STATE OF NORTH CAROLINA
DEPARTMENT OF HEALTH AND HUMAN SERVICES

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

November 1, 2019

SENT VIA ELECTRONIC MAIL

The Honorable Joyce Krawiec, Chair
Joint Legislative Oversight Committee on
Health and Human Services
North Carolina General Assembly
Room 308, Legislative Office Building
Raleigh, NC 27603

The Honorable Josh Dobson, Chair
Joint Legislative Oversight Committee on
Health and Human Services
North Carolina General Assembly
Room 307B, Legislative Office Building
Raleigh, NC 27603

The Honorable Donny Lambeth, Chair
Joint Legislative Oversight Committee on
Health and Human Services
North Carolina General Assembly
Room 303, Legislative Office Building
Raleigh, NC 27603

Dear Chairmen:

Session Law 2017-57, Section 11G.1(c) requires the Department of Health and Human Services to submit an updated report on the community paramedicine pilot program to the Joint Legislative Oversight Committee on Health and Human Services and the Fiscal Research Division. The updated report shall include any updated version of the evaluation plan required by subsection (d) of Section 12A.12 of S.L. 2015-241, an estimate of the cost to expand the program incrementally and statewide, an estimate of any potential savings of State funds associated with expansion of the program, and if expansion of the program is recommended, a time line for expanding the program. Pursuant to the provisions of law, the Department is pleased to submit the attached report.

Should you have any questions regarding this report, please contact Mark Payne, Director for the Division of Health Service Regulation, at 919-855-3750.

Sincerely,

for Mandy Cohen, ~~MD~~, MPH
Secretary

cc: Kody Kinsley
Tara Myers
Matt Gross
Katherine Restrepo
Erin Matteson
reports@ncleg.net
Susan G. Perry
Rob Kindsvatter
Hattie Gawande
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Ben Money
Zack Wortman
Lisa Wilks
Deborah Landry
Jessica Meed

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SECRETARY

November 1, 2019

SENT VIA ELECTRONIC MAIL

Mr. Mark Trogdon, Director
Fiscal Research Division
Suite 619, Legislative Office Building
Raleigh, NC 27603-5925

Dear Director Trogdon:

Session Law 2017-57, Section 11G.1(c) requires the Department of Health and Human Services to submit an updated report on the community paramedicine pilot program to the Joint Legislative Oversight Committee on Health and Human Services and the Fiscal Research Division. The updated report shall include any updated version of the evaluation plan required by subsection (d) of Section 12A.12 of S.L. 2015-241, an estimate of the cost to expand the program incrementally and statewide, an estimate of any potential savings of State funds associated with expansion of the program, and if expansion of the program is recommended, a time line for expanding the program. Pursuant to the provisions of law, the Department is pleased to submit the attached report.

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COMMUNITY PARAMEDICINE PILOT PROGRAMS

Session Law 2017-57, Section 11G.1.(a-c)

Report to the

Joint Legislative Oversight Committee on Health and Human Services

and

Fiscal Research Division

By

The North Carolina Department of Health and Human Services

November 1, 2019

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Introduction

The Department of Health and Human Services (DHHS) submits this final report to the Joint Legislative Oversight Committee on Health and Human Services and to the Fiscal Research Division pursuant to Section 12A.12.(a-e) of Session Law 2015-241, Section 12A.3 of Session Law 2016-94, and Section 11G.1.(a-c) of Session Law 2017-57. The Division of Health Services Regulation (DHSR) is submitting this report on the administration of the funds that were allocated for the Community Paramedicine Pilot Program.

This report contains the following information:

(1) An executive summary.
(2) A summary of current operations from each pilot site.
(3) A summary of clinical and fiscal findings for each pilot site.
(4) An updated version of the evaluation plan required by SL 2015-241 12A.12.(d), stated in SL 2017-57 11G.1.(c)(1).
(5) An estimate of any potential savings of State funds associated with the expansion of the program.
(6) An estimate of the cost to expand the program incrementally and statewide.
(7) A timeline for expanding the program.

Executive Summary

Introduction:

In conjunction with the North Carolina Department of Health and Human Services (DHHS) and the Division of Health Service Regulation (DHSR), the North Carolina Office of Emergency Medical Services (NCOEMS) prepared a report on Community Paramedicine Pilot Programs for the Joint Legislative Oversight Committee on Health and Human Services and the Fiscal Research Division. Given the length of this report, NCOEMS has prepared an Executive Summary to emphasize the key findings of the report. More details regarding the information in this summary can be found in the full report.

Community paramedicine, also called mobile integrated health care, strives to improve health outcomes while being a potential cost savings to states, communities, and consumers of healthcare services across the country. Local EMS personnel are at the heart of many new community-based innovations. In addition to providing traditional emergency care, EMS personnel are providing a variety of non-emergent care and cost-effective options by helping patients manage their chronic diseases, avoid emergency department (ED) visits and subsequent hospital admissions, adhere to medication plans, and access social services in rural and urban areas throughout the country. While each community's paramedicine program operates differently, the goals are similar: improve individual and community health, reduce unnecessary hospitalizations and ED visits, improve patient satisfaction, and reduce healthcare costs.

Session Law 2017-57 Section 11G.1.(a), provided the sum of three hundred fifty thousand dollars ($350,000) in nonrecurring funds for the 2017-2018 fiscal year and the sum of three hundred fifty thousand dollars ($350,000) in nonrecurring funds for the 2018-2019 fiscal year to continue the Community Paramedicine Pilot Program authorized in Section 12A.12 of S.L. 2015-241, as amended by Section 12A.3 of S.L. 2016-94. The funding was distributed according to S.L. 2017-57 Section 11G.1.(a)(1) - (3), which specifically designates New Hanover Regional EMS, McDowell County EMS, and Wake County EMS.

Region	Site	Population	Program Focus	EMS System Type	Award Amount
West	McDowell	Micropolitan (45,507)	Reduce unnecessary emergency and 911 services	County Based	$70,000 Per FY
East	New Hanover	Medium Metropolitan (232,274)	Reduce hospital readmissions	Hospital Based	$210,000 Per FY
Central	Wake	Large Central Metropolitan (1,092,305)	Utilize alternative destinations for patients who do not need to be seen in an ED.	County Based	$70,000 Per FY

Pilot Results:

McDowell County EMS (MCEMS) closely examined high volume EMS and ED utilizers. They performed 1719 patient visits in their community paramedic program between July 1, 2018 and June 30, 2019. During this pilot, 398 911 calls were prevented and 113 EMS transports to the ED were avoided by services provided through the community paramedic program.

New Hanover Regional Medical Center EMS (NHRMC-EMS) focused on reducing in hospital re-admissions. In FY 2018, NHRMC-EMS Community Paramedics were able to perform a total of 3,262 patient visits with 740 new patients. These patients were then compared to the overall numbers for the hospital. Community Paramedic patients had an approximately 7% reduction in re-admission when compared to the re-admission rates for high-risk patients in the hospital. NHRMC also worked with the City of Wilmington to establish the Cape Fear Opioid Quick Response Team and were able to refer 28% of overdose patients into treatment.

Wake County EMS (WCEMS) evaluated the use of alternative destinations for mental health and substance abuse patients. During FY 2018 they evaluated 1602 patients for potential alternative destination. Of the 1602 patients, 352 (22%) were able to remain at home and 454 (28%) were able to be transported to a facility other than an ED.

Statewide Expansion:

Estimating expansion costs and savings is incredibly difficulty due to how much every community paramedic program differs in program type, location, community resources, staff, population, etc. The only program type that could be considered for expansion to all of North Carolina would be the reduction in high volume EMS and ED utilizers.

Expansion Costs:

Estimating the costs of expanding a high volume EMS and ED utilizer program statewide initially requires providing reimbursement of non-transport visits. There is currently no rate established in North Carolina for these types of visits and Medicaid does not pay for them. Using the amount established by the State of Georgia of reimbursing EMS $30.00 per visit for non-transports and estimating the potential number of transports reduced, it would cost $169,558-$235,806 for the Medicaid population. This estimate is a bit conservative given that many of these patients would require multiple visits to help actually reduce their need to call 911 and for ED transport. It would seem reasonable that anywhere from 3-5 visits could be required to effectuate the reduction in 911 calls and ED transports, thus potentially costing the State Medicaid Program between $508,674 and $1,179,030.

