

**Feasibility Assessment: Implementing a Mobile Integrated Provider Program in Alamance County. Addressing Healthcare Shortcoming, Overuse Burdens and Developing New Collaborative Relationships Among Healthcare Providers.**

By

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## INTRODUCTION

Emergency Medical Services (EMS) traditionally provides emergent care and transport of community members to emergency departments. However, the past several years has demonstrated the baseline skill set of a Paramedic proves to be an excellent foundation to be trained and function as a Mobile Integrated Healthcare Practice (MIH)<sup>1,2</sup> provider also referred in literature as a Community Paramedic.<sup>5,7,10,18,19,20</sup> The MIH practitioner<sup>1,2</sup> delivers a unique perspective of interaction and treatment of community members by identifying health care needs beyond emergencies typically treated in the pre-hospital environment but having the skill level to do so. There by reducing 9-1-1 call volumes, unnecessary transports, potentially unnecessary ED visits and subsequent hospital admissions. The thought process behind employing the MIH practitioner will be to transform EMS from a strictly emergency care service to a value-based mobile healthcare provider that is fully integrated with an array of healthcare and social services partners to improve the health status of the community.<sup>1,6</sup> Often Paramedics are often overlooked as a valuable members of the healthcare team, incorporating the MIH role allows the Paramedic to remain active and visible healthcare team member.<sup>1,6</sup> One estimate suggests approximately 15% of persons transported by ambulance to Emergency Department (ED) could safely receive care in non-urgent care settings, potentially saving the system hundreds of millions of dollars each year.<sup>17</sup> Of those, 11-61% are Medicare beneficiaries with the potential saving of Medicare dollars if these individuals could receive an on-site examination or triage to an appropriate resource.<sup>17</sup> Wang et.al, reported approximately 58% of ED visits by survey respondents met criteria for avoidable ED visits.<sup>6</sup> Two major reasons reported for seeking care at an ED were lack of availability and accessibility for appropriate care. The ideal primary care appointments were not available due to long wait times and/or insurance limitations e.g., Medicaid.<sup>6</sup>

Medicare identified areas in the health care system where patients were lost to care following discharge, system overuse or lack adequate direction to gain ideal care for their problem, or patients lacked full understanding of local resources from data obtained from contributing hospital systems.<sup>17</sup>

Six gaps in the healthcare system an MIH provider<sup>1,2</sup> could improve or resolve:

- Treat and release: Up to a 1/3 of EMS calls are nonemergent. MIH providers according to Choi's survey<sup>8,12</sup> could provide on-site care for minor injuries and illnesses reducing costs and freeing up valuable ED resources.<sup>17,18</sup>
- Patient navigation: MIH providers<sup>8,12</sup> help non-emergent callers reach appropriate care by transporting them to non-hospital destinations like primary care, urgent care, substance abuse treatment and behavioral health centers.<sup>18</sup>
- Addressing ED "frequent flyers: MIH providers<sup>1,2</sup> work with local healthcare and social service organizations to assist people who chronically overuse ED resources.<sup>18</sup>
- Preventative care: In underserved areas, MIH programs partner with primary care providers and social service organizations to deliver needed screenings, education and immunizations.<sup>18</sup>
- Post-acute care: MIH providers<sup>1,2</sup> help reduce unnecessary hospital readmissions by following up with recently discharged patients. These providers will assist patients with discharge instructions, follow-up appointments and safety/appropriateness for the home environment.<sup>18</sup> The key piece will be fluid communication between mobile providers and the patient's regular healthcare team.<sup>18</sup>

- Chronic illness management: A patient referred to a MIH provider<sup>1,2</sup> program will be scheduled regular visits to address chronic disease condition supporting compliance with their treatment regimen.<sup>18</sup>

