Actuarial Consulting on Proposed Mandated Health Insurance Services:
EMS Treat and Release Programs,
EMS Alternative Destination Programs, and
EMS Mobile Integrated Health Programs

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Prepared for:

Maryland Health Care Commission (MHCC)

Prepared by:

BerryDunn
100 Middle Street
Portland, ME 04101
Phone: 207-541-2200

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1.0 Executive Summary

This report provides an assessment the social, medical, and financial impact of establishing a mandate to require commercial insurers offering fully-insured products in Maryland to provide coverage for three Emergency Medical Services (EMS) care delivery models.

1.1 Background of Proposed Mandated Health Insurance Services

The Maryland Senate Finance and House Health and Government Operations Committees (Committees), under the authority of insurance Article §15-1501, requested the Maryland Health Care Commission (MHCC) to assess the social, medical, and financial impact of establishing a mandate for covering alternative destination treatment programs, treat and release programs, and mobile integrated health (MIH) programs. Each of these program models is currently in operation, or approved for operation, by the Maryland Institute for Emergency Medical Services Systems (MIEMSS), in at least one jurisdiction in Maryland.

1.2 Current Coverage

Health Insurance carriers in Maryland do not provide reimbursement for the three models of EMS care delivery in the fully-insured market. EMS reimbursement in the private fully-insured market is limited to reimbursement for medically necessary transportation of the patient to a limited number of destinations such as an emergency department.

1.3 Medical Efficacy/Social Impact of Proposed Models

EMS systems across the United States are developing innovative EMS models of care to direct low-acuity patients to an appropriate level of care and away from the ED; prevent hospital readmissions; and fill gaps across the continuum of care as well as gaps related to social determinants of health (SDoH). EMS treat and release, EMS alternative destination, and EMS MIH programs are based on the principles of providing the right care, at the right time, in the right place. Provided that scientifically based protocols are followed by providers who are acting within their scope of care, the three EMS models would be expected to deliver effective, person-centered care; relieve ED overcrowding; and enhance the efficiency of the EMS system. The medical efficacy and social impact assessment are contained in section 3.0 of this report.

1.4 Demand and Utilization Assessment

There are several pathways through which utilization of health care services, and thus costs, could increase under the three EMS models. The first would occur if the prevalence of 9-1-1 calls increased, because a model's incentive structure to reduce such calls is more than offset by the convenience of receiving care at home. The second would occur if there was a rise in the proportion of patients who called 9-1-1 and are taken to a health care facility; for instance, if first responders transported patients to an urgent care center who, absent new legislation, would not be transported. The third would occur during events in which patients visit the ED despite initially receiving treatment elsewhere (i.e., at home or at an urgent care center).

Evidence indicates that 7.8% of all EMS transports in MD were eligible for an alternate destination, with roughly 58% to 69% of patients willing to be transferred to an alternative destination if it was a more clinically appropriate setting. Meanwhile, eligibility and enrollment data from six MIH pilot studies found that 11% – 64% of individuals in the target MIH populations (high users of 9-1-1 or the emergency department and/or individuals at risk for hospital readmission) would demand and/or utilize MIH services.

Evidence from an alternative destination pilot program in Houston, TX identified a 56% decline in ED visits over the program's duration. Among MIH pilot programs with available data, there was a decline in ED use (-14% to -64%, depending on study), inpatient hospital service use (-36% to -81%), the number of 9-1-1 calls (-1% to -81%), and readmissions (-1% to -90%) among program participants. This implies that mandating MIH services could lead to a substitution effect that substantially reduces unnecessary utilization of high cost health care services.

1.5 Financial Assessment

Table 18, in Section 5.0 of this report, summarizes the estimated effect of a mandate requiring coverage of the three EMS models of care on premiums for fully insured plans over five years.

This analysis estimates that if such a bill were enacted, fully insured premiums for the alternative destination model would decline by roughly $0.03 per-member-per-month (PMPM); the reduction is in the range of $0.02 to $0.04 PMPM, equivalent to an average annual savings of $356,000 with a range from $252,000 to $453,000.

Meanwhile, fully insured premiums for the treat and release model would go down by, at most, $0.01 PMPM. This results in annual savings of approximately $93,000 with a range from $34,000 to $152,000.

Fully insured premiums for the MIH model would decline by $0.04 PMPM, with a range of $0.01 to $0.12. This is equivalent to an average annual savings of $443,000, or from $95,000 to $1,419,000.

The estimated impact of the three EMS models on insurance premiums is driven by relative reductions in ED use, readmissions, inpatient visits, and/or the number of 9-1-1 calls.

2.0 Introduction

This report provides an assessment of the social, medical, and financial impact of establishing a mandate in the fully-insured private health insurance market in Maryland for coverage of three EMS models: treat and release, alternative destination model, and mobile integrated health programs. This section of this report provides an overview of the models, a review of current health insurance coverage for these models, and limitations of the assessment. In Section 3.0 of this report, we summarize evidence on each EMS model's social impact and medical efficacy. In Section 4.0, we project the pathways through which demand and utilization for benefits from each of the three EMS models could increase, as well as strategies payers could take to mitigate unnecessary use of those benefits. Finally, in Section 5.0, we apply findings from Section 4.0, along with other data and assumptions, to estimate the financial impact of these models.