Expansion Savings:

Savings was measured by calculating the money saved from not transporting the patient and not having to pay for an average ED visit. Projected savings should range from $1,469,000 and $2,042,950 for Medicaid patients. Just as noted above, this number is also a bit conservative,

because billable mileage paid to EMS was excluded along with other hospital charges which could vary from the average amount used in this study.

Totals:

When combining the overall costs and savings, it is projected that reimbursement for a high volume EMS and ED utilizer community paramedic program would have a net savings to the Medicaid Program of between $863,920 and $960,326. Overall savings to the patient and healthcare system are far greater.

Summary:

Community paramedicine is not a universal program, such as traditional 911 services. Community paramedicine serves to meet the needs of the community, by more effectively utilizing available local resources to assist patients. Each community will vary in terms of their own needs, capabilities, and resources. The variability in these programs makes any type of expansion estimates very difficult as the results achieved by these pilot sites cannot be applied to every county across the state. Each of the three programs used for this pilot study were vastly different, but they are effective in their respective areas.

EMS revenue is currently generated from reimbursement for transportation to the Emergency Departments. Community paramedicine often seeks a way to avoid unnecessarily transporting patients to the Emergency Department. As a result, the operation of a community paramedic program is currently an uncompensated expense to the EMS agency and decreases its revenues. In some cases, EMS is potentially incentivized to unnecessarily transport the patient if they want to be paid for their service. The current reimbursement/payment model for EMS must change in order to provide the right care for the patient, at the right time, and at a lower cost.

Background and Development

Community paramedicine, also frequently called mobile integrated healthcare, strives to improve health outcomes and achieve cost savings for patients and payers. While the capacity of individual programs is determined by the needs and available resources in the community it serves, one of the fundamental goals of a community paramedicine program is to expand the role of paramedics to provide preventative patient care and reduce unnecessary emergency services utilization. In essence, providing each patient with the right care, at the right time, for the lowest cost.

Session Law 2015-241 Section 12A.12 (a-e), provided the sum of three hundred fifty thousand dollars ($350,000) for a Community Paramedicine Pilot Program. Section 12A.12.(c) allowed the Department of Health and Human Services (DHHS) to establish up to three (3) program sites to implement the Community Paramedicine pilot program. New Hanover Regional Emergency Medical Services (NHREMS) was designated to receive up to two hundred ten thousand dollars ($210,000) in Session Law 2015-241 12A.12 (c). The North Carolina Office of Emergency Medical Services (NCOEMS) released a grant application soliciting interest throughout the state for two (2) additional program sites. The other two program sites, McDowell County Emergency Medical Services (MCEMS) and Wake County Emergency Medical Services (WCEMS), were each awarded up to seventy thousand dollars ($70,000).

The programs selected represent the three NCOEMS geographic regions of the State (East, Central, and West) and provide a cross-sectional sample of community paramedicine programs within North Carolina.

Region	Site	Population	Program Focus	EMS System Type	Award Amount
West	McDowell	Micropolitan (45,507)	Reduce unnecessary emergency and 911 services	County Based	$70,000
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Central	Wake	Large Central Metropolitan (1,092,305)	Utilize alternative destinations for patients who do not need to be seen in an Emergency Department.	County Based	$70,000

As noted in Session Law 2015-241 Section 12A.12.(e) a final report was submitted to the Joint Legislative Oversight Committee on Health and Human Services and the Fiscal Research Division on November 1, 2016. Session Law 2017-57 Section 11G.1.(a) appropriated nonrecurring funds for the 2017-2018 fiscal year and the 2018-2019 fiscal year to continue

funding McDowell, New Hanover, and Wake EMS Community Paramedicine Programs. The focus of the program is to continue the expansion of the role of paramedics to allow for community-based initiatives that results in providing care that avoids nonemergency use of emergency rooms and 911 services and avoidance of unnecessary admissions into health care facilities.

Pilot Programs

McDowell County Emergency Medical Services (MCEMS)

Overview:

The McDowell County EMS Community Care Program began on July 1, 2013 after receiving grant funding from the Kate B. Reynolds Charitable Trust. The program was designed around three main objectives: (1) addressing high utilization of EMS and Emergency Department (ED) services, (2) preventing readmissions for high risk patients, and (3) conducting community wellness events in rural areas of McDowell County.

McDowell Community Paramedics function under the direction of the agency's medical director, Dr. Edward St. Bernard. Currently there are 4 full-time equivalents (FTE) in the Community Paramedic Program. Patients are referred to the program from a variety of sources including physician offices, hospitals, EMS crews, 911 Centers, law enforcement officers, family members, Department of Social Services (DSS), and others within the region. McDowell Community Paramedics take a holistic approach in solving the immediate needs of each patient by safely and effectively navigating them to the most appropriate resources available within the community. The main objective is to improve patient outcomes through proper resource management with an intense focus on eliminating waste and reducing cost.

The pilot project funded by the State of North Carolina has allowed the agency to purchase essential equipment for the McDowell Community Paramedic Program, increase staffing, and provided critical training for Community Paramedics. The agency has developed new protocols, polices, and standard operating guidelines specifically for community paramedics. These new policies and procedures enhance safety and improve efficiency of the program. McDowell County EMS looks forward to continuing to provide at-risk citizens this valuable service that improves health outcomes, reduces costs, and increases patient satisfaction.

Results:

Patients who frequently call 911 or have extensive medical needs are enrolled into the Community Paramedic Program and have scheduled home visits. Last year, McDowell County Community Paramedics enrolled 39 patients and performed 521 wellness visits. During these home visits, Community Paramedics often find that each patient has varying needs. Much of their time is spent serving as a resource navigator and advocate for their patients, many of whom find themselves discouraged, confused, and alone as they look for help. Below is table (Figure 1.1) demonstrating some of the various services.

Services Linked	Number of Patients
Medication Reconciliation	36
Primary Care Physician Contact	25
Peer Support Program	18
DSS Transportation Services	15
DSS Adult Services	15
Food Pantry	15
Pharmacy Pickup	13
DSS Heating/Cooling Services	9
Mental Health Services	9

Figure 1.1

McDowell County EMS Community Paramedics performed a total 1719 visits with all patients of all types, preventing an estimated 398 911 calls and 113 ambulance transports to an emergency room.

Mental Health Diversion Program

Traditionally, a patient experiencing a behavioral health emergency was transported via ambulance to a local emergency department. Through an integrated partnership with the local Managed Care Organization (MCO) and law enforcement, community paramedics are dispatched to all behavioral health calls where they perform a medical screening on scene to rule out a medical emergency. If the patient meets medical clearance and has a condition which could best be treated by a mental health professional, the community paramedic will transport the patient to the local behavioral health clinic or assist with mobile crisis to perform a home visit. During the last fiscal year, McDowell County EMS Community Paramedics were able to evaluate 105 mental health patients, diverting 13 to a mental health facility and assisting with mobile crisis interventions for 8 others.

Peer Support Specialist

This year, McDowell County EMS hired a North Carolina Certified Peer Support Specialist as part of the program. The peer support specialist responds with the Community Paramedic to all overdoses responses while on duty, and follows up within 48 hours for those occurring when not on duty. The peer support specialist serves as a bridge to link the under-served population dealing with substance use and mental health challenges to community resources including food

security, transportation, mental health services, substance use services, harm reduction, secure housing and other needs that are essential for recovery. Since December 2018, 10 people have been placed into long term treatment programs with the help of the peer support specialist.

Public Relations

In addition to providing the services previously mentioned, McDowell's Community Paramedics also spend time participating in various community events. These events are designed to help make the community aware of what they do, provide valuable screening services (such as blood pressure checks and blood glucose analysis), and educate the public on things such as overdoses, strokes, and cardiac arrest. Last year, McDowell Community Paramedics attended 29 various events to help meet the needs of their citizens.

