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.2,3

NEMT is an important social determinant of health.4,5 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.3 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,
through taxicab vouchers, wheelchair-
16 000 yearly rides within our organisation, mostly
and unit reports, our needs assessment estimated over
Through a mix of expenditure data, voucher counts
Needs assessment
RESULTS
through contracts and a stepwise launch. Key success measures
included complete system-wide ride availability regardless
of patient locale, continuous scheduling platform avail-
ability, time spent scheduling rides, wait times and cost.

RESULTS
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 supple-
mental 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 plat-
form 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 demon-
strated superior ability to provide a mix of rural and
urban coverage and special needs rides, and to leverage
utilisation data for organisational planning.

Table 1 Organisational priorities for an NEMT vendor

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

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

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 transporta-
tion 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
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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