

Non-Emergency Medical Transportation and the Promise of Blockchain Applications

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Abstract

Health care transportation costs have increased dramatically in the United States and in many developed countries. Public health programs in the U.S that includes the Medicare and Medicaid programs rely on non-emergency transport companies to provide access to health care providers and facilities for vulnerable populations. Spending on these services are expected to increase to over \$4 Billion in coming years. Recent studies from government sources and other research finds that these programs have fraud and waste associated with providing the service. We find that much of the waste and fraud is a direct result of inefficiencies largely driven by outmoded legacy technology systems and further suggest that blockchain applications can mitigate fraud, waste and abuse while providing better access to care and improved health outcomes for vulnerable populations.

Keywords: Blockchain; U.S. medicaid; U.S. medicare; Cost containment; U.S. health care reform; Health information technology; Health care fraud

Introduction

Transportation access and use are an important component to all citizens in receiving health care services. Importantly, many vulnerable populations rely on public transportation and transportation services provided by public health programs such as the U.S Medicare and Medicaid programs to get to appointments for services. One key component of transportation services in the U.S. are Non-Emergency Medical Transportation (NEMT) that helps beneficiaries to get to health care providers.

The U.S. health care system is complex and diverse with both the federal government and the states setting policy and implementing benefits for services like NEMT and as a result there are wide variations in how the services are provided. As a result of the variation in delivery and the documented implementation issues associated with NEMT, there are numerous opportunities for technology solutions using a distributed ledger on a blockchain that arguably provide greater efficiency and cost savings for not only public programs but also private insurers. What follows is discussion of the current state of NEMT services, associated costs and the addressable markets in the U.S. and around the world, and the potential savings through the deployment of blockchain technology applications.

Background

Access to transportation service for healthcare has been a long documented and important factor in providing services for all beneficiaries. Numerous studies have found that when access to transportation is limited or unreliable, the results find that health conditions can suffer and, in many cases, result in increased costs for public health programs [1]. The U.S. Medicare and Medicaid programs provide valuable information about the current state of Non-Emergency Medical Transportation (NEMT) benefits and use as well as their limitations that technology applications can potentially address.

The most recent data finds that public programs in the U.S. spent over \$ 2.7 Billion on direct NEMT benefits [2]. In the last decade and largely a result of the enactment of the Affordable Care Act in 2010, NEMT spending has nearly tripled with many estimates suggesting that

NEMT spending from Medicare and Medicaid is likely to approach over \$ 4 Billion in the next few years.

While the majority of U.S. health spending is from public programs, it is estimated that the commercial insurance market also spends over \$ 2 Billion on NEMT related costs as well. Estimates from this spending are from diverse sources and difficult to track but the amounts correlate to the total spend related to public programs. The totals spend from both public and private health care programs suggest that total NEMT spend is estimated at over \$ 4 Billion a year and growing [2,3].

Transportation barriers have been associated with poorer health care access, differential treatment, missed or delayed medical appointments, and lower health status. Transportation has been recognized as a key element of health care access, which highlights its role to offset long-term health consequences. Delayed medical care may adversely affect patients' quality of life and result in more depressive symptoms. These delays can also lead to an increased need for emergency care and preventable hospitalizations and result in higher medical costs [1].

The most recent U.S Government Accountability Office (GAO) report finds that under Medicare, NEMT services are allowed to be delivered via ambulance transport to scheduled nonemergency medical services for some beneficiaries. For example, Medicare NEMT may cover ambulance transportation for a beneficiary with ESRD for scheduled, repeated, and nonemergency transports to and from dialysis treatments, if transportation by ambulance is medically necessary.

Under Medicaid, states must ensure NEMT for beneficiaries who have no other means of transportation to needed medical services- such as doctors' appointments and various types of therapies- and can provide NEMT in a variety of ways. States have discretion, consistent

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Received September 29, 2019; **Accepted** November 29, 2019; **Published** December 07, 2019

Citation: Randall D, Goel P (2019) Non-Emergency Medical Transportation and the Promise of Blockchain Applications. J Health Med Inform 10: 341.