2.1 Background of Proposed Mandated Health Services

The Maryland Senate Finance and House Health and Government Operations Committees (Committees), under the authority of Insurance Article §15-1501, requested the Maryland Health Care Commission (MHCC) to assess the social, medical, and financial impact of establishing a mandate to require commercial insurers to provide coverage for the following Emergency Medical Services (EMS) models in fully-insured plans offered in Maryland:

1. EMS treat and release model: EMS treat and release can take two forms, one of which is innovative. As a routine part of EMS care, EMS treats a 9-1-1 patient at the scene and this patient may refuse ambulance transport to the emergency department (e.g., EMS provides naloxone to a patient who has overdosed on opioids). Innovative treat and release models identify low-acuity patients who have called 9-1-1 (either through a 9-1-1 triage line or through EMS responding to a 9-1-1 call) and the patient is provided on-scene treatment by a physician or nurse practitioner either in person or via telehealth (with no transport).
2. EMS alternative destination model: In this model, EMS transports 9-1-1 patients with low acuity conditions to an urgent care center or another suitable environment (e.g., a recovery center) instead of the emergency department (ED).
3. EMS mobile integrated health (MIH) model: In this model, EMS partners with other health care providers (e.g., nurse practitioners [NPs], community health workers [CHWs], social workers, pharmacy technicians, pharmacists, and physicians) to conduct home-visits to assess, treat, and refer patients with chronic conditions to appropriate health care providers and community resources. Patients who are either high utilizers of EDs, frequent 9-1-1 callers, or at high risk for hospital readmission are identified for recruitment to MIH programs by local EMS and/or health care providers and home visits

are scheduled (i.e. MIH services are not an immediate response to a 9-1-1 call). These models are tailored to their communities.

The Legislative Committees requested that the MHCC assess the prospect that these programs could induce demand for health care services and what actions, if any, insurers could take to limit that unintended outcome. The Committees also asked that MHCC carefully consider the impact these EMS programs may have on the Total Cost of Care Model (TCOC) demonstration that Maryland established with the federal government in January 2019.

This report is intended to build upon previous reports studying the challenges faced by Maryland's Emergency Medical Services (EMS) system.[1] In 2017, the Maryland Institute for EMS Systems (MIEMSS)[2] partnered with the Health Services Cost Review Commission (HSCRC)[3] to evaluate the impact of hospital overcrowding on EMS response times and Maryland's patient population, as well as to develop a plan to address overcrowding.[4] The report noted Maryland's longstanding challenges of excessive ED wait times and ambulance diversion from one hospital to another.

ED overcrowding was reported to be exacerbated by the following factors:

- An increase in behavioral health patients treated in EDs, including overdose patients
- Continuing staff shortages affecting hospital EDs
- Increased patient care requirements in EDs
- Increased numbers of EMS transports in some EMS jurisdictions coupled with limited options for alternative modes of treatment
- A misalignment of hospital reimbursement and EMS reimbursement policies

The report suggested several strategies to address Maryland's ED overcrowding, including continuing to support new models of EMS care delivery so as to reduce ambulance transport of low-acuity patients to hospital EDs. A follow-up report in 2019 found that a number of the 2017 recommendations had been addressed.[5] As of November, 2019, there are nine Mobile Integrated Health programs operating in Maryland. MIEMSS has developed an Alternative Destination Protocol, to allow EMS to transport patients, with appropriate patient consent, to an alternative destination. MIEMSS has also developed guidance on the use of telemedicine for EMS, which allows EMS to implement a treat and released model using telemedicine connections to skilled clinicians.

In 2018, Senate Bill 682 was passed, requiring the MHCC and the MIEMSS to study and report on coverage and reimbursement options for the three EMS models.[6,7] This report addressed Medicare, Medicaid, and private market reimbursement and found that EMS is not reimbursed by public or private insurance for any of the three EMS care delivery models. Reimbursement

for EMS services is traditionally limited to reimbursement for transportation to a limited set of reimbursable destinations (primarily emergency departments).

In December 2019, MIEMSS submitted follow-up report on "Reimbursement for New Models of EMS Care Delivery".[8] This report provides updates on changes to MIEMSS protocols and guidance which enable EMS to transport to alternative destinations and improve use of telehealth. This report also describes a new funding opportunity from the Centers for Medicare and Medicaid Services (CMS) for Medicare, the "Emergency Triage, Treat, & Transport" Program (ET3). EMS Participants in the ET3 program can seek reimbursement from Medicare for patients who are treated at the scene of the 9-1-1 response and patients who are transported to alternative destinations.[9] Five jurisdictional EMS programs from Maryland have applied to the ET3 program (Montgomery County, Baltimore City, Annapolis, Charles County and Howard County), which is set to begin in the spring of 2020. Finally, the December 2019 MIEMSS report notes that HSCRC is working with hospitals and EMS providers to develop a potential Care Redesign Program (CRP) track for EMS new models of care under the Maryland Total Cost of Care model. A subgroup of the Maryland Hospital Association convened Stakeholder Innovation Group will work on the CRP design for EMS through 2020.