Future Considerations:

The program will remain focused on its initial objectives, particularly behavioral health diversions and decreasing utilization of high utilizers. The McDowell County EMS 911 Division is projected to have a decrease in overall call volume due to the work of Community Paramedics to improve efficiency and referral patterns of enrolled patients. Currently, Community Paramedic services in McDowell County are only available during business hours on weekdays. Going forward, McDowell County would like to be able provide Community Paramedic services on the weekend. This would assist with high utilizers in crisis outside of business hours, as well as with the behavioral health diversion program. Future expansion could include other types of alternative destinations and 911 diversion. This growth requires a stable funding model before the true potential of the McDowell Community Paramedicine Program can be realized.

New Hanover Regional Medical Center Emergency Medical Services (NHRMC-EMS)

Overview:

The New Hanover Regional Medical Center (NHRMC) Community Paramedic Program started in 2013 and has positively impacted thousands of patients in the Cape Fear Region since its inception. The program currently consists of 5 full-time staff members who are responsible for covering a 50-mile radius around Wilmington. Working as an integrated member of the NHRMC transitional care teams, NHRMC Community Paramedics complete over 3,000 patient visits a year. There are several patient groups targeted by NHRMC's Community Paramedic team:

- NHRMC patients identified as "high risk" for a hospital readmission.
- Patients participating in a Medicare Shared Savings Plan (MSSP) with Physician Quality Partners (ACO) and have been identified as needing community paramedic intervention.
- Opioid overdose patients within New Hanover County who have refused EMS transport.

The last two years have seen the direction and scope of NHRMCs Community Paramedic Program adjust to improvement in technology and the blunt force of the opioid epidemic in their region. The team has embraced the changes and continues to be a sought-after member of local efforts to care for their community.

Funds received from the Community Paramedic Pilot Program have directly contributed to the salary of 5 staff members and the purchase items that directly impact their ability to provide quality care. This includes an additional mission support vehicle, a defibrillator/cardiac monitor, technology packages (such as secure mobile internet routers and iPads), along with weight scales to help congestive heart failure patients monitor weight changes, food portion plates (to encourage proper nutrition among our patient population), and pill minders to help patients keep track of their daily medications.

Results:

In FY2018, NHRMCs Community Paramedic Program continued to see high volumes of patient visit requests. Three thousand two hundred sixty two (3,262) patient visits were completed, while 740 new patients entered the program (See Figure 2.1).

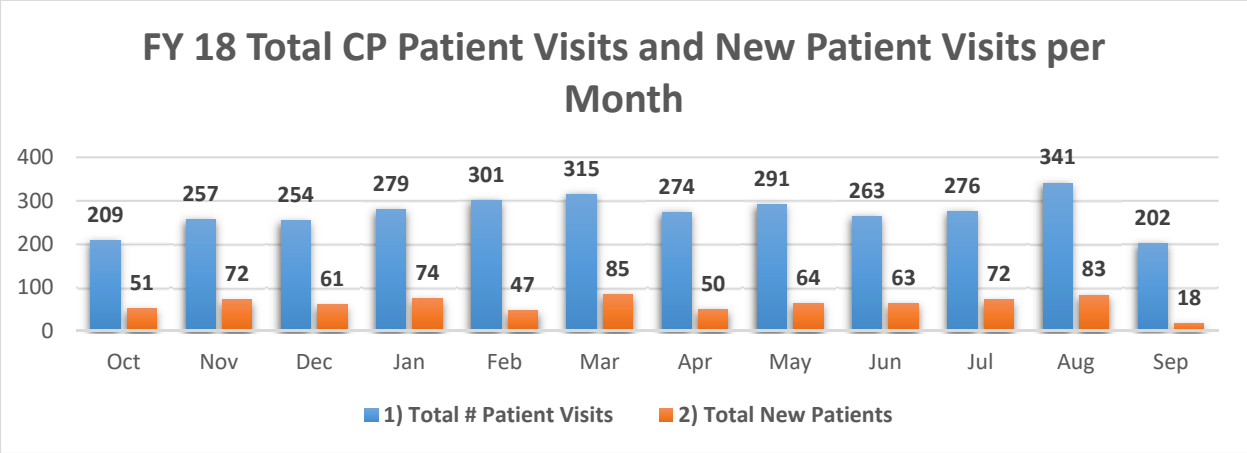

Figure 2.1

When patients are referred to the NHRMC Community Paramedic Program, the team works to ensure they have an in-home visit completed within 5 days of discharge from a facility. Many factors can affect how quickly the patient can be seen in the home, but the goal is to minimize the time from discharge to first visit. Figure 2.2 shows the success of the team in scheduling these initial visits.

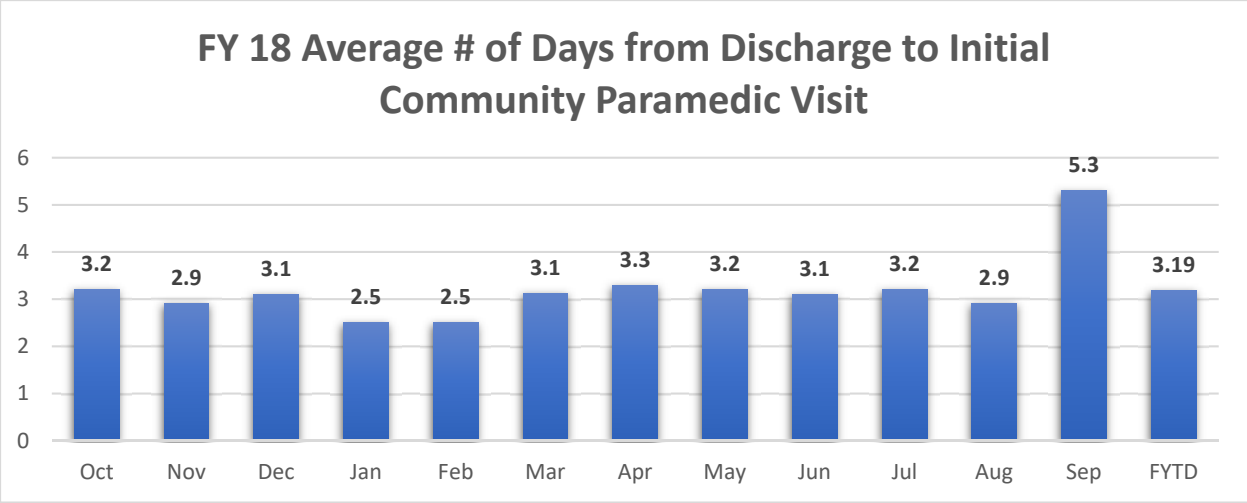

Figure 2.2

Reducing Hospital Readmissions:

One of the primary roles of the Community Paramedic Program at NHRMC is to reduce unnecessary readmissions to a hospital. Patients referred to the Community Paramedic Program are considered "high risk" for readmission given the complexity of a patient's diagnosis or their resistance to following prescribed treatment plans. Patients who received NHRMC Community Paramedic visits achieved lower readmissions rates (approximately 7% less) than those who did not (See Figures 2.3).

