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*Brief Report*

# Developing a Public Health Quality Tool for Mobile Health Clinics to Assess and Improve Care

Nancy E Oriol <sup>1,2,\*</sup>, Josephina Lin <sup>3,4</sup>, Jennifer Bennet <sup>4,5</sup>, Darien DeLorenzo <sup>5,6</sup>,  
Mary Kathryn Fallon <sup>4</sup>, Delaney Gracy <sup>7,8</sup>, Caterina Hill <sup>4,9,10</sup>, Madge Vasquez <sup>11,12</sup>,  
Anthony Vavasis <sup>13,14</sup>, Mollie Williams <sup>4,15</sup> and Peggy Honoré <sup>16,17</sup>

<sup>1</sup> Program in Medical Education, Harvard Medical School, Boston, MA 02115, USA

<sup>2</sup> Department of Anesthesia, Beth Israel Deaconess Medical Center, Boston, MA 02215, USA

<sup>3</sup> Harvard T.H. Chan School of Public Health, Boston, MA 02115, USA

<sup>4</sup> Family Van/Mobile Health Map, Harvard Medical School, Boston, MA 02115, USA

<sup>5</sup> Mobile Healthcare Association

<sup>6</sup> Mobile Health Care Authority

<sup>7</sup> Children's Health Fund, New York, NY 10115, USA

<sup>8</sup> New York Foundling, New York, NY 10011, USA

<sup>9</sup> Department of Global Health and Social Medicine, Harvard Medical School, Boston, MA 02115, USA

<sup>10</sup> 1A Wellness Group, Wenham, MA 01984, USA

<sup>11</sup> St David's. Foundation, Austin, TX 78701, USA

<sup>12</sup> Madge Vasquez Consulting LLC., Austin, TX 78704, USA

<sup>13</sup> Callen-Lorde Community Health Center, New York, NY 10011, USA

<sup>14</sup> New York Hotel Trades Council & Hotel Association Health Center, Brooklyn, NY 11217, USA

<sup>15</sup> Mission Mobile Medical, Kernersville, NC 27284, USA

<sup>16</sup> DHHS/OS/Office for the Assistant Secretary for Health, Washington, DC 20201, USA

<sup>17</sup> LSU Health Sciences Center of Public Health and Medicine, New Orleans, LA 70112, USA

\* Correspondence: Nancy\_Oriol@hms.harvard.edu

## Abstract

This report describes the development and deployment of the Public Health Quality Tool, an online resource designed to help mobile health clinics (MHCs) assess and improve the quality of their public health services. MHCs provide essential clinical and public health services to underserved populations but have historically lacked tools to assess and improve the quality of their work. To address this gap, the Public Health Quality Tool (PHQTool) was developed as an online, evidence-based, self-assessment resource for MHCs, hosted on the Mobile Health Map (MHMap) platform. Drawing from national public health frameworks and Honore et al.'s nine quality aims, the PHQTool focuses on six aims most relevant to mobile care: Equitable, Health Promoting, Proactive, Transparent, Effective, and Efficient. Development included expert consultation, pilot testing, and iterative refinement informed by user feedback. The tool allows clinics to evaluate practices, identify improvement goals, and track progress over time. Since implementation, 82 MHCs representing diverse organizational types have used the PHQTool, reporting high usability and identifying common improvement areas such as outreach, efficiency, and equity-driven service delivery. The PHQTool facilitates systematic quality assessment within the mobile clinic sector and supports consistent documentation of public health efforts. By providing a standardized, accessible framework for evaluation, it contributes to broader efforts to strengthen evidence-based quality improvement and promote accountability in MHCs.

**Keywords:** mobile health clinics; public health; public health quality; quality assessment; quality improvement; self-assessment tool; health equity; community health; underserved

## 1. Introduction

Mobile health clinics (MHCs) represent some of the nation's most adaptable safety-net providers, delivering care across urban neighborhoods, rural and frontier towns, and post-disaster areas. Approximately 3,000 MHCs operate nationwide, providing preventive care, primary care, health education, screenings, and connections to social services for populations often excluded from traditional health systems, including individuals experiencing homelessness, uninsured families, migrants, and rural residents [1].