2.2 Current Coverage

Health Insurance carriers in Maryland do not provide reimbursement for the three models of EMS care delivery. EMS reimbursement in the private fully-insured market is limited to reimbursement for medically necessary transportation of the patient to a limited number of destinations such as an emergency department. EMS are not covered if treatment is provided at the scene but the patient refuses transportation.

We surveyed five carriers in Maryland, with four responding.

The insurance market in Maryland includes fully-insured plans and self-insured plans (for definitions of terms, please see the glossary in Appendix G). Self-insured plans are regulated under the federal Employee Retirement Income Security Act of 1974 (ERISA), which prevents the State from mandating benefits for self-insured plans operating in Maryland. Self-insured plans can elect to voluntarily provide the services that are mandated by the State for fully-insured plans.

Fully-insured plans are divided into three market segments: the large group, small group, and individual markets. All individual and small group plans must cover the Affordable Care Act's (ACA) ten essential health benefits (EHBs). (This requirement does not apply to self-insured group plans, large group plans, or grandfathered plans).[10] Emergency services are considered essential health benefits (EHBs) under the federal Patient Protection and Affordable Care Act (ACA),[11] and as such, must be included in any EHB package. Benefits are defined for Maryland according to its benchmark health plan,[12] which covers emergency services and emergency transportation by an ambulance.

In addition to concerns about reimbursement for EMS services, full reimbursement of the alternative destination model would require reimbursement for services provided at an alternative destination. The federal Emergency Medical Treatment and Labor Act (EMTALA)[13]

requires emergency rooms to screen and stabilize any person who presents to an ED, regardless of insurance status or ability to pay. Urgent care centers are generally not covered under EMTALA and may refuse treatment to individuals without health insurance.[14] Maryland's All-Payer hospital rate setting system currently provides rate adjustments for hospitals for uncompensated care provided as a result to EMTALA obligations. Maryland does not have a payment model which provides similar reimbursement to urgent care settings.

Private insurers may also choose which urgent care centers are in network for their plans. If alternative destination programs transported patients to urgent care centers which are outside of the network of the patient's plan, this could have significant financial implications for the patient. As a result, which urgent care centers are in network will become an important factor if the alternative destination model becomes law.

2.3 Limitations

The efficacy, utilization, and spending estimates in this report must be considered within the context of several limitations. First, projections are only as robust as the underlying data used to develop them. We applied parameters from a range of data sources, including peer-reviewed studies and reports. Those sources had differing study design criteria, evaluation techniques, approaches for operationalizing measures, or populations not perfectly generalizable to Maryland.

The estimates in this report are expressed in terms of averages; the effect on any one individual, employer group, or insurance carrier may vary. Variation in impact will also depend on several endogenous and exogenous factors including patient, plan, market characteristics, and regulatory factors.

We provide independent estimates for the three EMS models and do not account for additive or interactive effects between the three EMS care delivery models, if coverage for two or more models was mandated in Maryland. The decision not to model these interactions may or may not have implications for health care quality and patient outcomes. Given overlap in the target population for the EMS care delivery models, this decision most likely impacts utilization and savings estimates, and thus the potential impact of these models on Maryland's Total Cost of Care model. This potential interaction between models should be considered in the design and deployment of insurance mandates for all three EMS models.

Analysis in this study is limited to patients aged 0 to 65 years, on the assumption that older individuals are insured through Medicare.

3.0 Medical Efficacy/Social Impact Assessment

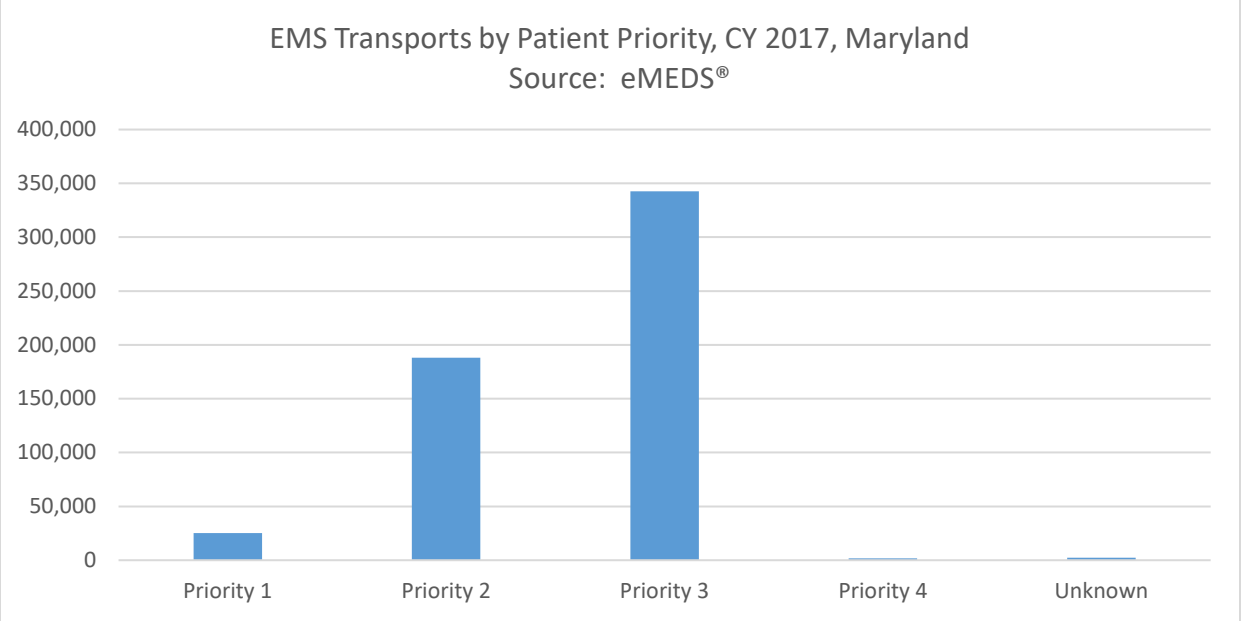
This section assesses the medical efficacy and the social impact of each of the three EMS models of care delivery.

