency care center. However, after several months, the program was only able to redirect approximately 20% of the few calls sent to the nurse line. Then in 2014, HFD launched ETHAN (Emergency Telehealth and Navigation) project where on-scene mobile technology is used to connect EMT's caring for these low-acuity 911 patients with emergency physicians who have access to primary care resources within the community. This community-based mobile integrated healthcare project, along with local and regional partnerships, agencies and collaborations ensures individuals who call 911 with non-emergency complaints will be triaged by telehealth emergency medical physicians who are immediately available and skilled at making rapid triage decisions. Patients who are assessed by the ETHAN physician and confirmed to be non-emergent can be scheduled to either local Federally Qualified Clinic (FQHC), home care, primary care physician along with arranged transportation by a taxi cab, self-transport or no-transport. Patients are followed-up by the City of Houston Health Department navigators with a tool-box of more than 15 programs and services to assure person-centered care "right time and place" prescription. The friction-free emergency telehealth technology has been embraced as a prehospital productivity tool, effectively delivering no-wait emergency physician virtual visit in the out-of-hospital environment and providing alternate managed solutions of care.

The motivation for the HFD EMS telehealth project was driven by the University of Texas, School of Public Health study, which estimated 40% of all emergency department visits are primary care related.¹ This original funded Texas 1115 Waiver ETHAN project has demonstrated significant success in increasing EMS efficiency and quality of care; through reduced ambulance transports, reduced on-scene time and management of patients both on-scene and to non-traditional destinations. The ETHAN Project garnered local and national recognition as one of the most innovative large-scale solutions in modern EMS. To date, it is estimated that the overall healthcare savings by program cost avoidance utilizing ETHAN is over \$27 million dollars. Therefore, the ETHAN model reinforces the CMS Innovation Center Statute - *"quality improves; cost reduced"*.



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BACKGROUND:

Prehospital patient management is an essential aspect of emergency medical care initiated by local EMS, which plays a vital role in the healthcare system for nearly 240 million 911 callers each year.² Within the United States EMS systems, the majority of patients are being transported every day to ED's for non-urgent complaints. Traditionally, 911 EMS patient treatment and transport decisions are established by the EMT or paramedic patient assessment, system protocols and off-line medical direction. Most EMS system's local standard of care requires the first-responder to transport all 911 patients to the ED, unless they engage a multifaceted patient capacity assessment refusal and no-transport protocol. In fact, Medicare primarily only pays 911 providers for unscheduled emergency ground ambulance services, within the fee-for-service model. To exacerbate the issue, only a limited number of destinations are covered by Medicare for ambulance transport to local hospitals, skilled nursing facilities and dialysis centers. Therefore, most 911 patients are transported to a primary care hospital ED, which is often the highest cost destination, using the most expensive mode of transportation. While difficult to calculate, Durand, et al, found that nationwide an average of 32% of 911 callers were non-emergent complaints and could be treated in an alternative setting other than the ED.

A nationwide study estimated that the proportion of medically unnecessary EMS transports has increased 31% from 1997 to 2007 (from 13% to 17%), supporting the need for alternative models of EMS prehospital care.³ Further, researchers found that approximately 15% of Medicare 911 calls were low-acuity and best treated in a primary care setting. However, as new models, including telehealth are developed, they must still overcome; 1. The availability of local clinic providers with normal 9am - 5pm weekdays only and the refusal of the unscheduled; 2. The on-going environment of urgent care centers reluctance to accept Medicaid patients. In addition, as leaders today develop new innovative systems, including alternate ambulance transportation and non-emergency hospital destinations, they must always make patient safety the primary factor, in conjunction with their local EMS medical director for oversight.⁴ Further, a sustainable reimbursement model is required for sustainable 911 telehealth, which includes an emergency physician providing immediate virtual care for each patient encounter, must be determined. Within an on-demand-economy telehealth has slowly begun to substitute low-acuity 911 calls for service and trips to local ED for many consumers or the original physician house-call with the virtual-visit. Therefore, if EMS can overcome these obstacles and then divert these individuals from the ED, it is estimated that CMS could save \$560 million per year.⁵

As a result, novel EMS strategies and protocols are required in the existing continuum model to maintain consistent financial stability and provide 911 callers with quality, timeliness and lower cost prehospital care.