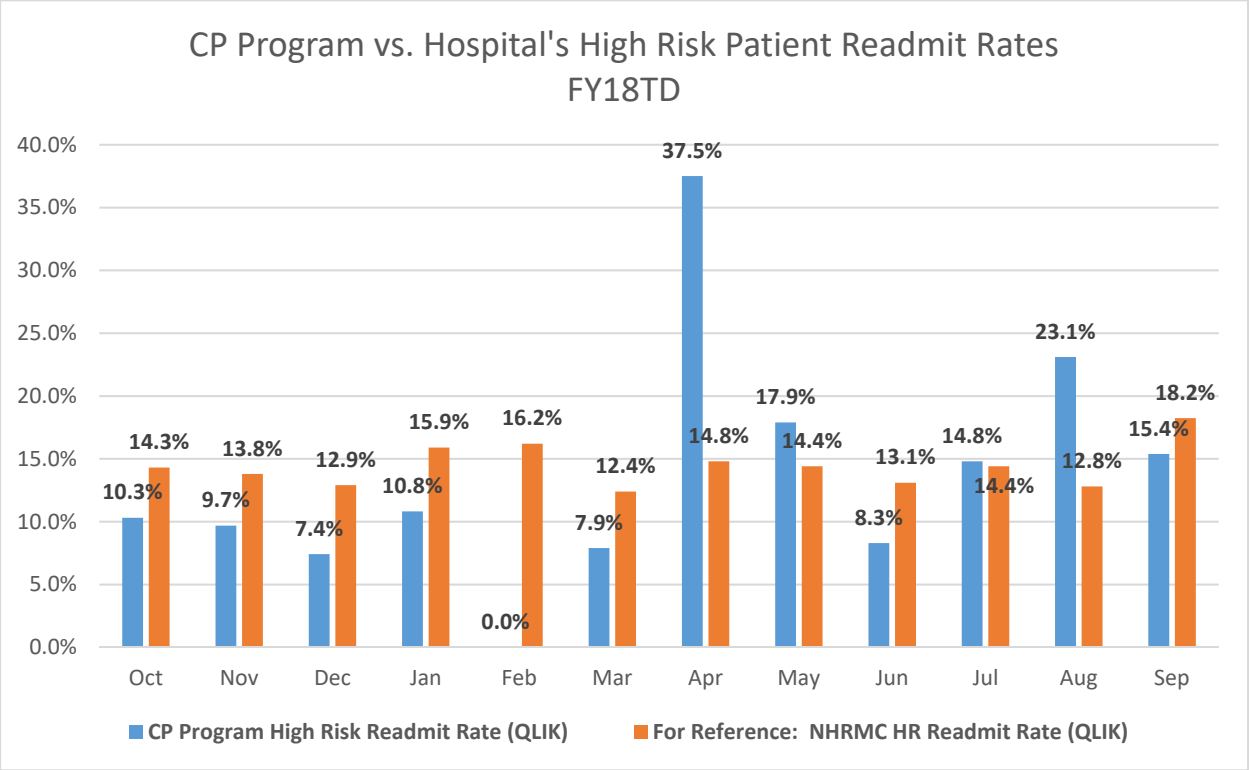

Figure 2.3

Opioid Crisis:

In early 2018, leadership of the NHRMC Community Paramedic Program began working with representatives of the City of Wilmington to develop a plan to combat the opioid epidemic within New Hanover County. The result was the formation of the Cape Fear Opioid Quick Response Team. This team attempts follow up visits on persons who refuse EMS transport after an opioid overdose reversal. Two NHRMC Community Paramedics are responsible for reviewing daily reports of overdose patients and working with community partners to get these persons in a treatment program. Since August of 2018, the NHRMC Community Paramedics have played a key role in identifying opioid overdose survivors, providing follow up care and referral to substance abuse counseling (Figure 2.4).

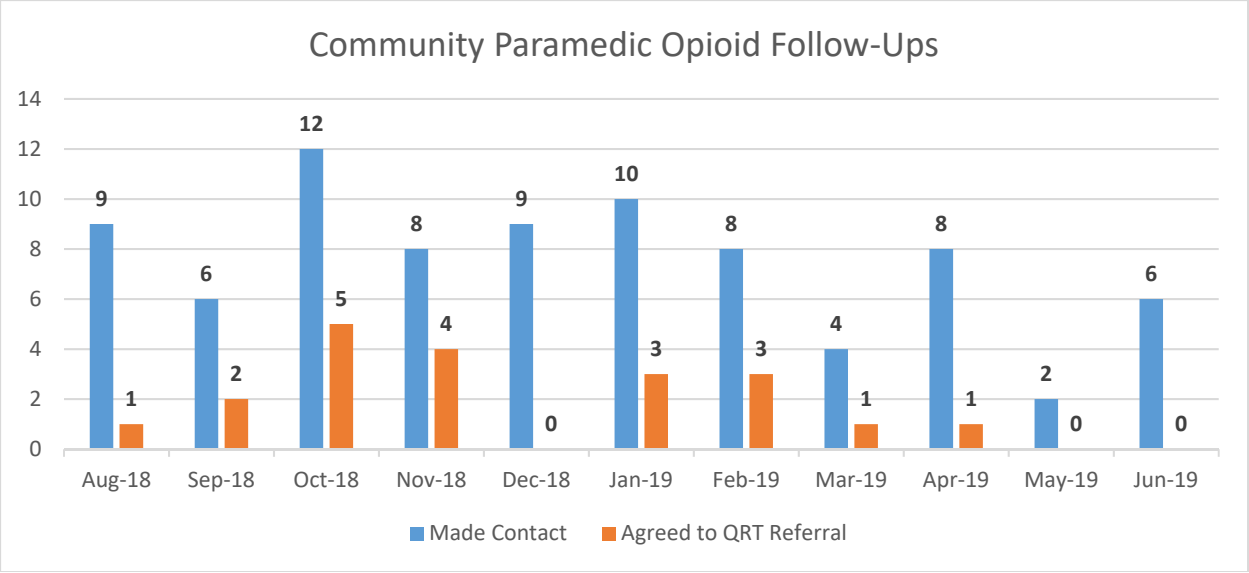

Figure 2.4

The current rate for qualifying patients being successfully referred to treatment is 28%. While there has been success in referrals to treatment, there is a larger percentage of overdose survivors who refuse treatment options. The NHRMC Community Paramedics track stated reasons why a patient refuses treatment options (See Figure 2.5). This data is being used to tailor offerings to help increase the number of survivors enrolled in treatment

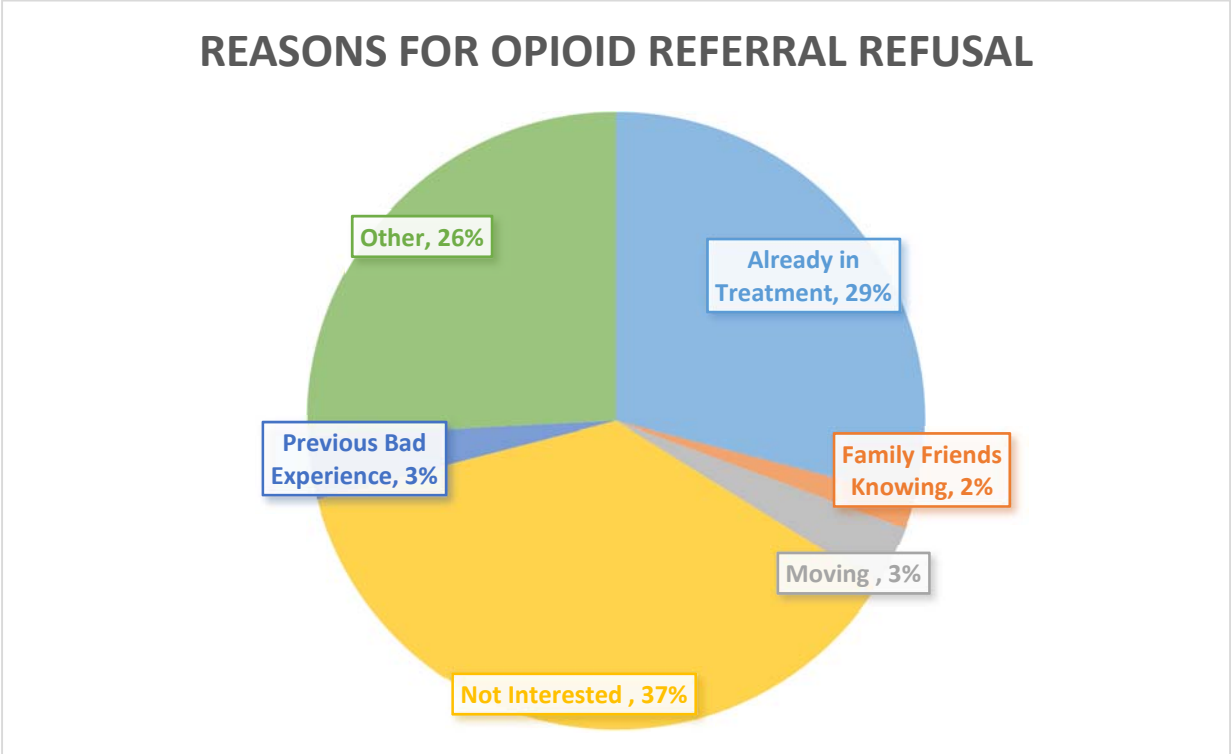

Figure 2.5

NHRMC Transitional Care Clinic:

In early FY2018, the NHRMC Community Paramedic team assisted in the design and implementation of NHRMC's Transitional Care Clinic. The Community Paramedic team has long identified the need for a medical home for patients who needed extra support after being discharged from the hospital. The NHRMC Community Paramedics work jointly with physicians, case managers, medical assistants, and pharmacists to help patients follow their post-discharge treatment plans.