3.1 EMS Alternate Destination Programs

3.1.1 Introduction

To reduce strain on Maryland's overcrowded hospital EDs, EMS alternative destination programs transport low-acuity patients to an urgent care clinic or similar care environment (See MIEMSS Alternative Destination Protocol in Appendix A). When a 9-1-1 call is received by EMS, the caller is screened to determine whether the patient may be a candidate for an alternate destination. If so, a specially trained emergency provider is dispatched with a regular EMS response team to confirm eligibility for an alternate location.

All EMS transports in Maryland are assigned a priority level in the eMEDS® database, which contains EMS data. Priority level 1 patients are critically ill or injured and require immediate attention or are unstable patients with life-threatening injury or illness. Priority 2 patients have a less serious but potentially life-threatening condition requiring emergency medical attention but not immediately endangering the patient's life. Priority 3 patients have a non-emergent condition that requires medical attention, but not on an emergency basis. Priority 4 patients do not require medical attention. Priority 3 patients are potential candidates for alternative destination programs. Approximately 60 percent of all ambulance transports in Maryland in 2017 were for priority 3 patients.



In 2017, approximately 10 percent of priority 3 transports (33,952 patients) [15] likely met the MIEMSS alternative destination protocol criteria for the alternative destination program pilot program in Montgomery County, according to a retrospective analysis of MIEMSS data.[16] The BCFD based its alternative destination program on an internal Baltimore City analysis that showed about one-third of the city's 9-1-1 calls are for patient with low-acuity incidents. The

BCFD developed its alternative destination program to encourage appropriate 9-1-1 use, optimize EMS resource utilization, and maintain appropriate care.[17]

Alternate destinations programs (ADPs) reduce the time EMS response teams are out-of-service and unavailable for other 9-1-1 calls. The length of time EMS providers are out on a call is generally longer for priority 3 patients [18] because EMS providers are required to stay in the ED until patient care is transferred to the ED provider (referred to as "offload time"). Patients with higher acuity (priority 1 and 2) are seen by ED providers first under standard ED triage protocols. As a result, EMS providers have to wait longer before responsibility for priority 3 patients is transferred to ED staff. Because urgent care centers are equipped to handle many priority 3 patients and generally have significantly shorter wait times, EMS response teams are able to return to service faster by taking low-acuity patients to these locations. In addition, the diversion of low-acuity patients to urgent care centers could shorten wait times for other patients in Maryland's overcrowded EDs.

Presently, the only alternate destination program in Maryland is operated by the Baltimore City Fire Department (BCFD), although Montgomery County Fire and Rescue Services (MCFRS) conducted a pilot program in 2017 and plans to resume a program soon.

The BCFD program has two alternative destinations. The University of Maryland Medical Center (UMMC) Urgent Care Center is the first alternative destination. The second alternative destination is for substance use disorder-related patients who are interested in receiving support for their disorder. These patients are transported to a recovery center (Tuerk House[19]). BCFD created its alternative destination program with the goals of encouraging appropriate 9-1-1 use and optimizing EMS resource utilization, while maintaining appropriate patient care.[20]

3.1.2 Medical Efficacy Review

Alternative destination programs are based on the basic principles of providing the right care, at the right place, at the right time.[21] Accurately identifying patients who are appropriate for alternative destinations is key for patient safety. For this study, the authors analyzed approaches in Maryland, as well as alternative destination programs that have been studied in other States.

The BCFD utilizes two screening points. First, the dispatch center utilizes a nationally recognized protocol[22] to determine if the 9-1-1 caller may be eligible for transportation to treatment at an alternative destination. If so, the usual EMS response team is dispatched along with Emergency Nurse Practitioner who determines whether the patient is low acuity and meets the criteria for transport to an alternate location. Patients that meet the criteria and consent to the transport are transported to the UMMC Urgent Care Center. This urgent care center is in close proximity to the UMMC ED, which provides an additional level of safety should a transport to the hospital ultimately be required.

