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Implementation of a non-emergent medical transportation programme at an integrated health system

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ABSTRACT

Objectives To implement a unified non-emergency medical transportation (NEMT) service across a large integrated healthcare delivery network.

Methods We assessed needs among key organisational stakeholders, then reviewed proposals. We selected a single NEMT vendor best aligned with organisational priorities and implemented this solution system-wide.

Results Our vendor's hybrid approach combined rideshares with contracted vehicles able to serve patients with equipment and other needs. After 6195 rides in the first year, we observed shorter wait times and lower costs compared with our prior state.

Discussion Essential lessons included (1) understanding user and patient needs, (2) obtaining complete, accurate and comprehensive baseline data and (3) adapting existing workflows—rather than designing de novo—whenever possible.

Conclusions Our implementation of a single-vendor NEMT solution validates the need for NEMT at large healthcare organisations, geographical challenges to establishing NEMT organisation-wide, and the importance of baseline data and stakeholder engagement.

INTRODUCTION

Non-emergency medical transportation (NEMT)—to medical appointments, to urgent care services or home from the hospital—represents a barrier to healthcare for almost 6 million individuals in the USA.[1] Obstacles include cost, accessibility (eg, wheelchair-accessible vehicles), local availability and reliability, which are associated with care delays, worse health outcomes and increased costs.[2]

NEMT is an important social determinant of health.[3 4] Unsurprisingly, transportation barriers are commonly experienced by low-income patients and racial and ethnic minority patients, propagating healthcare inequities.[2] Additionally, NEMT causes suboptimal patient and staff experiences through complex advanced scheduling procedures, long waits and missed appointments.[5] Further, although Medicaid beneficiaries are entitled to NEMT in certain circumstances, options for other patients are limited and heterogeneous at the system level.

Recently, alternative strategies, such as rideshare-based NEMT systems, have improved outcomes including appointment show-rates, general wait times and cost.[6 7] Here, we describe our development and implementation of a unified NEMT service across a large integrated healthcare delivery network.

METHODS

We conducted this work at BJC HealthCare, an integrated network of 15 hospitals including a 1300-bed urban quaternary hospital (Barnes Jewish Hospital, the teaching hospital of Washington University School of Medicine), several 500-bed community hospitals and multiple smaller community hospitals in Missouri and Illinois.

First, we conducted a needs assessment in early 2019 to (1) establish a shared understanding of our organisation's NEMT needs, (2) prioritise vendor capabilities and (3) establish baseline measurements and define key results necessary for success. To align our understanding of the problem with that of our key stakeholders, we engaged front-line care managers and social workers to empathise with the patient and staff NEMT experience. We also involved organisational legal and compliance experts to frame potential solutions, around anti-inducement regulations.[8] We proactively adopted the institutional stance that all NEMT would occur within the boundaries of safe harbours.

Second, we requested proposals through our centralised procurement division. Table 1 lists our priorities. Our proposal-vetting team included the stakeholders named above.

Our implementation plan was sequential (ie, hospital by hospital) through an initial information security risk assessment,

Table 1 Organisational priorities for an NEMT vendor

Priority	Comment
Single vendor	Vendor capable of supporting current and future ride volume across entire organisation
Ride capabilities	Vendor capable of transporting both ambulatory and special patient/equipment needs (eg, wheelchairs)
Scheduling	Vendor capable of supporting both prearranged and on-demand single-way (eg, discharges) and round-trip transportation
Experience	Vendor willing to commit to maximising the quality of patient and staff experience
Cost	Vendor offers competitive price point
Data driven	Vendor routinely provides data and insight at both system and unit level
Regulatory compliance	HIPAA compliant

HIPAA, Health Insurance Portability and Accountability Act; NEMT, non-emergency medical transportation.

contracting and a stepwise launch. Key success measures included complete system-wide ride availability regardless of patient locale, continuous scheduling platform availability, time spent scheduling rides, wait times and cost.

RESULTS

Needs assessment

Through a mix of expenditure data, voucher counts and unit reports, our needs assessment estimated over 16 000 yearly rides within our organisation, mostly through taxicab vouchers, wheelchair-capable vans or idle ambulances. Most rides were hospital or emergency-department discharges (n=4764, 65%). We identified multiple problems related to NEMT (online supplemental table 2), which collectively indicated the need for system-wide NEMT redesign. For example, taxi rides were organised and funded by individual units, without any system to support or track data on this need; this lack of data precluded comparisons between the new platform and the prior system. Social workers—the main ride organisers—relied on foundation support or petty cash, which were inherently unstable. Financially, NEMT was deemed a system priority because of the potential for downstream cost savings (eg, through reducing no-show appointments). With the exception of Medicaid-funded hospital discharge rides, other NEMT resources were financed locally through grants.

