

The Emerging Business Models and Value Proposition of Mobile Health Clinics

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KHIN-KYEMON AUNG AB; CATERINA HILL, MSC, MA; JENNIFER BENNET, BS;
ZIRUI SONG, MD, PHD; AND NANCY E. ORIOL, MD

ABSTRACT

Mobile health clinics are increasingly used to deliver healthcare to urban and rural populations. An estimated 2000 vehicles in the United States are now delivering between 5 and 6 million visits annually; however, despite this growth, mobile health clinics represent an underutilized resource that could transform the way healthcare is delivered, especially in underserved areas. Preliminary research has shown that mobile health clinics have the potential to reduce costs and improve health outcomes. Their value lies primarily in their mobility, their ability to be flexibly deployed and customized to fit the evolving needs of populations and health systems, and their ability to link clinical and community settings. Few studies have identified how mobile health clinics can be sustainably utilized. We discuss the value proposition of mobile health clinics and propose 3 potential business models for them—adoption by accountable care organizations, payers, and employers.

Population health management is an increasingly important framework in healthcare. As insurers transition from paying for volume to paying for outcomes and quality, healthcare organizations will need ways to effectively manage the health and wellbeing of patient populations. Effective population health management requires coordination of care across the entire spectrum of medical, behavioral, and social services as well as the incorporation of acute care with primary care and preventive care; additionally, it will require an emphasis on care management and care coordination services, and education programs. Aside from re-imagining the services that are offered, organizations invested in population health management will need to rethink the way services are delivered and help patients overcome the many barriers that prevent them from accessing care.

At the community level, major impediments to care include affordability, accessibility (eg, geography, time, distance, transportation, language), availability of providers or appointments, health literacy, and lack of trust.^{1,4} To engage communities that have long been disenfranchised from the traditional healthcare system and identify at-risk populations, healthcare organizations must be able to successfully mitigate some of these barriers. Mobile health clinics are

a community-centered solution that can eliminate barriers to access, reduce health disparities, and improve care delivery while decreasing costs. These clinics on wheels travel into the heart of communities, often delivering preventative care and health education, filling critical gaps in care, and in many cases, addressing social determinants of health, such as food insecurity, legal needs, and housing.

Although mobile health clinics represent a promising delivery model, with a couple of exceptions, they have yet to be incorporated into the delivery models of major healthcare organizations. Few studies have examined the value mobile clinics may add to these organizations and to the emerging business models for mobile clinics. In this paper, we explore the potential value proposition of widespread deployment and utilization of mobile health clinics and discuss 3 business models through which mobile health clinics may most generate value.

An Overview of Mobile Health Clinics

There are an estimated 2000 mobile health clinics in the United States serving approximately 5 to 6 million people annually.⁵ These vehicles vary in size and scope according to the communities and catchment area served. In some cases, like the Boston University Outreach Van which provides food and basic supplies, connects clients to community services, and provides health education, the programs are centered on transactions and are similar in size to a food truck; other larger models—the size of a city bus or flat-bed truck—house large equipment such as mammogram units, exam tables, dialysis clinics, and blood collection units. Overall, the most frequent services provided by mobile health clinics are primary care and preventive care, but they may also provide dental care, mental health services, chronic disease management, and maternal and infant health.⁶ Specialty clinics also exist for a variety of services, including substance abuse treatment, asthma and allergy care, pap smear tests, pediatric care, urgent care, HIV testing, and speech therapy.⁷ Nearly half of mobile clinics provide more than one type of service and most patients to other healthcare services and social services agencies.

Population Served

Mobile health clinics usually serve the medically disenfranchised—individuals who are underinsured, uninsured, or who are otherwise disconnected from the healthcare system due to access barriers.⁵ Fifty-seven percent of visits to mobile health clinics are made by uninsured individuals, 42% by individuals aged under 18 years, and 37% identify themselves as non-white while 43% identify themselves as Latino or Hispanic.⁵ In some areas, mobile health clinics have become a provider of last resort, delivering care to individuals who do not have a primary care provider or who must resort to visiting the emergency department (ED) for nonemergent health needs. One study of a mobile health clinic showed that, over a 2.5 year period, 27% of patients who visited the mobile clinic would have sought care at an ED had the mobile clinic not been available.⁶