Hurricane Florence:

As Hurricane Florence approached the Wilmington area, NHRMCs Community Paramedics were preparing to assist patients who would be affected by the loss of power and medical services. From September 14th-30th, the team assisted 76 persons in need of assistance post storm. The team provided services such as providing back-up oxygen tanks to dependent patients, arranging medication refills, and locating dialysis patients to ensure they obtained proper care services. The ability to have a dedicated team of community paramedics to assist this patient population helped to alleviate additional stress on the traditional EMS system and reduce the use of local emergency shelters.

Future Considerations:

The utilization of community paramedics is rapidly changing and NHRMC EMS is planning expansion to help serve the needs of the community. NHRMC plans to increase the use of technology, such as use of telemedicine, to help link patients to providers. There are also plans to utilize community paramedics as the transportation facilitator for patients who could better utilize alternative destinations. Given the continued growth of the program over the years, the program hopes to expand by adding FTE's to focus on substance abuse, mental health, and EMS/ED high utilizer patient populations.

Wake County Emergency Medical Services (WCEMS)

Overview:

The Wake EMS Advanced Practice Paramedic (APP) Community Paramedic Program began in 2009. The program was approved and funded within the annual Wake County EMS Department operating budget. In 2011, the Program was re-aligned under the Wake County EMS Office of Medical Affairs to provide further program direction and expansion of clinical services. Currently, there are four APP supervisors and 19 full time personnel, staffing six units across the county.

The APP Program has three primary functions, which are respond, reduce, and redirect. These goals are accomplished through relationships with various community partners to assist in successful navigation of patients for specialty evaluation and treatment.

Response: The APP's respond to high acuity 911 calls utilizing Emergency Medical Dispatch (EMD) codes of Delta and Echo. This allows for an experienced provider to respond and provide any needed assistance as well as on-scene clinical oversight for high acuity patients.

Reduce: The APP program also works with hospitals and health care systems to reduce burdens and costs of care with the goal of providing clinically excellent patient care at the right time and place for the patient. This includes working with high utilizers to create care plans with community partners, working with Community Care of Wake and Johnston County to provide gap coverage for congestive heart failure (CHF) and transitional care patients, along with various other efforts.

Redirect: In addition to studying and evaluating potential reductions in the unnecessary utilization of emergency services, the Wake EMS APP Program is also active in redirecting subsets of patients to most appropriate care at the time of an EMS call. Most notably, one of the original Wake APP projects, ongoing today, is the redirection of acute mental health and substance use patients. As part of the 911 system response, APPs evaluate patients for acute mental health or substance use crisis. Using advanced medical decision making and a set of screening criteria, APPs attempt to redirect these patients to a primary psychiatric or substance use facility, rather than the emergency department, thereby getting these patients the right care the first time.

Results:

Wake County EMS evaluated a total of 1,602 mental health and acute substance use patients during FY 2018. Below is a chart showing the results of these evaluations (Figure 3.1).

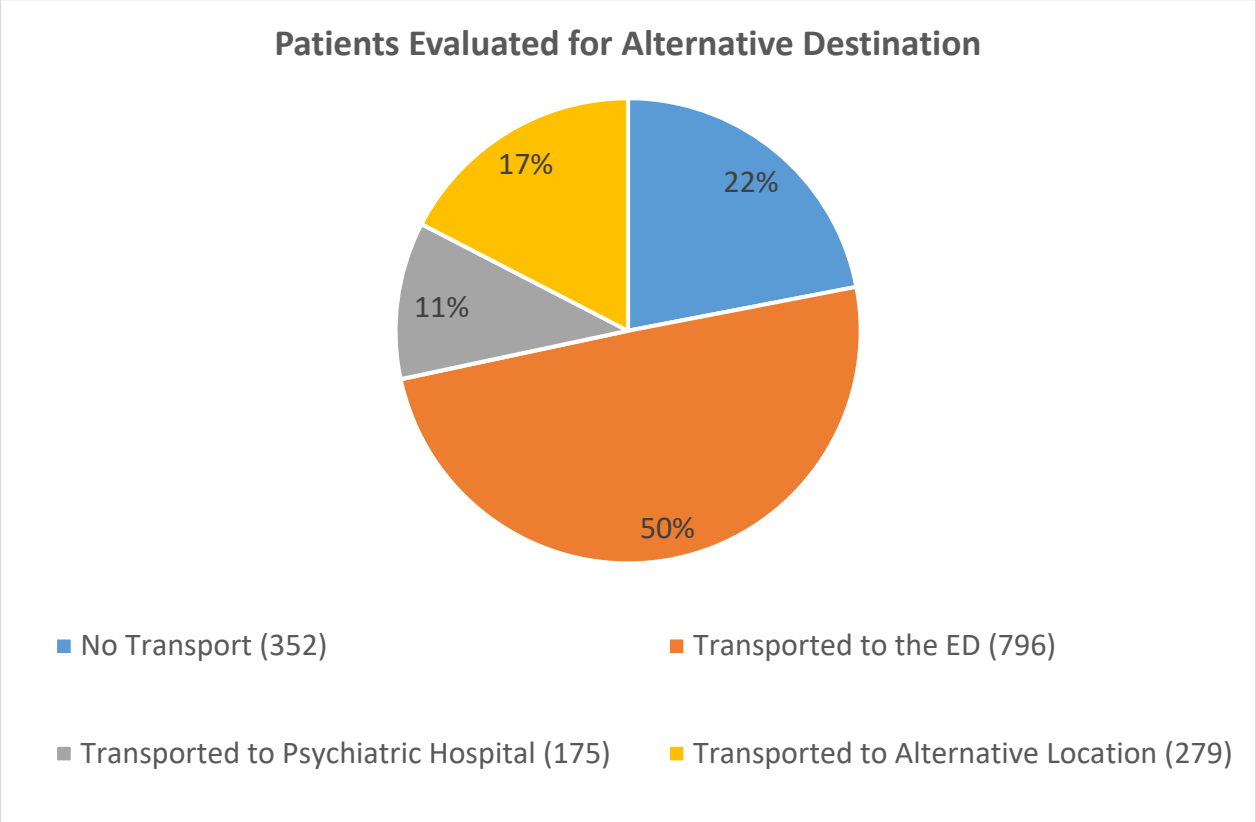

Figure 3.1

Of the 1,602 total patients evaluated, 50% (796 patients) were transported to the emergency department (ED). Of the patients who do not go to the ED, all were provided resources and an attempt made to align them with an appropriate provider to handle their unique need, many of which were able to remain at home (352, 22%). The APP's have training in crisis intervention and may be able to resolve the problem without the patient having to leave the home. Others remain at home and a mobile crisis staff member comes to their home in coordination with the paramedics. A total of 454 patients are transported by EMS to an alternative destination, either to a psychiatric hospital (175, 11%) or an alternative location (279, 17%), such as Wakebrook and Healing Transitions. Nearly half of the total patients evaluated were able to avoid the emergency department, saving time and money for both EMS and the hospital, while providing the patient with the most appropriate care.

In addition to the traditional alternative transports, the Wake EMS APP program began two additional initiatives. The APP Program partners with a substance use peer support counselor from Healing Transitions to locate and provide rehabilitation outreach to those who were

reversed from Naloxone. Of the 360 patients who were linked with peer support over the past year, approximately 40% of those were interested in or agree to support services.

Lastly, to improve efficiency as well as reduce response times for mobile crisis, Wake County entered into a partnership with Alliance Behavioral Health and Therapeutic Alternatives to provide enhanced mobile crisis response within Wake County. This partnership provided 3 mobile crisis providers, 7 days a week, committed to responding with Wake EMS. The program has only been in place a few months, but it has been a great addition to fill the gap within the community. During the current year, this has been utilized 71 times, with 48 of those events occurring since March 2019.