The utilization of MIH providers<sup>1,2</sup> to address similar issues as above in Alamance County, North Carolina will be equally impactful compared to other communities. In Alamance County approximately 17% of citizens receive Medicare and 20% receive Medicaid. According the Census Bureau in 2016, the Alamance County population was 159,688, and of those, 16.7% are over 65 years old.<sup>8</sup> In 2012 ~\$801,896 of healthcare and social assistance were provided to individuals in Alamance county.<sup>8</sup> It is likely this amount has increased over time. It is estimated that 18.9% live below the poverty level and approximately 14% of citizens under 65 years old are without health insurance.<sup>8</sup> The Mobile Integrated provider demonstrates the appropriate skill level and access to develop a bridge between acute, chronic and preventive health issues in the community members. The community will ultimately have a continuity of care allowing patients to be redirected towards appropriate resources and reduce health system stressors. Alamance County like most communities in North Carolina, has a population well suited for the MIH strategy, these include a need for: 1—chronic disease management; 2—unscheduled acute care evaluation and treatment; 3—primary, secondary and tertiary prevention strategies; 4—population health surveillance; 5—culturally competent social services; 6—patient navigation; 7—care coordination; 8—patient advocacy and education.<sup>18</sup>

The initial steps involved in developing a MIH program generally begins by identifying financial and logistical contributors to work in conjunction with Alamance County EMS as a local government entity. Several nearby counties, Guilford, Wake, and New Hanover are examples that have adopted the Mobile Integrated Healthcare with successful outcomes. Since

implementation of a Community Paramedic (CP) provider, who maintains 20-30 patients per month, Guilford County EMS reported a reduction of ~\$500,000 in EMS transport billing.<sup>21</sup> On average a patient transported in Guilford County will be billed between \$300-\$1000.00 per trip. The cost escalates if a patient with uncontrolled congestive heart failure experiences an exacerbation and is admitted. The average hospital stay can range from \$5000-10,000. The CP provider in Guilford county can manage a chronic illness like CHF, on average for \$200-300.00/visit.<sup>21</sup> Thus, eliminating unnecessary transports and hospital admissions. Two other local 911 systems note reduced volume of 911 ambulance transports to EDs, reduced ED admissions and hospital readmissions (meeting the U.S. Centers for Medicare & Medicaid Services less than 30 days after discharge)<sup>11</sup>. These agencies, New Hanover and Wake EMS, reported general reductions without reported statistics. These qualitative and quantitative outcomes are and will continue to be important in overcoming the endless challenges of limited budgets local prehospital and hospital providers face. Typically, the early phases of MIH programs are supported through grant funding and are then maintained through community partnerships established with EMS and any local government affiliation. The program goals and outcomes met justify continued funding and budget adjustments. The transition from grant funding to more terminal funding must remain as one of the primary focuses through the feasibility phases and should continue once the program has officially deployed ensure no financial shortfalls. Several models have been developed to secure terminal funding:

- Expand current fee for service model for EMS agencies with reimbursement for treatments at home as well as transport to alternative care settings.<sup>18</sup>
- Develop incentives for EMS agencies and physician offices to change service delivery for less emergent patients and reduce ED utilization.<sup>18</sup>

- Alternative option-maintain the current FFS structure and integrate pre-hospital emergency services into the shared-savings model of an Accountable Care Organization (ACO).<sup>18</sup>

As a part of funding development, providers that should be included are: EMS agencies, primary care providers, local hospital emergency department, specialty health care facilities, urgent care, Federally Qualified Health Centers and rural health clinics.<sup>18</sup> The next development task is defining the paramedic scope of practice for the Mobile Integrated Health practitioner. Most state regulatory codes are quite specific in spelling out the procedures paramedics can and cannot perform. Development of a standard scope of practice for the community paramedic at the national level ensures continuity of care among MIH practitioners/Community Paramedics. This task will take the national scope of practice and define locally how the MIH practitioner will perform based on local needs. The community need, secured funding, trained providers with a well thought plan is the generic goals for a feasibility framework.

Alamance County, North Carolina demonstrates the needs and healthcare gaps for a successful Community Paramedic/MIH program because of existing resources that just need realigning to meet the new goals of improving the health status of the community members.<sup>16</sup>

## **METHODS**

The search strategy necessary to explore evidence of successful community paramedicine models, ambulance and emergency department and ambulance overuse/misuse patterns, budget and cost recovery, and paramedic scope of practice as a mobile integrated provider. The broad search criteria was required in order to gather information and data initially. The search included surveys, a case study, observational studies, randomized control trials, systematic reviews, meta-analysis and reviews. Limitation of higher evidence randomized controlled trials led to

utilization of remaining references identified in addition to reference and educational websites. Databases utilized were MEDLINE-PubMed, CINAHL, Cochrane Database, and Google Scholar. In addition, a reference list of studies were hand searched for additional potential relevant studies. The databases were searched with the following restrictions: English language; date limits (from 2003 to 2017). In each database, a search was performed using the following search terms:

[community paramedicine OR community paramedic OR mobile integrated healthcare provider] AND [un-necessary transports OR non-transport] AND [meta-analysis OR review OR search]

[community paramedicine OR community paramedic OR mobile integrated healthcare provider] [non-emergent ED visits OR emergency readmission OR hospital readmission] AND [meta-analysis OR review OR search]

[community paramedicine OR community paramedic OR mobile integrated healthcare provider] AND [community paramedic scope of practice] AND [review OR search]

Keywords chosen: community paramedic, frequent utilizers of emergency departments, frequent utilizers of ambulance transport, mobile health care, rural health care. The MEDLINE-PubMed search was replicated for CINAHL and Cochrane Database.

Lastly, applicable information and data was reviewed from survey data collected from personnel working and community members currently engaged in a Community Paramedicine model, National EMS Advisory Council under the umbrella of the National Highway Transportation and Safety Administration and the Department of Health and Human Service.

## **Feasibility Study for Program Design, Development, Community Needs & Resources**

### Provider Definition

“Mobile Integrated Healthcare” is an overarching phrase for non-emergent, pre/post hospital EMS care initiatives.<sup>1,3,4,8,11,14,15</sup> The National Association of Emergency Medical Technicians defines Mobile Integrated Healthcare as “the provision of healthcare using patient-centered, mobile resources in the out-of-hospital environment”.<sup>19</sup> With that said, the design of the feasibility phase will include identifying providers as Mobile Integrated Medic Provider (MIMP) to encompass a provider that exhibits mobility, collaboration with multiple medical and community partners and extended scope of practice required to serve the community in the MIMP role.<sup>9</sup>

### **Mobile Integrated Medic Feasibility Program Design**

The feasibility design will consist several components: 1—Selecting diagnoses, health and social issues to initially address then expand upon; 2—Identify partners within EMS, local hospital leaders, community leaders to discuss a MIMP model appropriate for Alamance county, funding and budget design and requirements to sustain; 3—EMS leadership, MIMP training and development; 4—Protocol and patient visit development.

### Health Issues Focus

Diagnoses generally focused on by similar programs are based on regional occurrence reported by U.S. Centers for Medicare & Medicaid/NC Medicaid, Medicare Hospital Readmission Reduction Program (MHRRP), local 911 ambulance transport volumes, local hospital emergency department census & admissions, & NC DHEC chronic disease profiles.<sup>11</sup> Congestive heart failure, COPD, diabetes and hypertension have been designated diagnoses that are followed by all of these entities and are very common diagnosis in Alamance county, NC.



The early stage of the program will initially focus on Congestive Heart Failure (CHF) then develop protocol for additional diagnoses e.g., diabetes, etc.

Partnership and Funding Development

While logistical steps are being taken to lay out the day to day operations, the background work continues with identifying partners, stakeholders and funding who will be an integral team member, and provide critical funding to allow the program to begin and sustain. Below are examples of potential partners (Table—1):

Table—1

Medicine <sup>18</sup>	<ul style="list-style-type: none"> <li>▫ Medical Clinics (Family Medicine, Primary Medicine, Specialist)</li> <li>▫ Health Department</li> <li>▫ Mental Health Partners</li> <li>▫ Local Hospitals (Look at their current incentives and penalties)             <ul style="list-style-type: none"> <li>– UNC Chapel Hill</li> <li>– Cone Health</li> <li>– Duke Healthcare</li> </ul> </li> <li>▫ Medicaid QI Initiatives (e.g. SC DHHS Healthy Outcomes Plans)</li> <li>▫ Accountable Care Organizations or other similar models</li> <li>▫ Local Businesses’ Wellness Programs</li> </ul>
Grant Funding <sup>18</sup>	<ul style="list-style-type: none"> <li>▫ Grants: e.g. Federal Office of Rural Health Policy grants</li> <li>▫ State &amp; National Foundations/Endowments             <ul style="list-style-type: none"> <li>– e.g., The Duke Endowment (in partnership with a hospital or other eligible organization)</li> </ul> </li> </ul>
Other <sup>18</sup>	<ul style="list-style-type: none"> <li>▫ Emergency Management</li> <li>▫ Public Safety Funds</li> <li>▫ County Funds</li> <li>▫ Insurance Provider</li> </ul>