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with federal requirements, in how they deliver NEMT, including the mode of transportation used and the model used to provide NEMT [2,4].

Medicaid NEMT spending and implementation is also of interest since there is variation in how states choose to provide the benefit. States can directly provide transport services or have managed care entities they contract with provide NEMT services as part of the insurance arrangement with the state Medicaid agency. Numerous studies have found that as a result of the variation in NEMT delivery, there is the potential for delayed or missed appointments for wide range of services [1].

The missed appointments and delayed services contribute to increased health care system costs. The estimates suggest that these costs could contribute hundreds of millions or even billions of dollars in increased spending as a result of treatment delays. Various studies have attempted to quantify the amounts and while data is sparse, the effect is particular acute on vulnerable populations that include the elderly, minorities, pregnant women and children and those with acute and long-term health conditions [1,4].

NEMT has been deemed cost-effective and cost-saving for preventive care (e.g., dental care, screenings for breast and colorectal cancers) and the treatment of chronic conditions (e.g., asthma, chronic obstructive pulmonary disease, diabetes, end-stage renal disease, heart disease, hypertension, mental health). Although this service is particularly useful for older adults it is not utilized sufficiently among all those who need it [1].

NEMT service delivery is also susceptible to fraud, waste and abuse as evidenced by numerous documented cases of transportation service providers abusing the system to receive excess payments or even funding for services never delivered. Fraud estimates generally related to Medicaid spending find that 15-20% of spending is fraud, waste and abuse that be directly correlated to NEMT spend [5]. This fact coupled with documented program issues of missed or delayed appointments suggest that a technology solution has the potential to address the shortcomings of current efforts by public and private health care programs to provide transportation services to beneficiaries.

Addressable Markets

NEMT spending is increasing and the frequency of use will also increase as a result of demographic changes in public programs in the U.S. There will be greater use by the elderly in urban as well as rural areas in both the Medicare and Medicaid programs as well as long term growth in public programs as a result of expansion of Medicaid and the aging demographics of the U.S. population. These factors will lead to increased need and associated spending on NEMT services for not only public programs but also commercial private insurers that contract with both Medicaid and Medicare.

The most recent data finds that there were over 50 Million rides taken that can be classified as a NEMT service. Increased spending and increased beneficiary population in public programs suggest this number will likely double in the next decade [1,2]. Various researches also find that between 6% and 20% of all trips that are subsidized end up being canceled for a range of reasons [1,2,6]. This fact suggests that there is an opportunity to increase adherence and the consequences of missed appointments and delayed health care services.

The U.S Medicaid program is of particular interest along with the Medicare program as a result of the current \$2.7 Billion spend on

NEMT services. Medicaid NEMT services are delivered at the option of the states with only 4 states not offering the services. Additionally, the over 300 active managed care entities that contract with state Medicaid agencies to provide coverage for 71% of the 74 Million beneficiaries enrolled also administer NEMT benefits as a part of the service [7].

Service Value and Technology Savings

The value of public and private health plans utilizing NEMT services can be quantified in a number of ways. Recent studies focus on the return on investment of making certain vulnerable populations adhere to a treatment plan and have access to needed care. These studies suggest from a limited population survey that having access to transportation benefits is correlated to decreased utilization of services and hence lower system costs [8]. Additionally, the study finds there is a positive Return on Investment by using NEMT benefit for patients with chronic conditions such as dialysis care and wound treatments associated with diabetes.

NEMT benefits are especially relevant for patients that have a high frequency of appointments to deal with chronic conditions. The referenced study found that patients that do not have access to transportation benefits end up costing more per member per month than those who utilize the benefit. Estimates suggest a 20% ROI on using the service and an even greater value in reduced utilization trend. While the study utilizes a limited population survey, the results find that the use of benefit has a strong positive return on investment (ROI) in controlling utilization of services and long-term disease and condition management.