Response to High Acuity Calls:

In addition to facilitating alternative destinations for mental health/substance use patients, APP's also are responsible for responding to high acuity 911 calls. While many other community paramedic programs do not involve an emergency 911 component, the APP program helps supplement the 911 system to ensure an experienced paramedic assists on high acuity calls. From July 1, 2018 through June 1, 2019, APP's responded to 16,519 calls via 911. These calls range from high velocity motor vehicle crashes, cardiac arrests, overdoses, and a variety of other severely sick and/or injured patients.

High Volume Utilizers:

Patients are identified as high utilizers of the health care system based on the number of 911 requests over a given period of time. Wake EMS utilizes the criteria of 4 or more EMS calls in a rolling 30 day period to identify these patients. Once a high utilizer is identified, the APP will research the EMS call history and work with community partners such as local hospital case management, primary care groups, and social workers to see if the patient is already aligned with appropriate health care services and work to determine gaps and begin a process of networking. The APP supervisors attend high utilizer meetings with these community partners and as a group work on the development of "care plans" specifically for those patients who require additional attention. Community partners and APP leadership discuss care processes that may benefit a patient, including agreement upon a consistent emergency department destination for these patients (with certain exceptions for specialty care as needed). This decision is based on a patient's primary care providers and their hospital affiliation, patient choice with regard to his or her "medical home," hospital capabilities, and generally what meets the best needs for that given patient. This program has been successful in reducing excess and/or possibly unnecessary utilization of the EMS system and local hospital emergency services. This past year, the Wake EMS APP program worked with around 70 persons who have specialized destination plans as part of a community care plan.

Falls in Assisted Living Facilities:

The Wake EMS System often responds to patients who have fallen and live at an assisted living facility (ALF). The Wake EMS APPs respond with the initial dispatched ambulance to these calls for the purpose of evaluating the patient utilizing a specific protocol. Based upon their findings, select patients may to be cared for onsite with primary care physician follow up rather than transport to the emergency department. This program is completed in partnership with Doctors Making House Calls (DMHC), which is a primary care physician group that provides care to a large portion of patients living in ALFs. Each of the Wake EMS APPs have access to the DMHC medical record system.

Once dispatched, the APP will look in the DMHC record to ensure that the patient is a patient of DMHC. If the patient utilizes DMHC as their provider, then the APP will continue to respond and with the assistance of the usual ambulance crew, evaluate the patient based on a 3-tier protocol. The APP then contacts the on-call DMHC provider to make a collaborative decision regarding whether transport to the emergency department is necessary based on the patient's current condition and which tier of the protocol the patient falls into. If transport is not warranted, the DMHC provider will make an in-person follow-up evaluation of the patient within a pre-determined time frame. This program has allowed for patients that meet the appropriate criteria remain at their facility and have a follow up by their primary care physician. During a recent prospective trial, Wake EMS was able to demonstrate around a 50% reduction in unnecessary transportation to the hospital.

During the past year, the Wake EMS APP program responded to 823 patients who suffered a fall at an ALF for evaluation and coordination of care.

Future Considerations:

The Wake EMS APP program hopes to expand current offerings going forward. Adding point of care testing would help advance the readmission reduction program. There are also plans to improve the mobile crisis program which integrates mental health providers with the APP's. Wake EMS also plans to expand the number of facilities that can be utilized for alternative destinations, providing more options for those patients who do not necessarily need an emergency room. Funding remains a challenge, as reimbursement for these services would help expand this program vastly. In addition to reimbursement for alternative destinations and various non-transport services, payment for telemedicine would open even more doors for EMS community paramedicine services.

HRSA Evaluation Tool

In accordance with Session Law 2017-57, Section 11G.1.(c)(1), originally described in Session Law 2015-241, Section 12A.12.(e), this report includes an evaluation based on the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA) Office of Rural Health Policy Community Paramedic Program Evaluation tool published in March 2012.

HRSA's Office of Rural Health Policy's Community Paramedic Program Evaluation Tool is designed to provide a benchmark for self-study and to measure ongoing progress of public health resources, policies, and procedures. Before and after the Community Paramedicine Pilot Program, each grant recipient used the tool to provide an independent self-assessment of its program's capabilities, strengths, weaknesses, and effective utilization of resources.

When compared to the initial evaluation completed by each pilot site and submitted on June 1 2016, there has been several minor improvements noted. These changes were not drastic changes due to the fact that each of the programs in this pilot have been established for several years, having already undergone the growing pains faced by a new program. Established programs were selected for participation in the pilot in order to better collect and analyze the results of community paramedicine programs and estimate the potential savings and cost for expansion. A new community paramedic program would expect to have quite a bit of change during their initial evaluation. Additionally, some of the benchmarks are related to community resources, which might not change or adopt as quickly as the EMS agencies. While the changes to the median scores for each program were minimal, the pilot sites did believe that this tool was a good way to ensure that they are reviewing resources, processes, and procedures regularly.

Below is a table explaining each benchmark, followed by tables showing the median scores for each program sites' "after" assessment. The scores for each site cannot be used to compare programs to one another due to the differences in population, program focus, and EMS service types referenced above. Rather, they indicate opportunities for improvement within the individual program.

Benchmark	Explanation
101	There is a thorough description of the epidemiology of the medical conditions targeted by the community paramedicine program in the service area using both population-based data and clinical databases.
102	A resource assessment for the community paramedicine program has been completed and is regularly updated.
103	The community paramedicine program assesses and monitors its value to its constituents in terms of cost-benefit analysis and societal investment.
201	Comprehensive statutory authority and administrative rules support community paramedicine program infrastructure, planning, provision, oversight, and future development.
202	Community paramedicine program leaders (sponsoring agency, community paramedicine personnel, and/or other stakeholders) use a process to establish, maintain, and constantly evaluate and improve a community paramedicine program in cooperation with medical, payer, professional, governmental, regulatory, and citizen organizations.
203	The community paramedicine program has a comprehensive written plan based on community needs. The plan integrates the community paramedicine program with all aspects of community health including, but not limited to: EMS, public health, primary care, hospitals, psychiatric medicine, social service and other key providers. The written community paramedicine program plan is developed in collaboration with community partners and stakeholders.
204	Sufficient resources, including those both financial and infrastructure related, support program planning, implementation, and maintenance.
205	Collected data are used to evaluate system performance and to develop public policy.
206	The community paramedicine, EMS, public health, community health, and primary care systems are closely linked and working toward a common goal.
301	The electronic information system (EIS) is used to facilitate ongoing assessment and assurance of system performance and outcomes and provides a basis for continuously improving the community paramedicine.
302	The financial aspects of the community paramedicine program are integrated into the overall performance improvement system to ensure ongoing “fine-tuning” and cost-effectiveness.
303	The community paramedicine program ensures competent medical oversight.
304	The community paramedicine program is supported by an EMS system that includes communications, medical oversight, and transportation; the community paramedicine program, EMS system, and public health and community health agencies are well integrated.
305	The community paramedicine program ensures a competent and safe workforce.
306	The program acts to protect the public welfare by enforcing various laws, rules, and regulations as they pertain to the community paramedicine program.

McDowell County EMS Evaluation:

Each indicator is scored from 0-5 based off the provided template. The median score is used to demonstrate where the agency lies for each benchmark.

Indicator	Median Score
100: Assessment: Regular systematic collection, assembly, analysis, and dissemination of information on the health of the community.	
101.1-101.5	4
102.1-102.4	4.5
103.1-103.5	4
200: Policy Development: Promoting the use of scientific knowledge in decision making that includes building constituencies, identifying needs and setting priorities, legislative authority and funding to develop plans and policies to address needs, and ensuring the public's health and safety.	
201.1-201.2	2.5
202.1-202.6	4.5
203.1-203.2	4
204.1-204.3	4
205.1-205.3	3
206.1	4
300: Assurance: Assurance to constituents that services necessary to achieve agreed-on goals are provided by encouraging actions of others (public or private), requiring action through regulation, or providing services directly.	
301.1-301.2	4
302.1-302.3	3
303.1	2
304.1	2
305.1-305.5	1.5
306.1-306.2	4.5

New Hanover Regional Medical Center EMS Evaluation:

Each indicator is scored from 0-5 based off the provided template. The median score is used to demonstrate where the agency lies for each benchmark.