Despite their reach, MHCs historically lacked standardized mechanisms to measure and improve public health impact. Unlike hospital systems that adopted formal quality improvement (QI) frameworks [2], MHCs operated with limited access to data systems or QI resources suited to their mobile, community-embedded context. The absence of a tailored framework impeded systematic evaluation and recognition of their contributions to population health. The *Public Health Quality Tool* (PHQTool) was developed to meet this need, offering a sector-specific, practical mechanism to assess and enhance quality performance.

## 2. Methods

### 2.1. Public Health Quality Tool Development

#### 2.1.1. Early Foundations: The Family Van and Mobile Health Map

The development of the Public Health Quality Tool built upon prior work by *The Family Van*, a Boston-based mobile clinic launched in 1992 by Beth Israel Hospital and later affiliated with Harvard Medical School [3–5]. Recognizing the need for evidence to demonstrate value, The Family Van partnered in 2007 with the Mobile Health Clinics Association (MHCA) to create an evaluation framework quantifying return on investment (ROI). The resulting ROI calculator, published in 2009 [6], demonstrated cost avoidance associated with preventive care and catalyzed the formation of *MobileHealthMap.org* (MHMap), an online collaborative research platform for MHCs [7]

#### 2.1.2. National Partnerships and Public Health Quality Aims

In 2011, Honoré et al. introduced nine aims for public health quality: population-centered, equitable, proactive, health-promoting, risk-reducing, vigilant, transparent, effective, and efficient [8]. Recognizing MHMap's ability to operationalize complex frameworks for frontline programs, Peggy Honoré, Director of Public Health Systems, Finance and Quality Programs in the U.S. Department of Health and Human Services invited the MHMap team to adapt these aims for MHCs.

#### 2.1.3. Collaborative Design with Diverse Clinics

A collaborative working group of five mobile clinic programs - including Children's Health Fund (NY), The Family Van (MA), St. David's Foundation Dental Program (TX), Callen-Lorde Community Health Center (NY), and MedStar Georgetown University Hospital (DC) - mapped routine MHC activities to the nine public health quality aims. Through iterative testing, six aims were identified as most actionable for the mobile clinic environment. Field testing and expert review ensured clarity, feasibility, and contextual relevance.

They mapped daily MHC activities, such as providing linguistically appropriate health materials, real-time needs assessment, or adjusting routes to emerging community trends, to each public health quality aim. Iterative discussion revealed that while the original nine aims were visionary, three ("population-centered," "risk-reducing," "vigilant") required infrastructure not available for many MHCs. The final version focused on six core, actionable aims: Equitable, Health Promoting, Proactive, Transparent, Effective, Efficient. Clinics reported back on ambiguous language, gaps, and what "fit" or didn't with street-based care realities. In addition to input from the five mobile clinics, the design team worked closely with Office of the Assistant Secretary of Health,

advisors from the Institute of Healthcare Improvement, the National Quality Measures Clearinghouse and the John Snow, Inc.

#### 2.1.4. Online Tool Construction and Release

The tool was implemented as a user-friendly, web-based resource modeled on the ROI calculator. It allows users to complete self-assessments in under 30 minutes, identify strengths and gaps, and set one-year improvement goals. Open access and plain-language design ensured inclusivity for small and resource-limited organizations.

### 2.2. Pilot Testing and Iterative Refinement

#### 2.2.1. Early Pilots and Feedback

Initial pilot testing in 2014 involved 21 clinics, followed by a 2015 expansion to 45 clinics [9]. Feedback guided language refinement and tool structure to better reflect real-world operations.

#### 2.2.2. Sector Engagement and Dissemination

Adoption of the PHQTool was advanced through presentations at major public health forums, including the American Public Health Association, the National Healthcare for the Homeless Council, the Institute for Healthcare Improvement forums, and through webinars hosted by the Health Resources and Services Administration (HRSA) and the Federal Office of Rural Health Policy (FORHP). Federal partners facilitated introductions to large-scale grantees, and the tool soon gained traction with hospital-linked programs, rural health departments, and philanthropic funders seeking ROI and quality documentation. The tool's voluntary, anonymous and supportive framework encouraged engagement without the perception of external oversight.

## 3. Results

### 3.1. Application and Quality Priorities

Among respondents to the second implementation round in 2015:

- 96% rated usability as high;
- $\geq 70\%$  found questions relevant to their practice;
- 83% planned to strengthen work in at least one quality aim.