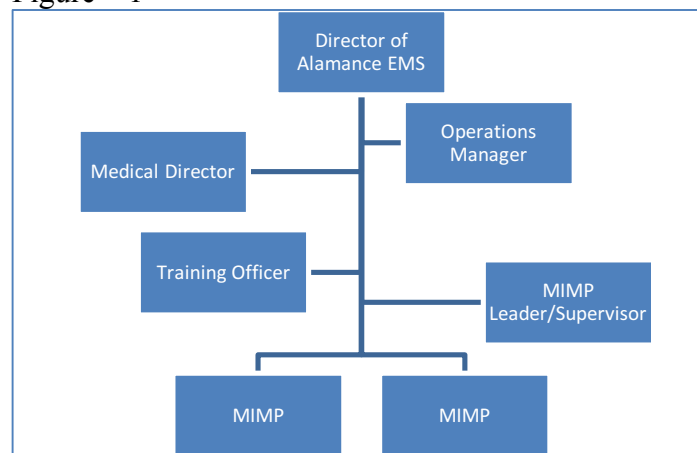
An ideal budget would cover: payroll and operating expenses, and capital expenditures.<sup>3,18</sup> Alamance EMS is a county managed entity therefore, budget monies for the program would need to be uniquely embedded in to the existing operating budget for the county's EMS operations.<sup>3,18</sup> The EMS budget is reviewed each fiscal year allowing request and/or changes to assist with program growth.

### MIMP Program Leadership and Training

The leadership and guidance for day to day operations ideally will remain within the Alamance EMS leadership (Figure-1).

#### Example leadership structure:

Figure—1



As discussed earlier, most prehospital community programs evolve through grassroots, grant money and partnership. Development of a logistics plan (provider equipment and uniforms, vehicles, computer, communication, medical supplies, training, etc.), generally, will be a similar process due to high cost of outfitting each provider to function at an optimal capacity. The initial goal will be providers utilizing existing equipment and vehicles until funding is more secure for program designated equipment. The feasibility assessment, case study and general quality assurance and improvement will be key to ensuring the logistical planning process meets the needs of the community.

The most important attribute of an ideal provider will be a genuine interest. In addition, the provider should be: 1—comfortable with autonomy; 2—compassionate; 3—able builds rapport; 4—adapts; 5—deescalates conflict; and 6—familiar with the community. Last, the candidate ideally would have to be an experienced Paramedic to ensure advanced training would appropriate layer his/her skill to work with the patient effectively.

The MIMP will require additional training to thoroughly meet the needs of the community to function in this capacity. A national curriculum defined as a result of trial and error of curriculums led to the Community Healthcare and Emergency Cooperative (CHEC) curriculum.<sup>12</sup> CHEC is standard local academic institutions to provide the training ensuring a consistent standard has been met. Hennepin Technical College in Minnesota provides an online didactic module and supports students while completing local clinical requirements. Hennepin awards Advanced Technical Certificate upon completion of 14 credits.<sup>12</sup> The average cost is \$2700.00 in tuition/fees. The curriculum has two phases: A comprehensive didactic component covering the MIMP role in the healthcare system, social determinants, public health, cultural competency, provider safety and wellness.<sup>12</sup> The clinical component consist of supervised training from medical director, nurse practitioner, physician assistant and/or public health provider.<sup>12</sup> The clinical portion of the training can be customized in relation to the program goals and provider skill level. Most clinical experience includes hospice, cardiovascular, mental health/behavioral, inpatient/hospital, wound care, dialysis, pharmacology, nutrition, case management/social services, and specialized IV lab.<sup>12</sup>

## Protocol and Patient Visit Development

The initial goal will be to determine the type of schedule to meet the needs of patient referrals. The feasibility phase is an ideal time to explore all aspects of the patient visit. The initial visit will consist of determining the patient's needs, establish rapport, educate the patient on the Mobile Integrated provider role and their relationship to the healthcare team. Follow-up visits will be structured for more clinically oriented task such as detailed physical examine/re-examination, medication reconciliation, illness/disease education, and/or specific treatment plans provided by referring physician.<sup>18</sup> These visits will generally be associated with disease specific Standard Operating Procedures.<sup>18</sup> The length of time patients will be followed are dependent on the referring physician plan, patient's psychosocial needs or preferences determined by the patient. The visits will be documented electronically to ensure thorough communication between the medical team, quality control and continued monitoring for improvement of the program.