Indicator	Median Score
100: Assessment: Regular systematic collection, assembly, analysis, and dissemination of information on the health of the community.	
101.1-101.5	5
102.1-102.4	5
103.1-103.5	4
200: Policy Development: Promoting the use of scientific knowledge in decision making that includes building constituencies, identifying needs and setting priorities, legislative authority and funding to develop plans and policies to address needs, and ensuring the public's health and safety.	
201.1-201.2	4.5
202.1-202.6	5
203.1-203.2	4.5
204.1-204.3	5
205.1-205.3	3
206.1	4
300: Assurance: Assurance to constituents that services necessary to achieve agreed-on goals are provided by encouraging actions of others (public or private), requiring action through regulation, or providing services directly.	
301.1-301.2	4.5
302.1-302.3	2
303.1	5
304.1	5
305.1-305.5	3
306.1-306.2	4

Wake County EMS Evaluation:

Each indicator is scored from 0-5 based off the provided template. The median score is used to demonstrate where the agency lies for each benchmark.

Indicator	Median Score
100: Assessment: Regular systematic collection, assembly, analysis, and dissemination of information on the health of the community.	
101.1-101.5	4
102.1-102.4	2.5
103.1-103.5	4
200: Policy Development: Promoting the use of scientific knowledge in decision making that includes building constituencies, identifying needs and setting priorities, legislative authority and funding to develop plans and policies to address needs, and ensuring the public's health and safety.	
201.1-201.2	3
202.1-202.6	5
203.1-203.2	1.5
204.1-204.3	4
205.1-205.3	4
206.1	3
300: Assurance: Assurance to constituents that services necessary to achieve agreed-on goals are provided by encouraging actions of others (public or private), requiring action through regulation, or providing services directly.	
301.1-301.2	4.5
302.1-302.3	3
303.1	5
304.1	5
305.1-305.5	5
306.1-306.2	5

Statewide Expansion Savings

Estimates for expansion of community paramedicine statewide are difficult to calculate. Community paramedicine is not universal, in that each program differs significantly. Partnering agencies, which include a variety of nonprofit groups, faith-based organizations, governmental agencies, and private entities, play an important role in these programs. These resources will differ in each community. Each program must be tailored to the resources that are available in that location. The three agencies who participated in this pilot offer varied services, but do have some similarities, which can broadly be considered for statewide expansion.

Across North Carolina and the United States, there are patients who rely on EMS and the Emergency Department to receive healthcare, often serving as the patients' primary care provider when their healthcare needs could be more appropriately and effectively met in an alternative setting. The concept of high volume utilization of 911 calls and ED visit reduction can be applied across the state, regardless of geography, demographics, and local resources. However, limitations will exist for each program and could differ amongst each program. Limitations include:

- Community resource options
- Staffing levels
- High-utilization definitions
- Reduction percentages
- Costs of operations
- Sample size

To calculate savings from high volume utilization statewide, it must be determined what constitutes "high utilization". There is no widely accepted national standard that defines this concept. In researching this topic, it was found that Centers for Medicare and Medicaid Services (CMS) and the Center for Medicaid and Children's Health Insurance Program (CHIP) Services (CMCS) has published an informational bulletin regarding the reduction in "super-utilizers". They identify frequent ED users as "individuals with 4 or more visits per year."[1] A recent article in the Western Journal of Medicine contained a study by physicians from Rhode Island who reviewed frequent users of urban emergency medical services.[2] They divided frequent users into four different sub-categories, beginning at four or more transports in single a year. A 2010 article in the Annals of Emergency Medicine stated that, "When defined as 4 or more ED visits per year, frequent users accounted for 4.5% to 8% of all ED patients.[3] These patients contribute 21% to 28% of all ED visits." Many other similar examples can be noted, as can a variety of sources that use a much higher threshold. For purposes of this estimated cost savings, NCOEMS

[1] Mann, Cindy. "Reducing Nonurgent Use of Emergency Departments and Improving Appropriate Care in Appropriate Settings." *CMS and CMCS Informational Bulletin*. January 16, 2014. Page 3.
[2] Norman, Chenelle, Michael Mello, and Bryan Choi. "Identifying Frequent Users of an Urban Emergency Medical Service Using Descriptive Statistics and Regression Analyses." *Western Journal of Emergency Medicine* 17.1 (2016): 39-45. Web.
[3] Lacalle, Eduardo, and Elaine Rabin. "Frequent Users of Emergency Departments: The Myths, the Data, and the Policy Implications." *Annals of Emergency Medicine* 56.1 (2010): 42-48. Web.

defines high utilizers as anyone who is transported four or more times in a year by an ambulance to an emergency department.

NCOEMS examined all patient care reports from 2018 and determined, by county, how many people met the criteria as high utilizers and how many times they were transported to the ED by EMS to determine the number of high utilizers in North Carolina. A total of 13,163 patients met the stated definition of a high utilizer in calendar year 2018. These patients were transported to the ED a total of 100,289 times (Figure 4.1). It is also noted that these numbers are very consistent with the numbers noted in the 2017 Community Paramedicine Pilot Program report.

High Utilizers in NC 2018

Number of high utilizers	13,163
Total number of EMS transports	100,289

Figure 4.1

In 2016-17, Wake County EMS and New Hanover Regional EMS tracked high volume utilizers in their system as part of the initial Community Paramedicine Pilot Program. They found that utilizing community paramedics could reduce unnecessary transports by 27.9% and 38.8%, respectively. A study performed by the State of California[4] showed their pilot programs reduced high utilizer call volume by 18-35%, showing some consistency with the numbers the North Carolina agencies have been able to reproduce.

In order to broadly calculate the potential number of 911 calls and ED transports that could be reduced, these calculations include the following assumptions:

- Every agency applied the same community paramedic program to every single patient who met the criteria of a high utilizer (4 or more calls in a calendar year).
- Similar frequency in both calls and transports for each county.
- As sample size increases, percentages would remain the same. This limitation must be assumed until further research can be completed.

Using the change in call volume and transports as found by both Wake EMS and New Hanover Regional EMS, that range was applied to the high utilizer in North Carolina in 2018. Figure 4.2 demonstrates the potential decrease in transports for high utilizers using the aforementioned percentages.

[4] Coffman, J. M., Blash, L., Amah, G., & Lee, P. R. (n.d.). *Update of Evaluation of California's Community Paramedicine Pilot Program*. Web. https://healthforce.ucsf.edu/sites/healthforce.ucsf.edu/files/publication-pdf/UpdateEvaluationCACommunityParamedicine.pdf

Number Transported	*Min. % Change*	*Max % Change*	*Amount Reduced*
100,289	27.9%	38.8%	27,980 – 38,912

Figure 4.2

The rate paid for EMS transportation must be calculated in order to estimate a potential monetary savings for EMS transport to the ED only. This rate varies based on the level of service provided, distance traveled, and the payor source. The North Carolina Medicaid and Division of Health Benefits has a maximum allowable Medicaid rate of $70.75 (not including mileage, which is billed at $3.03 per mile) for a non-emergency basic or advanced life support ambulance[5]. The rate at which NC Medicaid reimburses is far lower than other payers but those rates vary so the Medicaid rate has been utilized. Using the information above regarding the estimated number of EMS transports reduced, a potential gross savings of for all payors is between $1,979,585 and $2,753,024 in a single year is projected (Figure 4.3)

Transports Reduced	*Medicaid Rate*	*Potential Savings*
Minimum: 27,980	$70.75	$1,979,585
Maximum: 38,912	$70.75	$2,753,024

Figure 4.3

To generalize possible Medicaid savings, NCOEMS assumes the high utilizer population has the same percentage of NC Medicaid recipients as the entire State. The US Census estimated the population of North Carolina to be 10,383,620 people as of July 1 2018[6]. The NC Medicaid 2018 annual report states that an average 2.1 million residents receive Medicaid benefits[7]. It is then estimated that approximately 20.2% of North Carolinians receive Medicaid benefits. Applying this percentage to the range of possible total savings in a single year, $399,876 to $556,111 in gross savings could be realized by a community paramedic high utilizer program from transport costs alone.