Alternate destination programs in the research literature vary from one another, and are usually combined with other models of care and/or types of services. The Area Metropolitan

Ambulance Authority (more commonly known as MedStar) in Fort Worth, Texas, transports patients to alternate destinations as part of a variety of innovative EMS programs designed to reduce the number of 9-1-1 calls, the number of potentially preventable ED visits and hospital admissions, and the number of overnight observational admissions. The MedStar Fort Worth innovative EMS programs led to declines in EMS and ED costs and freeing up capacity in EDs.[23] MedStar provides exclusive ambulance service for 15 cities in north Texas, including Fort Worth. More than 936,000 people live in the area served by MedStar.[24] These individuals make approximately 125,000 9-1-1 calls per year.[25] Registered nurses (RNs) in MedStar's 9-1-1 call center work with low-acuity patients to find appropriate resources instead of the ED.[26] 1,022 patients were triaged to other dispositions between June 1 and December 31, 2015.[27]

The Houston Fire Department initiated the Emergency Telehealth and Navigation Program (ETHAN) in 2014.[28] ETHAN combines a telehealth, social services, and alternative destination with the goal of navigating patients away from the ED and to primary care services when possible.[29] Using a case-control study design of 5,570 patients in a control group and the same number of patients in the intervention group, differences between the control group (traditional EMS patients treated and transported to local EDs per standard protocol) and those who used the telehealth-enabled program were studied.[30] The intervention group was dispositioned to various levels of care (e.g., hospital ED, local safety net clinic with prepaid taxi voucher, or referrals to primary care).[31] The Houston Fire Department experienced a 56% absolute reduction in ambulance transports to the ED with the intervention group versus the control group (18% versus 74%, $p<.001$). EMS productivity (measured as median time from EMS notification until the unit was back in service) was 44 minutes faster for the intervention group (39 minutes versus 83 minutes, median).[32] The study found no statistically significant differences in mortality or patient satisfaction. [33]

Nationally, the rate of mental health/substance use disorder-related ED visits increased 44.1% from 2006 to 2014, with suicidal ideation growing the most (414.6% growth in the number of ED visits).[34] Behavioral health patients often have long wait times in the ED before hospital admission,[35] and the ED is generally not a conducive environment for patients in a behavioral health crisis. In North Carolina, EMS has had promising results transporting patients in mental health crises or substance use-related and addictive disorder crises into an acute crisis unit at a North Carolina community mental health center rather than an ED. [36]

3.1.3 Social Impact Review

The literature supports that the majority of people are willing to be transferred to an alternative destination if appropriate. In a 2015 cross-sectional study of 1,058 patients in the ED of an academic medical center (42% of whom had arrived via EMS), over two-thirds of the sample (68.2%) was willing to consider transport via a taxi or medical transport van, and 69% was willing to consider transportation to either an urgent care center or their primary care physician's office.[37] In a different cross-sectional study of 621 patients who presented to an urban academic ED, patients and caregivers were surveyed on their attitudes, perspectives, and agreement/comfort with alternative destinations and other proposed innovations in EMS care

delivery.[38] 58% of those surveyed supported transport to an alternative location for low-acuity conditions. The study found no association between levels of agreement and the patient's level of acuity or EMS utilization history.

Patients call 9-1-1 for a variety of reasons other than an actual medical emergency. Sometimes the reasons are related to SDoH issues. While these issues are more prevalent in the Medicaid population, they are also present in the commercially insured population. Healthy People 2020 highlights the importance of addressing SDoH and includes, "Create social and physical environments that promote good health for all" as one of the overarching goals for the decade.[39] The World Health Organization (WHO) shares this emphasis,[40] as do other United States health initiatives.[41,42] The alternate destination model of care is person-centered and takes the patient to the appropriate level and type of care.

In February 2019, the U.S. Department of Health and Human Services (HHS), Center for Medicare and Medicaid Innovation (Innovation Center) announced ET3 pilot program to reimburse ambulance providers for treatment on the scene or transport to a nonemergency site, such as an urgent care clinic or a doctor's office. Alternate destinations will become more common with the implementation of the ET3 pilot program in the spring of 2020.

3.2 EMS Treat and Release Programs

3.2.1 Introduction

EMS treat and release occurs in two forms: routine patient refusal to transport after receiving treatment, and innovative programs that bring other types of providers to the scene (either in person or via telehealth) to provide immediate on-scene care to low-acuity patients who meet specific criteria outlined in the MIEMSS protocol in Appendix B. Currently, Maryland has one operating treat and release program, called Minor Definitive Care Now (MDCN), located in Baltimore City and operating in partnership with the University of Maryland Medical Center (UMMC). Teams that provide treat and release services through this program consist of a BCFD MDCN paramedic provider and one of the following advanced level providers:

- UMMC NP
- Maryland-licensed physician affiliated with UMMC with board certification in emergency medicine
- UMMC physician assistant (PA)

A treat and release team is dispatched in a separate vehicle concurrently with the typical EMS ambulance response team when EMS receives a low-acuity 9-1-1 call. If the EMS ambulance response team determines the individual meets specific criteria in the protocol, the patient is offered the option to be seen by the MDCN team. The EMS team ensures that the patient consents to the treat and release services (and no transport). Contraindications for MDCN services include:

- Patients who decline the option to be seen by the MDCN team or who later revoke consent
- Patients who do not meet MDCN criteria
- Patients who possess a language or communication barrier that may inhibit the MDCN team's ability to appropriately address their needs at the scene
- Patients who lack capacity to give informed consent
- Patients who have not yet reached their 18th birthday

After consent is provided and patient information is transferred from the EMS ambulance response team to the MDCN team the EMS ambulance response team returns to service and care is provided by the MDCN team. Recently, MDCN started utilizing a Lyft service to transport patients to urgent care instead of the ED as clinically appropriate. Patients receive a follow-up call from the MDCN team 24 hours after receiving definitive treatment at the scene by a MDCN team.