## Initiation of the Program

The timeline will most likely vary due to unpredictable timing of the feasibility design components. Once partnerships are developed, initial funding is established, provider training is completed, standard operating procedures and policies are approved; the next step will be to pilot a case study. The case study will follow the feasibility assessment initial findings and recommendations allowing a "trial run" of the MIMP model. The case study ideally will consist of 1 or 2 community members with health history of congestive heart failure. The study will identify success and pitfalls of protocol and visit design immediately. The case study participants will provide qualitative feedback regarding prehospital care, improved compliance of CHF treatment regimen. Last, the case will provide objective data regarding the case patient's 911 transport occurrence, ED visits and readmission after participating with MIMP program. All

qualitative and quantitative data will be valuable for program design adjustments, sustainability, future funding along with transparency to stakeholder and the community.

The results and learning curve of a patient case study will guide the official roll out of the program. New Hanover Regional EMS found the patient case study to be very effective during their Community Paramedic program development. Two patients were followed by Community Paramedics for 12 months: Patient transports reduced from ~22 times/year to less than 5 times/year; Hospital inpatient stays reduced from 27 times/year to ~3 times/year and annual hospital charges reduced from \$511,019 to \$118,454/year between two patients followed during the feasibility phase. Corbett<sup>16</sup> The hope will be an outcome with similar results allowing progression of the Alamance County feasibility study.

Once the case study is complete with adjustments from lessons learned, the program can essentially begin. Most services have recommended a step-wise progression, “crawl, walk, then run”.<sup>3,18</sup> The crawl phase is the timeframe to develop MIMP patient visit schedules to coincide with physician office hours, or resource accessibility.<sup>3,18</sup> The “walk” phase focuses on outreach. The feasibility team will engage with Primary Care Providers and Emergency Department Physicians to the MIMP program to generate patient referrals.<sup>3,18</sup> The team will also work with the local Community Health Center(s), Free Clinic(s), Rural Health Clinics and any partnering hospitals.<sup>11,18</sup> As a part of continuity and communication, the MIMP will engage with the discharge planning of patients from the hospital.<sup>3,18</sup> Last will be the “run” phase, making adjustments from successes and pitfalls from previous phases. The “run” phase will have the ability of self-initiating calls and achieving scene referrals from other EMS crews. The ability to spawn referrals in this manner will require consistent communication with community resources to ensure a thorough patient care plan and less risk of loss to follow up for the patient. The run

phase allows for a “watch and see” approach where adjustments are less likely to be significant due to the initial graduated approach of the Mobile Integrated Medic program.<sup>3,18</sup>

Prior to the initial visit, a physician referral is required with a review of the patient’s history should be completed. The MIMP provider schedules an appointment with the community member for the initial visit then follow-up visits until goals are met or reassessed.<sup>3,18</sup>

Protocol development is very similar to the visit design, an integrative and collaborative process to achieve patient goals, community satisfaction, multisystem goals, readmission reduction goals.<sup>3,18</sup> Alamance County will initially focus on one diagnosis, Congestive Heart Failure, with progression to other diagnoses once the program is optimal and adequately funded. Below is an example of protocol development.

<i>Table 2: Example</i>	<b>Congestive Heart Failure Protocol<sup>3,18</sup></b>	
	<b>Hospital Goals</b>	<b>Patient Goals</b>
	<ul style="list-style-type: none"> <li>▫ Increase overall quality of life.</li> <li>▫ Decrease the patient’s number of hospital visits over a (3)-month period.</li> <li>▫ Improve patient compliance of taking medication.</li> <li>▫ Obtain patient satisfaction scores.</li> </ul>	<ul style="list-style-type: none"> <li>▫ Maintain satisfactory weight.</li> <li>▫ Maintain satisfactory diet plan.</li> <li>▫ Maintain a good understanding of their disease process.</li> <li>▫ Increased exercise ability.</li> <li>▫ Decrease edema.</li> <li>▫ Decrease amount of shortness of breath.</li> </ul>
<b>Policy<sup>3,18</sup></b>	<ul style="list-style-type: none"> <li>▫ The MIMP will respond to a residence at a request of a primary care providers and follow guidelines outlined by physician’s orders for follow up on recently diagnosed or discharged Congestive Heart Failure.</li> </ul>	