Transports Reduced	*NC Medicaid %*	*Medicaid Rate*	*Potential Savings*
Minimum: 27,980	20.2%	$70.75	$399,876
Maximum: 38,912	20.2%	$70.75	$556,111

Figure 4.4

[5] "Ambulance Fee Schedule" North Carolina Medicaid and Division of Health Benefits. Web. https://files.nc.gov/ncdma/Ambulance-Fee-Schedule-6-6-19.pdf

[6] "Population Estimates, July 1, 2018, (V2018)." *North Carolina QuickFacts from the US Census Bureau.* Web. http://www.census.gov/quickfacts/NC

[7] "North Carolina Medicaid and NC Health Choice, Annual Report for State Fiscal Year 2018" NC Department of Health and Human Services, NC Medicaid and Division of Health Benefits. Web. https://files.nc.gov/ncdma/documents/AnnualReports/NCMedicaid-AnnualReport-SFY2018-FINAL-20181224.pdf

NC Medicaid and Division of Health Benefits provided NCOEMS with the actual amount paid for three common ED outpatient diagnoses, for the three pilot counties used in this grant (McDowell, New Hanover, and Wake). These three (congestive heart failure, pneumonia, and diabetes) are just a small sample of what is seen in the emergency department. The average amount paid for those three diagnoses, in the three pilot counties is $189.16. When this amount is applied to the estimated percentage of transports reduced that are also potentially Medicaid patients, the gross savings is between $1,069,124 and $1,486,839 annually (Figure 4.5).

Transports Reduced	*Estimated Transports Reduced on Medicaid (20.2%)*	*Average Paid for Medicaid ED*	*Totals*
27,980	5,651.96	$189.16	$1,069,124.75
38,912	7,860.22	$189.16	$1,486,839.97

Figure 4.5

A greater cost savings from a community paramedicine program would be seen in the reduction of ED utilization. Each transport that a community paramedic can avoid translates into one less Emergency Department bill. A 2013 study funded by the National Institute of Health, and published by the Public Library of Science, found that the median charge for the ten most common outpatient conditions in the emergency department was $1233[8]. Using the number of estimated EMS transports that will be reduced, it is estimated that patients could save between $27,530,473 and $38,286,839 from ED charges in a single year.

Transports Reduced	*Estimated Transports Reduced NOT on Medicaid (79.8%)*	*Average Charge for ED, not on Medicaid*	*Totals*
27,980	22,328.04	$1233	$27,530,473.32
38,912	31,051.77	$1233	$38,286,839.80

Figure 4.6

To summarize the findings above, Figure 4.7 (below) demonstrates the gross savings to both EMS and the ED, for both all payor sources (excluding Medicaid) and NC Medicaid only.

	EMS All Pay	*EMS Medicaid Only*	*ED All Charge*	*ED Medicaid Only*
Minimum	$1,979,585	$399,876*	$27,530,473	$1,069,124
Maximum	$2,753,024	$556,111*	$38,286,839	$1,486,839

** $230,318-$320,305 if Medicaid reimburses EMS $30.00 per visit for non-transports*

Figure 4.7

[8] Caldwell N, Srebotnjak T, Wang T, Hsia R (2013) "How Much Will I Get Charged for This?" Patient Charges for Top Ten Diagnoses in the Emergency Department. PLOS ONE 8(2): e55491. doi: 10.1371/journal.pone.0055491

The total potential gross savings, combining both EMS and ED charges can be seen below in Figure 4.8.

	EMS and ED Medicaid Only	*EMS and ED All Other Pay Types*
Minimum	$1,469,000*	$29,510,058
Maximum	$2,042,950*	$41,039,863

** $1,299,442-$1,807,144 if Medicaid reimburses EMS $30.00 per visit for non-transports*

Figure 4.8

The NCOEMS believes these estimates are very broad, make several assumptions that need further research, and lead to conservative estimates for potential savings. Leaving the billable mileage rate out ($3.03 per mile for NC Medicaid) grossly underestimates the potential savings to the State of North Carolina, but there is no way to account for mileage when trying to make statewide estimates. Until further data and the support of financial analysts are provided, this information is the best possible with the current resources.

In addition to the EMS transport savings and the ED outpatient savings, the costs of inpatient care should also be considered. This is an even larger number than any of the savings represented in this report, but again, more data and financial analysts are needed to make this calculation. Indirect and non-monetary savings must also be considered when looking at the entire picture of healthcare. Community paramedicine improves patient satisfaction, saves patient and staff time, increases paramedic employee satisfaction, and improves overall patient health.

It must be noted that in addition to the demonstrated funds saved above, high utilizers are only a percentage of what community paramedicine as a whole could save. All of these programs have multiple facets, of which only the high volume utilization program was used for potential cost and savings due to the inability to universally apply these unique programs across the state.

Statewide Expansion Costs

Aligning with the Institute for Healthcare Improvement's Triple Aim philosophy, community paramedicine ensures that the patient is provided the right service, at the right time, all while doing so at a lower cost. Additional funding is needed to operate community paramedic programs across the State. There is an inherent challenge to predict funding requirements given that each program will vary across the State to meet the needs of the community. Additionally, the uncertainty in the healthcare payment model that will be used going forward makes the situation even more difficult as the fee-for-service estimate presented below may not be the most cost effective.

Since there is no rate currently for these non-transport type services in North Carolina, this report will use the rate established by the State of Georgia[9] as a point of reference ($30.00). Using their reimbursement rate and the estimated number of potential transports that could be avoided (see Figure 4.2 above), an estimated cost range for expansion of a community paramedic high volume utilizer program was determined (Figure 5.1). It should be noted that this estimate is thought to be very conservative, as the number of potential transports reduced could be much higher and the percentage of the Medicaid participants in this program may be much higher than 20.2%.

Estimated Transports Reduced	*Georgia Medicaid Rate Non-Transports*	*Medicaid Only (20.2% of Total)*	*All Other (79.8% of Total)*
27,980(Minimum Total)	$30.00	$169,558	$669,842
38,912 (Maximum Total)	$30.00	$235,806	$931,554

Figure 5.1

These estimates only look at the reimbursement from a high volume utilizer community paramedicine program. Other initiatives, such as alternative destinations and hospital re-admission reduction, should also be a reimbursable service rendered by EMS agencies. These types of programs are far less transferrable when trying to apply analysis across the State. Therefore, no estimates regarding potential costs of other program types could be reliably calculated without the data and assistance of a financial analyst or health economist.

[9] Policies and Procedures for Emergency Ambulance, Georgia Department of Community Health, Division of Medicaid. Web. https://www.mmis.georgia.gov/portal/Portals/0/StaticContent/Public/ALL/HANDBOOKS/Emergency%20Ambulance%20%2020190627123358.pdf

Net Savings

When combining both the estimated costs and savings, there is a potential net savings:

	EMS Transport Savings	*ED Visit Savings*	*Non-Transport EMS Visit Costs*	***Net Savings***
NC Medicaid	$399,876 - $556,111	$1,069,124 - $1,486,839	$169,558 - $235,806	**$1,299,442 - $1,807,144**
All Others	$1,979,585 - $2,753,024	$27,530,473 - $38,286,839	$669,842 - $931,554	**$28,840,216 - $40,108,309**

Figure 5.2

Statewide Expansion Timeline

All three pilot sites, the NCOEMS, and partnering agencies (such as NC Association of EMS Administrators, NC Association of EMS Educators, NC Division of Mental Health/Developmental Disabilities/Substance Abuse Services, et al.) are in favor of expansion of community paramedic programs. In order to expand these services, programs must have more sustainability through an agreed upon reimbursement/payment model.

The Office of EMS would need to work with NC Medicaid and Division of Health Benefits in order to determine the parameters for payment of non-transport and alternative destination services. This should not take longer than 12-18 months for implementation.

Summary

Each pilot program recipient is continuing to collect data regarding their programs. As noted above, analysis of the data shows positive results. More information will need to be analyzed over a longer period of time to ensure that the data supports the claims of program efficiency over an extended period of time. None of the pilot sites or other EMS agencies are responsible for the projections in the statewide expansion cost/savings section, as each county is only responsible for their own service and the data they demonstrated within their own service area.

EMS revenue is currently generated from reimbursement for transportation to the Emergency Departments. Community paramedicine often seeks to avoid unnecessarily transporting patients to the Emergency Department. As a result, the operation of a community paramedic program is currently an expense to the EMS agency which also decreases its revenues. The current reimbursement/payment model for EMS must change in order to provide the right care for the patient, at the right time, at a lower cost.