However, the result does not account for other factors associated with NEMT service delivery and the acknowledged program shortcoming detailed in above referenced U.S GAO Reports. Most notably there is the cost of missed appointments and as the GAO documents the problems of fraud, waste and abuse. Again, it is again noted that missed appointments account for an estimated 10% of NEMT spend and fraud, waste and abuse on all Medicaid services account for an estimated 15-20% of all spending.

The GAO reports referenced acknowledge the limitations of the states to monitor and implement NEMT benefits and also document abuses by private transportation brokers. Anecdotally there is evidence among state Medicaid systems of inadequate systems to track and monitor the services with some states still utilizing maps and paper vouchers to pay transportation providers. Implementation issues and the lack of technology solutions arguably play a role in the system inefficiencies that lead to fraud, waste and abuse.

Technology solutions can play a role in making the NEMT system more efficient [9]. Most notably in documenting that a transport has occurred and that a patient was delivered to the health care provider. The transparency and transportation documentation in real time can arguably assist in reducing fraud waste and abuse. Blockchain technology platforms have the ability to provide the needed transparency and system interoperability that is somewhat lacking in current implementation with all NEMT benefits [10].

Extrapolating ROI estimates for specific populations in the U.S Medicaid program suggest a at minimum a 5-7% savings in direct costs with technology deployment which translates into over \$100 Million in estimated program savings on NEMT benefit spending. Additionally, there is the additional ROI of reducing utilization of direct healthcare service and the potential for better health outcomes for vulnerable populations.

The potential savings documented in this paper suggest that utilizing an integrated technology solution with a qualified transportation provider can be significant. Intangible benefits include not only less system fraud, waste and abuse but also greater adherence to treatment protocols that can ultimately reduce utilization trend and overall health system costs for both public and private payors.

Conclusion

NEMT benefits play an important role in making certain beneficiaries receive the needed care. Current research also suggests a high ROI on the use of the benefit, especially for vulnerable populations. However, like any public program, there is documented fraud, waste and abuse. Technology applications have the ability to address NEMT implementation issues by providing more transparency and the ability to monitor and document the use of the benefit.

Public programs such as Medicaid and Medicare as well as private insurers that contract with the programs could benefit from the use of an integrated technology platform to assist in reducing system costs for NEMT and importantly reducing utilization and improving health outcomes.

Future research should attempt to document the efficient use of new technologies through a difference-in-difference multivariate research design that examines the effects of technology deployment. Research should focus on difference in NEMT spend, adherence to treatment protocol and evidence of reduced utilization of service and overall spend trend. An integrated technology platform has the ability

to achieve the goals outlined and to address the documented flaws in the current administration of NEMT benefits.

References

1. MacLeod KE, Ragland DR, Prohaska TR, Smith ML, Irmiter C, et al. (2015) Missed or delayed medical care appointments by older users of nonemergency medical transportation. *Gerontologist* 55: 1026-1037.
2. GAO. Nonemergency medical transportation. Updated Medicaid guidance could help states (2016) GAO Highlights (Government Accountability Office). GAO-16-238.
3. Chaiyachati KH, Moore K, Adelberg M (2019) Too early to cut transportation benefits from Medicaid enrollees. *Health Serv Insights* 12: 1178632918804817.
4. GAO. Transportation-disadvantaged populations. Some coordination efforts among programs providing transportation services, but obstacles persist. GAO Highlights. GAO-03-697.
5. Parente ST, Oberlin S, Tomai L, Randall D (2016) The potential savings of using predictive analytics to staunch Medicaid fraud. *J Health Med Economics* 2: 11.
6. Delaware Medicaid NEMT services. Available from: <https://dhss.delaware.gov/dhss/dmma/medicaid.html>
7. GAO. CMS has taken steps to address problems, but needs to further implement systems development best practices. GAO Highlights. GAO-15-238.
8. Non-emergency medical transportation: Findings from a return on investment study. NEMT ROI Study: 1-5.
9. Randall D, Goel P, Abujamra R (2017) Blockchain applications and use cases in health information technology. *J Health Med Informat* 8: 276.
10. On the road to better care: Solve. Care partners with uber health to deliver medical transport service (2019).