<b>Purpose<sup>3,18</sup></b>	<ul style="list-style-type: none"> <li>▫ To assist primary care providers in observing and documenting recent diagnosed/discharged Congestive Heart Failure patients through written and/or verbal orders to ensure proper compliance with their treatment plan for the purpose of increasing the patient’s quality of life and avoid hospital re-admittance.</li> <li>▫ All initial goals are met.</li> </ul>
<b>Expected Outcomes<sup>3,18</sup></b>	<ul style="list-style-type: none"> <li>▫ Patient’s overall quality of life improves.</li> <li>▫ Patient remains compliant with medication.</li> <li>▫ Patient maintains good understanding of their disease process.</li> <li>▫ Patient satisfaction improves.</li> </ul>

**DISCUSSION**

Alamance County is very similar to other counties implementing Integrated Mobile Healthcare providers in their communities. Many community members are at a disadvantaged due to poor health literacy, lack of resources or health insurance effecting treatment compliance, reducing emergency department visits, hospital admissions and unnecessary 911 response with transports.

The decision to choose a single diagnosis will streamline the process, maintaining focus on success of the program. Congestive heart failure (CHF) will be the initial diagnosis of focus. Given that many of the major illnesses have a significant impact on function and well-being, choosing CHF over one of the other disease processes should provide equally impactful feedback. CHF has a significant presence and impact on the Alamance County community leading to multiple EMS transports, ED visits and ultimately hospital admissions with readmissions.

Heart failure is a very common diagnosis affecting an estimated 5.8 million people in the United States and about 26 million people worldwide.<sup>20</sup> The prevalence of CHF increases with age gradually impairing the quality of life of patients and their families, causing anxiety and depression, social isolation and a sense of loss of control. CHF is the most common cause of hospitalization in the 65+ age group in the US and Europe with a rate of repeat hospitalizations within one month of discharge from the hospital of 18-27% and 50% within the first half year after discharge.<sup>20</sup> CHF has high mortality rates at 9±11% over the first month following diagnosis, 20-37% in the first year, and 45-60% in the first five years.<sup>20</sup> About 1±2% of the national healthcare costs in the United States are for CHF with the cost of hospitalization representing about 80% of this cost.<sup>20</sup>

The U.S. Centers for Medicare & Medicaid Services (CMS) defines hospital returns as: rates of readmissions are demonstrated by percentage of patients who return to the hospital for an unplanned inpatient admission within 30 days of leaving the hospital due to a medical condition. CMS currently monitors the following diagnoses for unplanned readmission less than 30 day from discharge: COPD (19.8%), Heart Attack (16.3%), Heart Failure (21.6%), Pneumonia (16.9%), Stroke (12.2%), and Unplanned Readmissions (15.3%).<sup>11</sup> Given its heavy burden on the health care system, there is increased focus on improving the quality and efficiency of health care delivery for this patient population.<sup>20</sup>

The Alamance County community currently utilizes UNC Hospital, Alamance Regional-Cone Health, Moses Cone-Cone Health, Duke Medical Center and Durham Regional. All five hospitals perform no different, statistically, than the national average in regards to rates of readmissions or unplanned readmission with the exception of UNC Hospital. UNC reports higher than the national average in unplanned readmission (15.3%).<sup>11</sup> Moses Cone-Cone



Health performs better than the national average with fewer readmission following a stroke (12.2%) and fewer unplanned readmission (15.3%).<sup>11</sup>

The case study will identify areas in the program can be improved from a qualitative and quantitative perspective. The information gathered can reinforce existing financial partnerships, logistical plans and facilitate potential healthcare, social and financial partners. The case will provide an opportunity for transparency for community input with final steps of the feasibility assessment being the deployment of the MIMP program for Alamance County, NC.

The research depicts several points: the model does improve the health status of the patient, increases patient compliance, reduces health system burdens and improves healthcare team communication. The feasibility for the Mobile Integrated Healthcare Provider program for Alamance county hopefully mirrors the research, in addition to, enhancing public service for the community and ultimately contributing to national goal of CMS, reduce hospital return and readmission rates.<sup>1,7</sup> My personal opinion is this may not reduce all healthcare costs but should remain a program goal of destressing the healthcare system and improve the health status of my community. The Mobile Integrated Medic Provider program will set a standard for community resources of collaboration and communication.

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