SOLUTION:

For more than 4 years, with an ever-increasing population of 2.3 million and greater than 300,000 calls for service, Houston Fire / EMS (3rd busiest system in the US) has successfully delivered ETHAN or Mobile Healthcare (mHealth) to more than 22,000 City of Houston residents and visitors. Over that time, generally 15% of all ETHAN patients were dispositioned or managed away from the emergency department and 9 of every 10 patients avoided using the HFD ambulance for transportation. With real-time telehealth technologies, ETHAN provides the same exam room experience independent of location, and eliminates expensive hospital care to individual patient complaint types, with physician / patient care time of approximately 6 minutes. Thus, “Telemedicine can eliminate distance and cost barriers, improving access to medical services that would otherwise not be consistently available or affordable” American College of Emergency Physicians - Emergency Medicine Telemedicine Policy Statement. In fact, less than 1% of all patients decide not to participate in a 911 telehealth session with an ETHAN emergency medical physician. Further, the typical HFD patient EMS call time is averaging 83 minutes, whereas ETHAN call times are averaging 39 minutes, saving an average of 44 minutes ⁶. This has a positive effect in terms of increasing the availability of Houston Fire Department ambulances to respond to true emergencies, such as heart attacks, strokes and traumatic injuries within the City of Houston.

The ETHAN medical system project management (program monitoring and corrective action) is provided by the Associate Medical Director for the HFD EMS and to date the program has proven to be safe. Further, independent model data evaluation (quality, patient characteristics, utilization, etc.) is contracted by the University of Texas Health Science Center, Departments of Emergency Medicine and Biomedical Informatics.

1. TAKE-AWAY TOPICS:

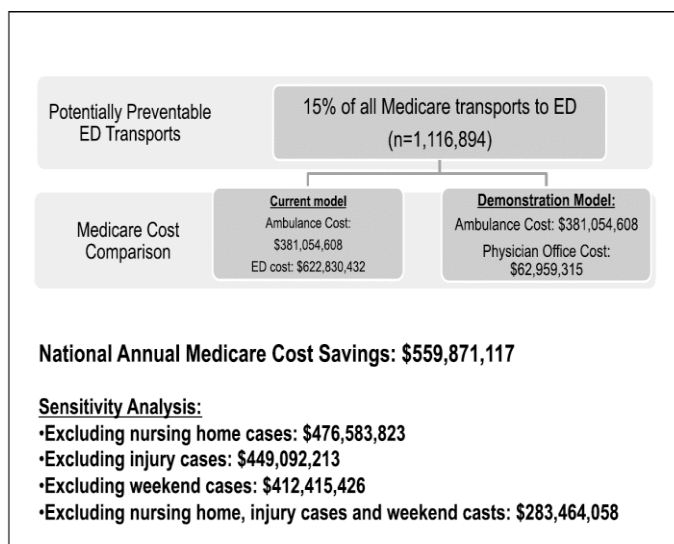


Figure 2: Innovation Opportunities in EMS, A Draft White Paper

a) As it stands, the ETHAN program could provide additional National Annual Medicare Cost Savings, as the ETHAN physician dispositions low-acuity patients to non-ambulance transportation. The ambulance cost of \$381,054,608 for 1,116,894 transports or \$341 per transport, would be reduced by 92% to \$32,110,702. Thus, ETHAN could add possible savings of \$348,943,906 or an overall 35% savings to the model.

b) With greater urgent care, FQHC, or other non-emergency clinic access EMS telehealth programs like ETHAN could likely save another \$300,000,000.