Proposal evaluation

Six vendors submitted proposals; after initial review, the four vendors able to meet our system's volume needs were given full consideration. Using a structured review template based on the priorities in table 1, our broad stakeholder group ultimately selected Kaizen Health (Chicago, Illinois, USA), a healthcare logistics entity focused on NEMT. Kaizen Health's hybrid approach merges software-based rideshare integration with call centre-managed traditional transportation options. As compared with other finalists, Kaizen Health demonstrated superior ability to provide a mix of rural and urban coverage and special needs rides, and to leverage utilisation data for organisational planning.

Implementation

Although rideshare services were immediately available, these incompletely met our need for specialised medical transport. We experienced delays initiating services such as wheelchair and bariatric support; Kaizen first needed to establish agreements with local transportation providers for these specialised rides. This barrier was particularly challenging in rural areas, where there is little rideshare availability and few companies able to cover the requisite geographic footprint. Addressing these barriers added 6 weeks to the implementation timeline, but was a one-time effort.

Staff engaged with Kaizen's platform through a web portal (online supplemental figure 1), through which they contacted a Kaizen broker to identify transportation options based on capacity, ability to serve the required service level and availability. The broker would finalise a ride via automatic software or manual confirmation (depending on the type of transportation), but the user experience remained the same regardless of transportation type.

Evaluation

Kaizen Health provided 6195 rides from 3633 patients in 2020 (figure 1A). NEMT patients tended to be young, to self-identify as black, and to reside in zip codes with high Area Deprivation Indices (online supplemental table 3).

Most rides (5545, 88%) were rideshares and almost two-thirds (4188, 66%) were for hospital discharge (online supplemental table 4). In general, rides were short (median distance 5.4 miles (IQR 3.2–10.0 miles), although 142 rides (2.3%) exceeded 50 miles (figure 1B). For just-in-time calls, waits were typically under 10 min. By contrast, social workers reported waits of 30 min to several hours prior to our NEMT update. Compared with taxicab voucher outlay in 2019, the Kaizen Health NEMT programme incurred approximately US$114 000 lower costs in 2020.

We surveyed workers arranging transportation. Of 153 workers approached, 44 (29%) responded. Respondents characterised the new platform as easier to use (n=34, 77%), as fast or faster for scheduling (n=39, 91%) and