Montgomery County plans to implement a treat and release program in the near future.

3.2.2 Medical Efficacy Review

Few well-designed studies exist on the medical efficacy of treat and release programs and there is general agreement that more research is needed. The existing research tends to focus on a single diagnosis, such as hypoglycemia in an insulin-dependent diabetic,[43] and generally suggests the need for further research.

Presently, EMS response teams already perform treat and release care whenever a patient receives services but refuses transport. This differs from the "innovative" treat and release program model in that no physician, nurse practitioner, or PA is treating the patient (whether on site or through telehealth).

An example of conventional treat and release that has been studied relates to patients who overdose on opioids, receive Naloxone at the scene, and refuse transportation to the ED. It is standard practice for EMS response teams to encourage these indivduals to consent to transportation to an ED because of rebound toxicity[44] and other concerns. In a retrospective review of studies of opioid overdose treatment, including patients who refused transport, the author concluded that treat and release might be safe with rare complications (the author identified three patient deaths attributed to rebound toxicity). As with other studies, the author recommended additional research be performed.[45]

3.2.3 Social Impact Review

Acceptance of treat and release programs and reimbursement by insurers is an important step toward long-term viability of these programs. On January 1, 2018, Anthem started reimbursing for treat and release services for patients in states where it offers commercial coverage. [46,47] Anthem does not operate in Maryland.

In February 2019, the U.S. HHS Innovation Center announced an ET3 pilot program to provide Medicare reimbursement for ambulance providers for treatment on the scene or transport to a nonemergency site, such as an urgent care clinic or a doctor's office. Presently, treat and release programs are not commonplace but will become more prevalent as payers begin to reimburse for these programs.

3.3 MIH Programs

3.3.1 Introduction

MIH programs utilize EMS infrastructure but which provide care in non-emergency situations (e.g. MIH program services are not a direct response to a 9-1-1 call). MIH programs target services to individuals at high risk of 9-1-1 system utilization, ED use, and/or hospital readmission. MIH programs use a team of care providers. MIH programs strive to meet social and clinical needs to improve the outcomes of the populations they serve. Because each jurisdiction is unique, MIH programs base their services and providers on residents' needs.

As of November 2019, there are nine MIH pilot programs operating through public safety EMS jurisdictions. The pilot program jurisdictions include the following: Baltimore City, Charles County, Frederick County, Howard County, Montgomery County, Prince George's County, Queen Ann's County, Salisbury-Wicomico, and Talbot County.

Each of the MIH programs operating in Maryland shares the common goals to reduce 9-1-1 calls and unnecessary ED visits. Additional program goals, which vary by jurisdiction, may include:

- Reduce readmissions
- Increase primary care use
- Increase referrals to community resources
- Improve health literacy

The MIEMSS regulates EMS and has implemented a protocol for MIH programs operating in Maryland. This protocol allows for program variability to structure programs to meet the needs of specific populations. For example, staffing structures may include any of the following:

- RN, NP, or medical doctor (MD) and paramedic
- CHW and paramedic
- RN or NP, paramedic, and licensed certified social worker – certified (LCSW-C)
- RN, paramedic, and CHW
- RN, paramedic, and program manager

Several pilot programs include a pharmacy technician at the first MIH visit who works with a pharmacist to reconcile the medications patients are taking with the medications they should be taking and provide patient education about their prescriptions.

Each pilot program has unique measures of quality and outcome, such as measures of quality of care, patient safety, EMS and hospital utilization, patient satisfaction, and costs.

Maryland MIH pilot programs are currently funded through grants and/or partnerships that provide resources (staff, care, supplies). Although some members of the health care team (RNs/NPs) may have the ability to bill for, and receive reimbursement for, covered services provided to individuals in the program, EMS staff do not receive reimbursement for services provided through the MIH program.

3.3.2 Medical Efficacy Review

MIH programs (also referred to in the literature as "community paramedicine" (CP) can fill critical gaps in access to medical care, establish important linkages between vulnerable populations and community providers, and offer a friendly face for people in need.[48] Community-tailored heterogeneous programs with medically complex populations are the norm for MIH/CP programs, and make comparative research and generalizations from research difficult.

A review of peer-reviewed literature of MIH/CP programs found eight articles representing data from seven interventions.[49] Health outcomes, patient satisfaction, and provider satisfaction were reported inconsistently in the peer reviewed literature. Reducing ED and inpatient utilizations were the most commonly studied outcomes, and programs were generally successful at reducing these outcomes.[50] Although the studies did not quantify savings, the studies suggested that the odds of net cost reductions are relatively high.[51] Given the heterogeneous nature of the EMS interventions studied, the authors concluded that more research is indicated to comprehensively assess costs, health outcomes, patient satisfaction, and provider satisfaction.[52]

In Queen's Anne's County in Maryland, a study examining the comorbidities of participants in its MIH program found the most prevalent diagnoses included hypertension, high cholesterol, esophageal reflux, and diabetes mellitus. 94.5 percent of the program patients had another diagnosis, and the number of diagnoses per patient ranged from one to 13 conditions, with a mean of 5.88 diagnoses per patient (SD=2.74),[53] underscoring the medical complexity of MIH targeted populations.