Cost-Effectiveness

Research shows that mobile health clinics can provide a significant return on investment (ROI). The Family Van—a mobile health clinic serving the Greater Boston area—modeled the quality adjusted life-years gained by the prevention activities conducted and the savings from unnecessary ED visits and found that their services resulted in a \$30 return on investment for every \$1 invested.⁷ This was equal to \$3 million saved through reduction in visits to the ED and more than \$17 million saved in total annual value of life-years saved.⁷ A follow-up study found that the blood pressure screenings and hypertension counseling provided on the Family Van led to a 32.2% decline in the relative risk of myocardial infarction and a 44.6% decline in the relative risk of stroke among patients.⁶ These reductions coupled with reduced unnecessary ED visits translated to \$1.6 million in savings over 36 months, or a ROI of \$1.3 per \$1 invested.⁶ Aside from the Family Van, other data also suggest cost-effectiveness of mobile clinics. Aggregate data collected by the Mobile Health Map⁸ based on an algorithm developed by Oriol et al (2009)⁷ indicate a national estimate of \$14 ROI per \$1 invested in a mobile clinic.⁸

Focus on Prevention

Mobile health clinics show promise in their potential to reach individuals with high risk for chronic disease who have previously undetected risk factors. Of the clients screened on the Family Van, 60% had previously undetected elevated blood pressure, 14% had previously undetected elevated levels of blood glucose, and 38% had previously undetected elevated total cholesterol.⁵ Other reports indicate that mobile clinics may improve outcomes and lead to early detection of cancer in patients.^{9,10} Mobile clinics have also been used to deliver prenatal care.¹¹ Their overall focus on wellness and prevention is a valuable asset for the communities in which they operate.

Trust and Cultural Competence

One of the most critical features of mobile health clinics is their

ability to build trust with the community and link clinical and community settings. Mobile health clinics are embedded in the heart of communities, often parked in front of frequented shopping plazas, grocery stores, and churches. They often collaborate with local community health centers, hospitals, and social services to provide holistic care, and they also work closely with community health workers to deliver culturally and linguistically appropriate care. The Family Van coined their approach to client services as the “Knowledgeable Neighbor Model.”¹² Key components of the model include building trust, and emphasizing culturally competent health literacy, motivational interviewing, advocacy, and navigational support. Visitors to the Family Van cite the organization’s convenience of location and “easy to talk to” staff as some of the reasons they keep returning.¹² Other qualitative studies have reported similarly positive patient experiences indicating that mobile clinics are an alternative model for delivering accessible and affordable care.^{13,14} In addition to directly delivering health services, mobile clinics play a critical role in referring patients to social services and primary and specialty care. In fact, the Massachusetts Partnership for Health Promotion and Chronic Disease Prevention named mobile health clinics as a state wide best practice in helping to prevent and control chronic disease and to connect community resources to clinical settings.¹⁵

Drivers of and Barriers to Adoption of Mobile Health Clinics

Drivers

The greatest advantage of mobile health clinics is their mobility, which allows them to more easily reach populations that do not have access to other forms of healthcare, and to be deployed flexibly as the needs of a community change over time. Given that geography, time, distance, and transportation are major impediments to accessing healthcare, mobile health clinics are unique in their ability to reduce some of these barriers. Another important advantage is the versatility in services they can offer. The interior of vehicles can be outfitted to accommodate everything from exam rooms to mammography machines. Thus, mobile clinics can be customized to meet the needs of both providers and the communities being served. Their ability to link clinical and community settings and foster trust among the patients are also assets. Much of the value of mobile health clinics comes from their flexibility in where they can go, what they can do, and their ability to foster trust among patients.

Barriers

Organizations interested in piloting mobile health clinic programs may face some operational and logistical challenges. For one, the healthcare industry and employers lack familiarity with operating a mobile health unit; understanding how and where to strategically deploy vans will present an operational challenge. Furthermore, equipping the vans with information technology and assuring con-

nectivity to the Internet on the road can be challenging as well. Finally, the current payment system remains a barrier to adoption. Although emerging value-based payments provide organizations with the opportunity to invest in new community-oriented technologies and programs, mobile health clinics are likely unsustainable under a fee-for-service model that does not reward quality or outcomes.