More than 60% used the tool to inform annual planning, grant reporting, or performance evaluation. The most common improvement goals involved proactive needs assessment, cost-tracking for efficiency, and equity-focused outreach. The three most frequently selected goals were:

- **Proactive aim:** Increase capacity for real-time needs analysis and client feedback systems
- **Efficient aim:** Expand cost tracking and develop simple ROI calculations for funders
- **Equitable aim:** Improve service location convenience and offer trusted formats for health education in multiple languages

### 3.2. Uptake and Clinic Characteristics

Since the post-COVID revision, 82 MHCs have used the PHQTool. Participating programs include Federally Qualified Health Centers (FQHCs), hospital affiliates, nonprofit agencies, and university-based clinics operating in urban, suburban, and rural settings, including disaster-response deployments.

The sample includes:

- Organizations with federal (40%), philanthropic (65%), public (56%), and private (67%) funding (many reporting multiple sources)

- Urban, suburban, and rural catchment areas, including post-disaster deployments after hurricanes and during the COVID-19 pandemic

**Table 1.** Public Health Quality Tool Aims and Sample Strategies (see Appendix A).

Public Health Aim	Example Strategies
Equitable	Affordable services for uninsured/underinsured clients; materials at <6th-grade literacy; 2+ languages offered; staff who reflect community diversity
Health Promoting	Health education/counseling; evidence-based clinical interventions (e.g., vaccines); addressing contextual and social determinants
Proactive	Analyzing community health data; regular client surveys; adaptive service models for emerging needs; staff emergency training
Transparent	Public reporting of program/process/outcome data; accessible governance and finance information
Effective	Prioritizing evidence-based interventions; assessing changes in knowledge/behavior/health outcomes post-intervention
Efficient	Tracking costs/ROI per person served, streamlining operations without sacrificing access or quality

#### 4. Discussion

The co-developed PHQTool demonstrates that mobility and community orientation can coexist with rigorous quality improvement. By simplifying evaluation processes and centering equity, MHCs can participate fully in quality culture without extensive infrastructure.

Key lessons include:

- **Accessible quality improvement** encourages sustained self-evaluation across diverse organizations.
- **Equity integration** ensures that assessment frameworks reflect community realities.
- **Data combined with narrative context** strengthens advocacy with funders and health systems.

As health systems expand out-of-facility care to address inequities [10,11], tools such as this provide a tested mechanism for structured evaluation. The COVID-19 pandemic underscored the importance of agile, data-driven mobile responses [12,13]; the PHQTool supports readiness and accountability for such efforts.

#### 5. Conclusions

Mobile health clinics have long advanced equity and effectiveness through direct community engagement. The PHQTool provides a scalable, evidence-based mechanism to document and improve these contributions. Embedding continuous quality improvement within mobile health operations is both feasible and necessary. MHMap and the PHQTool offer a replicable framework for equity-oriented evaluation across population-based health initiatives.

**Table 2.** Historical Timeline: Key Moments in Mobile Health Map and Quality Tool Innovation.

Year	Milestone
1992	The Family Van launches in Boston
2007	The Family Van, Mobile Healthcare Association (MHA), Harvard School of Public Health and health economist Paul Cote Jr, MBA begin Return on Investment (ROI) pilot
2009	The Family Van, MHA, The Boston Children's Hospital Department of Information Technology and Harvard Medical School (HMS) Department of Bioinformatics launch Mobile Health Map.org (MHM) and the online ROI calculator
2011	MHM team presents ROI calculator to Health Resources Service Administration (HRSA) and Federal Office of Rural Health Policy (FORHP) in Washington, DC

	Honoré et al. publishes public health quality aims
	Health and Human Services (HHS) and Office of Minority Health (OMH) sponsor a convening inviting over 100 Representatives of Agencies and Offices including Peggy A. Honoré, Director of Public Health Systems, Finance, and Quality Program, Office of Healthcare Quality/Office of the Assistant Secretary for Health, Department of Health and Human Services
2012	Honore invited and fund MHMap to convert the Public Health Quality Aims (PHQA) to concrete Metrics and create an online tool for PHQ.
2012	Collaborative working group with five flagship clinics create quality assessment tool
2012–2013	Public Health Quality Tool (PHQTool) launches online, free for any Mobile clinic registered on MHMap, first public presentation American Public Health Association (APHA) annual meeting New Orleans
2014	Version 2 released after user feedback.
2015	National dissemination of PHQTool with invited presentations at APHA annual meetings, Institute for Health Improvement (IHI) forum, National Quality Partners, MHA Annual Conferences, HRSA, FOPHP, Agency for Healthcare Research and Quality (AHRQ), Weitzman Institute, and an interview on National Public Radio
2016–2019	The Leon Lowenstein Family Foundation funds MHMap, and helps scale MHCs during Covid Response, MHMap and Quality tool rebuilt.
2020	82+ clinics nationwide complete quality tool; mobile clinics nationwide use MHMap
2023–2025	tools for advocacy