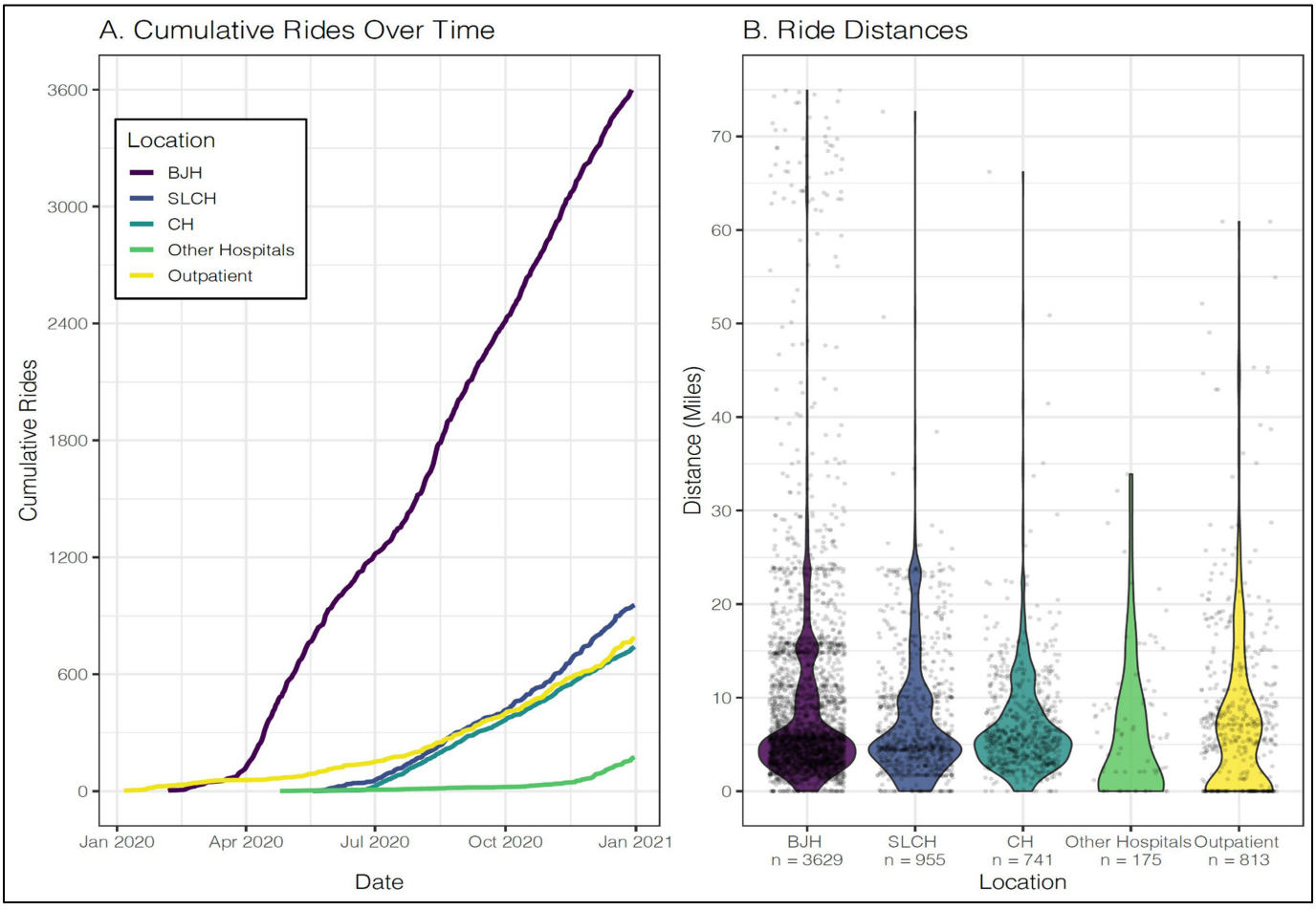

Figure 1 (A) Shows cumulative ride use over time across different sites within our system. (B) Shows site-specific individual ride distances (grey points) and their overall distribution (violin plots). BJH, Barnes Jewish Hospital; SLCH, St. Louis Children's Hospital; CH, Christian Hospital.

as fast or faster for ride arrival (n=40, 93%) than prior NEMT experiences. Informal shadowing and patient anecdotes provided by staff suggested that patient experience was improved by decreased wait times and fewer cancellations.

DISCUSSION

We implemented a single-vendor NEMT solution across our system, identifying positive returns on the initial investment in terms of patient and staff experience, ride-related delays and costs.

Limitations include confounding in ride numbers and patient mix due to COVID-19. However, this challenge also demonstrated the robustness and flexibility of our vendor's platform, which allowed us to meet an immediate need by organising dedicated COVID-19 NEMT rides. Additionally, because a key aspect of our intervention involved systematic data collection, we were unable to generate an otherwise-equivalent control group for comparison. We partially mitigate this issue through historical comparisons.

Our work also has strengths. First, we evaluated, selected and implemented our solution rapidly, showing the effectiveness of an organised approach to innovation. Second, we demonstrated the feasibility and benefits of implementing a single-vendor system across a large healthcare system. Despite early challenges in rural availability, we met a diverse range of patients' needs. Third, we captured previously unrecorded data—such as ride wait times—to allow quality control and future improvements.

We identified important lessons relevant for organisations considering NEMT programmes. First, identifying rural transportation was challenging. Our service could have launched earlier, and more smoothly, if we had better understood our patients' needs up front. To create a local transportation network, the vendor needed accurate estimates of expected volume, patient needs and county-level origins and destinations. Advance preparation of this information could have allowed the vendor to curate a focused list of potential partners.

Second, we validated the importance of accurate and comprehensive baseline data. Our ability to demonstrate success was limited by unavailable baseline direct (eg, number of no-show taxicabs) and indirect (eg, time from discharge to hospital departure) measures of success.

Third, our solution was most successful in the units with existing taxicab-hailing workflows. Adapting workflows appears less burdensome than designing workflows de novo, which requires deliberate consideration of oversight, budgeting, patient eligibility, staff capabilities and 'ownership' of day-to-day responsibilities. Tiered implementation with 'soft' launches allowed staff to become familiar with the new process, while allowing us to adapt best practices for implementation at the next site.

CONCLUSIONS

Our implementation of a single-vendor NEMT solution validates the need for NEMT at large healthcare organisations, geographical risks to establishing a feasible and available NEMT solution organisation-wide, and the importance of baseline data and stakeholder engagement.

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Contributors PGL, BAR, MW, MG, JKE, AK and TMM have substantial contributions to the conception and design of the work; the acquisition, analysis and interpretation of data for the work, drafted the work and revised it critically for important intellectual content; provided final approval of the version to be published; and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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