Emerging Business Models and Value Propositions

Accountable Care Organizations

Accountable care organizations (ACOs) are financially and clinically responsible for populations of patients and represent a payment and delivery model designed to incentivize cost-savings and improved quality. ACOs are unique in that they take responsibility for the total costs of care for their assigned population. As a result, ACOs must be able to identify and manage the health and social needs of their high-cost patients and reduce low-value spending. ACOs piloting population health management tools may be interested in deploying mobile health clinics, as they could potentially use these clinics to deliver health education, chronic disease management, primary care, preventive care, or other services with the goal of keeping their patients healthy while delivering more cost-effective care. The benefit of using mobile clinics as opposed to, or in addition to, fixed-site clinics is that the former is capable of moving from area to area as high-risk populations shift over time and visiting different high-risk sites without having to invest in permanent clinic infrastructure in those areas.

Payers

As both public and private payers move from fee-for-service to risk-based contracts, there is an even greater emphasis on cost-effectiveness, value, and targeted case management of high-cost, high-need beneficiaries. There has been widespread support of mobile health clinics from public payers, and mobile clinics have been an important component of the Department for Veterans Affairs' (VA) rural health strategy. The VA operates approximately 70 Mobile Vet Centers across the country, offering services such as counseling, outreach and education, substance abuse, and employment assessments and referrals, in addition to screenings for medical issues such as traumatic brain injury and depression.¹⁶ Section 204 of the Veterans Access, Choice, and Accountability Act of 2014 (public law 113-146) strengthens the role of Mobile Vet Centers and Mobile Medical Centers by standardizing the parameters by which they must operate and by requiring the use of telemedicine.¹⁷ In addition to the fleet of Mobile Vet Centers and Mobile Medical Centers, in 2011, the VA also planned to add over 200 emergency shuttle vehicles that provide routine transportation to veteran patients and could be converted to mobile clinics in the case of natural disasters and emergencies.¹⁶ Aside from the VA, 17 different federal agencies fund mobile clinics, and 222 health resource-funded federally qualified health centers

or federally qualified look-alikes include mobile clinics in their care delivery model.¹⁸

Private payers may also reap benefits from the effective deployment of mobile health clinics. One example of a successful mobile clinic model can be found in Kaiser Permanente (KP). KP, like ACOs, has strong incentives to successfully manage their patient populations. KP was an early adopter of mobile health clinics (as of 2013, the group operated 6 clinics) and has shown compelling evidence that mobile health clinics are effective for integrated provider-based health plans. Of the patients screened on their vehicles in July 2013, 71% were overweight or obese, 67% were positive for pre-hypertension or hypertension, 6% were positive for borderline high or high random glucose, 39% were positive for abnormal or high cholesterol, and 34% of patients said they did not exercise.¹⁹ KP members who used the clinic had improved levels of glycated hemoglobin, low-density lipoprotein cholesterol, blood pressure, and improved rates of colorectal, breast, and cervical cancer screenings.¹⁹ These patient encounters via mobile health clinics led to an \$88 cost saving per visit.¹⁹ The services provided on the van range from primary care to biometric screenings and mammography services. The aims of their mobile clinics are to: 1) grow market share and increase penetration by serving a nonmember mix, 2) demonstrate performance as a leader in healthcare, and 3) retain patients and target at-risk groups.¹⁹

Employers

Employers are incentivized to keep their workers healthy. Employers who develop worksite clinics could benefit from reduced healthcare costs, improved employee performance and morale, and boost their ability to recruit and retain employees. In 2003, the total loss in economic output due to sickness was totaled at \$260 billion per year.²⁰ Loss in productivity as a result of absenteeism for employers who are overweight or obese and have at least 1 other chronic disease amounts to \$153 billion.²¹ Sponsoring a comprehensive health promotion program could reduce absenteeism and employee turnover, attract and retain talented workers, increase productivity, and foster stronger commitment to the organization.²² One meta-analysis of the literature on savings generated by workplace prevention and wellness programs suggests that employees' medical costs fall by \$3.27 and absenteeism costs fall by \$2.73 for every dollar invested in these types of initiatives.²³

Mobility is a major asset to employers aiming to provide clinical services to employees, but who may not have the capital to invest in a worksite medical clinic and hire full-time staff. Employers contracting with mobile clinics could schedule worksite visits as frequently as needed. Clinics' mobility becomes even more valuable to employers who operate multiple sites across a geographic area. The mobile clinics could travel from site to site, thereby reducing the inconvenience and cost of workers taking time to visit an off-site

clinic or the need of employers to build multiple fixed site clinics in various locations.