BCFD calls its MIH program "Transitional Health Support" (THS). The program links patients to medical, pharmacological, social, and community resources. The field team, consisting of a BCFD community paramedic, a BCFD RN, and a UMMC NP or a University of Maryland School of Medicine physician faculty member, delivers in-home, follow-up care for 30 days after a hospitalization and helps patients with chronic disease management. The team assists with clinical management, as well as identifying SDoH that are barriers to optimal health. The THS

program has received consistently high overall patient satisfaction scores (average 9.7 on a scale of 1-10) since the program's inception in December 2018.[54]

3.3.3 Social Impact Review

MIH programs differ from and provide supplemental services to home health care. Depending on the community's needs, EMS providers work synergistically with home health care. MIH programs can fill gaps related to social needs and lack of community supports.

Since 2016, Blue Cross Blue Shield of New Mexico has been contracting with Albuquerque paramedics to provide home support for frequent users of the ED and recently discharged hospital patients.[55] In 2018, the New Mexico program reached approximately 2,000 high utilizers. This program achieved a yearly reduction of emergency visits among program participants of 50% – 60% when comparing before and after enrollment. Nationwide, there were at least 129 programs similar to the New Mexico program by 2017, according to a survey by the National Association of Emergency Medical Technicians.[56]

In Maryland, the BCFD MIH program (THS) has identified the following patient needs (listed in order of frequency, from high to low): medication-related problems, care coordination, durable medical equipment, transportation, housing/utility/food insecurity, and environmental concerns.

3.4 Medical Efficacy and Social Impact Conclusion

EMS systems across the United States are developing innovative EMS models of care to direct low-acuity patients to an appropriate level of care and away from the ED; prevent hospital readmissions; and fill gaps across the continuum of care. These gaps related both to medical needs and SDoH. EMS treat and release, EMS alternative destination, and EMS MIH programs are based on the principles of providing the right care, at the right time, in the right place. EMS programs vary and the peer-reviewed literature tends to combine programs and/or services, making generalizations from research difficult. Programs continue to evolve and take many forms,[57,58,59,60 61] and fire departments are creating hybrid models, such as alternative response units that can provide both treat and release services and transport to alternative locations.[62] Provided scientifically based protocols are followed by providers who are acting within their scope of care, the three EMS models would be expected to provide effective, person-centered care; relieve ED overcrowding; and enhance the efficiency of the EMS system.

4.0 Demand and Utilization Assessment

4.1 Methodology

This section addresses the following research questions related to each EMS model's impact on the demand for and utilization of care:

1. What is the prospect that these EMS programs could induce demand for health care services, and what are actions payers could take, if any, to limit that unintended outcome?
2. What is the extent to which mandated EMS coverage for the model of care will increase the appropriate use of the model of care?
3. What is the extent to which the mandated model of care will be a substitute for a more expensive service?

In the context of the three EMS models, the term "demand" represents the magnitude by which commercially insured patients have an interest in utilizing new benefits covered under any of those models. Thus changes in demand for such benefits do not necessitate a corresponding change in utilization. Where available we provide estimates for both demand and utilization of health care services.

We then interpret "appropriate use of the model" in the second question to mean the extent to which individuals who are offered EMS benefits choose to utilize them. Where applicable, we operationalize this measure either through ED survey data that has been published or as the percent of individuals who have been eligible and chosen to enroll in existing pilot demonstrations EMS models.

Finally, in the third question, we examine whether new benefits offered for each EMS model will reduce utilization that is known to increase health care costs without necessarily improving outcomes. The measures we use to answer this question are the number of ED visits, unplanned hospital admissions, 9-1-1 calls, and readmission rates.

4.2 EMS Alternative Destination Programs

There are three pathways through which utilization of health care services, and thus costs, could increase under the alternative destination EMS model. The first would occur if the prevalence of 9-1-1 calls increased. The second would occur if there was a rise in the proportion of patients who called 9-1-1 and are taken to a health care facility; for instance, if first responders transported patients to an urgent care center who, absent a change in statute to mandate coverage of alternative destination programs, would not be transported. The third would occur during events in which patients visit the ED despite initially receiving treatment at an urgent care center.

Eligibility and enrollment data on alternative destination pilots from Baltimore City, MD (BCFD), Fort Worth, TX (Med Star), or Houston, TX (ETHAN) was limited. Using 2017 eMEDS® data, MIEMSS found 7.8% of all EMS transports in MD were eligible for an alternate destination. Evidence further suggests that that between 58% and 69% of patients admitted to an ED would consider being transferred to an urgent care center instead, if it was a more clinically appropriate setting for them.[63]

We found no data citing the impact of those three pilots on utilization measures, aside from an evaluation report from ETHAN that showed a 56% decline in the number of ED visits for pilot participants relative to controls over the program's duration. Findings did not indicate the proportion of foregone ED visits that were redirected to an alternative destination.[64]

4.3 EMS Treat and Release Programs

The treat and release EMS model could result in greater utilization of health care services through two similar pathways. The first would occur if the prevalence of 9-1-1 calls increased, because the model's incentive structure to reduce such calls is more than offset by the convenience of receiving care at home. The second would occur during events in which patients are eventually transported to the ED despite an at-home visit.