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## Abbreviations

The following abbreviations are used in this manuscript:

PHQTool	Public Health Quality Tool
MHCs	Mobile Health Clinics
MHMap	Mobile Health Map

MHCA	Mobile Health Clinics Association
ROI	Return on Investment
HHS	Health and Human Services
HRSA	Health Resources and Services Administration
FORHP	Federal Office of Rural Health
FQHC	Federally Qualified Health Center

## Appendix A

### Appendix A.1

#### Public Health Quality Tool Metrics

##### 1. Equitable

- a. Definition: Does your program advance health equity? An equitable program works towards health equity by addressing health disparities – the gaps in quality of health or health care due to the social determinants of health (like race or ethnicity, education level, or socioeconomic status).
- b. Metrics
  - i. Services will be affordable for those who are uninsured, underinsured, or low-income
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - ii. Written information will be easy to understand for those with low-literacy or language barriers
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - iii. Locations will be convenient
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - iv. The staff will speak the 2 most common languages
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - v. The staff will reflect the diversity of the population served
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year

##### 2. Health Promoting

- a. Definition: Is your program health promoting? A health promoting program adopts policies and strategies that advance safe practices by providers and the population and that increase the probability of positive health behavior and outcomes.
- b. Metrics
  - i. Offer counseling and education
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - ii. Use clinical interventions
    1. Use strategy now
    2. Use more next year

3. Don't use and don't plan to implement within next year
- iii. Implement long-lasting clinical interventions such as vaccinations
  1. Use strategy now
  2. Use more next year
  3. Don't use and don't plan to implement within next year
- iv. Change the context to people's health, e.g. by offering healthy food in schools
  1. Use strategy now
  2. Use more next year
  3. Don't use and don't plan to implement within next year
- v. Addresses the social determinants of health including poverty and discrimination
  1. Use strategy now
  2. Use more next year
  3. Don't use and don't plan to implement within next year

### 3. Proactive

- a. Definition: Is your program proactive? Proactive programs adopt policies and sustainable practices in a timely manner, while mobilizing rapidly to address new and emerging threats and vulnerabilities.
- b. Metrics
  - i. Analyze community health reports and community data
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - ii. Get feedback from people you serve on a regular basis
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - iii. Review program data for emerging needs among your target population
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - iv. Adjust services to address emerging needs
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - v. Train personnel in emergency response
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year

### 4. Transparent

- a. Definition: How transparent is your program? Transparency ensures openness in the delivery and practices, with particular emphasis on valid, reliable, accessible, timely, and meaningful data that are readily available to stakeholders, including the public.
- b. Metrics
  - i. Operational data
    1. Share data now
    2. Share next year
    3. Don't share and don't plan to share within next year

- ii. Equity data
  1. Share data now
  2. Share next year
  3. Don't share and don't plan to share within next year
- iii. Outcomes data
  1. Share data now
  2. Share next year
  3. Don't share and don't plan to share within next year
- iv. Governance data
  1. Share data now
  2. Share next year
  3. Don't share and don't plan to share within next year
- v. Financial data
  1. Share data now
  2. Share next year
  3. Don't share and don't plan to share within next year

## 5. Effective & Efficient

- a. Definition: How effective and efficient is your program? Effective and efficient programs use evidence, science, and best practices to achieve optimal results in areas of greatest need. Understands costs and benefits of public health interventions, to facilitate the optimal use of resources to achieve desired outcomes.
- b. Metrics
  - i. Use evidence-based interventions (programs proven to be effective and efficient)
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - ii. Measure changes in knowledge, behavior, or health after intervention
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - iii. Measure differences in a group's health when compared to another group that haven't received your program
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - iv. Track expenses per individual served
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year
  - v. Track return on investment
    1. Use strategy now
    2. Use more next year
    3. Don't use and don't plan to implement within next year

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