Policy Implications

Mobile health clinics have been leveraged to deliver healthcare tailored to underserved populations in both rural and urban communities for decades. Growing out of a social mission to reduce healthcare disparities, many mobile health clinics exist as nonprofit organizations or hospital-sponsored community benefit programs; thus, historically, they have lacked the capacity to evaluate their own impact and gain visibility for their work. Only recently have they been gaining national attention as a valuable and underused resource to help reach populations that do not have a regular source of primary care. In 2012, the HHS' Office of Minority Health convened the first formal meeting of the Collaborative Research Network of Mobile Health Clinics. In early 2014, the Institute for Healthcare Improvement launched a 3-city tour to highlight their innovative approach to improving health in the community.

Despite the growing acknowledgement of the role of mobile clinics, they have not yet been deployed systematically. Few studies have identified the business case for mobile clinics and articulated how they can transform patient care. With the many changes in the way healthcare is being financed, there are numerous opportunities to seamlessly integrate mobile clinics into the healthcare system as a critical link between clinical and community settings. In the coming years, mobile health clinics may be able to play a larger role in chronic disease management and prevention and may bridge the gap between vulnerable populations and the traditional healthcare system. Piloting mobile clinic programs within ACOs, hospitals, or community health centers could also fill critical gaps in care; thus, financial models and policies that facilitate such collaborations to form should be encouraged.

Gaps in Knowledge and Future Directions

Although mobile health clinics may be a promising tool to help provider organizations, payers, and employers to better manage population health, there remain gaps in knowledge. Further research in the following areas will better clarify the applications and limitations of mobile health clinics:

Outcomes and Patient Satisfaction

There is a need to collect additional data that quantify the impact and effectiveness of mobile health clinics in improving patient satisfaction and patient outcomes. The Mobile Health Map is in its third year of a partnership with the HHS to pilot a Public Health Quality Self-Assessment Tool on mobile health clinics nationwide. This tool is intended to collect information about the quality of the services offered at mobile clinics and the quality improvement goals each program intends to tackle in the next 12 months, focusing on the

population impact of the services. To date, 70 mobile clinics have completed the tool and results are expected by the end of the year.

Cost-Effectiveness

While the few peer-reviewed studies that determine ROI all show a positive outcome, there is a considerable range in values, depending on the model used. It will be useful to determine not only whether mobile clinics lead to a positive ROI, but also the contexts in which savings can be generated. In cases where mobile health clinics do not directly lead to a positive ROI, organizations will need to determine whether the other benefits of mobile clinics (eg, branding, increased community outreach and patient engagement) outweigh the financial costs. Further evaluation on mobile health clinics' ROI is warranted.

Partnerships and Integration

Additional testing evaluating the impact of mobile clinics across different care settings, communities, and demographics is needed. In particular, further study on how mobile health clinics can be seamlessly integrated into existing work flows and the myriad of population health management efforts would be beneficial. Partnerships between existing mobile health clinics and ACOs, payers, and employers may add value for the delivery system.

Additional evaluation is needed to shed more light on how mobile health clinics can be effectively and sustainably deployed. Mobile health clinics can potentially help generate savings for healthcare organizations implementing population health management under ACO contracts. Providers, policy makers, researchers, and other stakeholders should consider the applications of mobile health clinics and evaluate their impact.

Conclusions

Mobile health clinics represent promising vehicles through which high quality, cost-effective care can be delivered to patients, especially in underserved areas. Their mobility and customizability are major drivers to adoption by health organizations interested in enhancing their population health management programs and strengthening their linkage with the community. Mobile clinics' ability to deliver affordable, culturally competent, and linguistically appropriate care makes them an attractive site of care for all patients, including those who feel disenfranchised from the healthcare system. Although further investigation needs to be pursued to ascertain the full impact of mobile health clinics on cost, quality, and outcomes, they have the potential to transform the way healthcare is delivered through partnerships with providers, payers, and employers.

Author Affiliations: The Family Van (CFH, JB), Harvard Medical School (K-KA, NEO), Boston MA; Massachusetts General Hospital (ZS), Boston, MA.

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Address correspondence to: Nancy E. Oriol, MD, Dean of Students, Harvard Medical School, Ste 244, 260 Longwood Ave, Boston, MA 02115. Email: Nancy_Oriol@hms.harvard.edu.

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