Tables and Charts:

Table 1. Patient Dispositions:

Patient Disposition	Percent
Referral to the ED via alternative transportation	74%
Referral to a community primary care clinic / PCP via alternative transportation	2%
Referral to patient's own primary care provider or medical home	1%
Patient declines referral to clinic and receives alternative transportation to ED	5%
Referral to ED via ambulance transport	11%
Other	7%

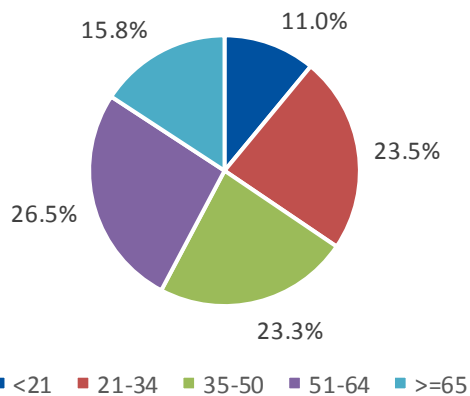
Shown are the counts of ETHAN physicians disposition of care following the patient assessment

Table 2. Patient Demographics:

Race	Percent
American Indian or Alaska Native	0.1%
Asian	0.8%
Black or African American	56.8%
Hispanic or Latino	16.4%
Native Hawaiian or Other Pacific Islander	0.1%
White	18.2%

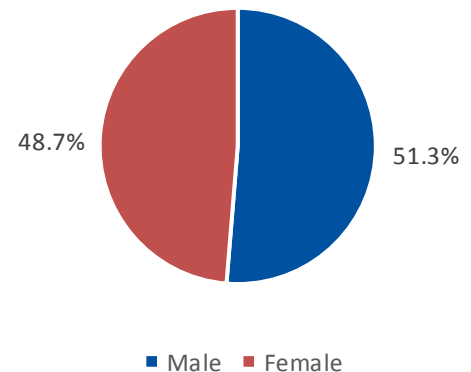
Listed are the ETHAN patient federal race percentages treated within the City of Houston

Chart 1. Patient Age



Shown are the ETHAN patient age distributions

Chart 2. Patient Gender



Shown are the ETHAN gender distributions

CONCLUSION:

ETHAN has proven to be safe and successful mobile integrated healthcare EMS program. It has become an integral component within the City of Houston's healthcare delivery system through patient managed alternate pathways of care in the out-of-hospital setting. To build upon this success, ETHAN future strategy moving forward is to utilize technology multipliers to improve the health of populations by driving productivity of existing enterprise data, and to continued building non-traditional partnerships and collaborations for future growth and sustainability where outcome benefits out-weigh the costs.

FUTURE:

The Office of the National Coordinator for Health Information Technology states, "providers must use tools to analyze data about care provided to patients and to create and implement strategies that target groups of populations to improved outcomes, thus bending the health care cost curve." ETHAN Phase II and Houston Fire Department are underway with a scalable Web-based portal connected to all 42 City of Houston hospitals and healthcare facilities via the local Health Information Exchange (HIE) to focus on - Population Health Management.

1. SYNAPSE

This real-time cockpit, internally called "Synapse" will allow ETHAN to aggregate patient data (clinical, financial, operational) across multiple health information technology resources and provide actionable analytics data into a single patient record or meaningful structured documentation. Accordingly, providing ETHAN physicians a comprehensive clinical picture of each patient to make decisions using analytics (retrospective and predictive), which can improve patient clinical outcomes and lower financial costs. Synapse will enable the City of Houston Fire Department to integrate with both payors and providers of healthcare, which closes gaps in patients care and aims to improve the health of an entire populations and reduce health inequities among various population groups.

2. Partnerships

The City of Houston and the HFD are actively developing a multi-payer environment by engaging contractual agreements with third party payors, hospitals and private ambulance companies. Thus, the new Synapse portal, along with potential for public-private collaborative programs will strategically support ETHAN and continue our innovative programs in mobile integrated healthcare and potentially saving millions of unnecessary healthcare services and spending in the region.



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