Table 1: Percent of Individuals Eligible and Enrolled in Treat and Release Pilots, by Location

Location	Target Population	# Eligible	# Enrolled	% Refused Treatment	Demand Range
Baltimore City, MD (MDCN)	Low acuity patients w/ conditions such as flu-like symptoms	308	167	26	54.2% - 91.5%

Only one treat and release pilot study had enrollment data available—MDCN from Baltimore City, Maryland. The study targeted low acuity patients with conditions such as flu-like symptoms, hypertension, and gastrointestinal issues. Per Table 1, among the 308 individuals who called 911 and were clinically eligible for the program, 167 consented to be treated on scene and 26 did not want to receive treatment on the scene. Thus, we provide a demand estimate that is the range of these ratios. The low end of that range, 54.2%, assumes only those enrolled would utilize services offered by a new model treat and release program; the high end of the range, 91.5%, assumes all individuals identified as appropriate (except for those 26 patients who refused treatment) would utilize the new model treat and release program services. We found no data citing the impact of treat and release benefits on ED use, inpatient visits, the number of 9-1-1 calls, or the number of readmissions.

4.4 EMS MIH Programs

The MIH EMS model may result in greater utilization of health care services if patients' use of MIH services more than offset intended reductions in ED use. This would be accentuated if patients are eventually transported to the ED despite utilizing MIH services.

Table 2 presents the number of individuals who were eligible for six MIH pilots, defined in accordance with the target population. It also includes the number and percent of individuals who voluntarily enrolled in each pilot. There was limited or no enrollment data available for MIH pilots from four locations: Frederick County, Maryland; Talbot County, Maryland; Howard County, Maryland; and Fort Worth, Texas. Enrollment data in Table 2 also does not adjust for the length of time that the pilot has been in operation.

Table 2: Percent of Individuals Eligible and Enrolled in MIH Pilot Programs, by Location

Location	Target Population	# Eligible	# Enrolled	% Enrolled
Queen Anne County, MD	High utilizers of EMS	851	374	43.95%
Montgomery County, MD	High utilizers of EMS	39	11	28.21%
Baltimore City, MD	Complex patients followed for 30 days post hospital discharge	927	591	63.75%
Charles County, MD	High risk for readmission; high utilizers (6+ 9-1-1 calls in 90 days)	279	140	50.18%
Salisbury-Wicomico County, MD	High utilizers of EMS	131	22	16.79%
Prince George's County, MD	High utilizers of EMS (5+ 9-1-1 calls per year)	141	16	11.35%

Among the six locations for which data were available through 2019, nearly all targeted high utilizers of EMS despite subtle differences in how that population was defined. Baltimore City and Charles County also focused on either complex patients discharged from the hospital, those at high risk of an ED visit, or those at risk for a hospital readmission. Roughly 11% – 64% of individuals eligible for these MIH pilots voluntarily enrolled. Enrollment differences likely stem from a range of factors, including how the target population is defined, the types of benefits offered, and approaches to outreach and engagement of eligible individuals. For instance, two programs (Baltimore City and Charles County, MD) with the highest enrollment also have program eligibility that is triggered by a hospital discharge.

Enrollment data from these Maryland pilots indicates that only a portion of insured individuals for whom MIH benefits are clinically appropriate will demand and/or utilize them. There is nonetheless reason to believe that these figures underestimate the true proportion of eligible individuals who, under such legislation, would demand and utilize MIH services. Queen Anne's County pilot found that participants' satisfaction with the program rose over time, with 97% indicating they would recommend MIH services to others. If legislation in Maryland mandates that insurers cover MIH benefits, all commercially insured individuals would have time to learn about the program and eventually use those services, even if individuals initially choose not to

participate. Our measure only captures those who have voluntarily enrolled in a pilot demonstration at a point in time.

Table 3 presents 12 utilization measures across five locations: Queen Anne County, Maryland; Montgomery County, Maryland; Baltimore City, Maryland; Charles County, Maryland; and Fort Worth, Texas.[65] The Queen Anne's County pilot had data on ED use, inpatient use, number of 9-1-1 calls, and readmissions—stratified by time period (i.e., 30-day, 90-day, and 365-day). The remaining pilots had partial data on these 12 measures.

Table 3: Utilization Measures for MIH Pilot Participants, by Location

Utilization Measure	Location				
	Queen Anne's County, MD	Montgomery County, MD	Baltimore City, MD	Charles County, MD	Fort Worth, TX (Med Star)
30-Day ED Use	-46.8%	-	-25.0%	-	-
90-Day ED Use	-27.7%	-	-30.0%	-37.0%	-
365-Day ED Use	-14.4%	-64.1%	-	-	-49.0%
30-Day Inpatient Use	-81.3%	-	-	-	-
90-Day Inpatient Use	-57.5%	-	-	-58.0%	-
365-Day Inpatient Use	-36.3%	-	-	-	-
30-Day 9-1-1 Calls	-70.2%	-	-	-	-
90-Day 9-1-1 Calls	-34.0%	-	-	-	-
365-Day 9-1-1 Calls	-1.2%	-80.7%	-	-	-
30-Day Readmissions	-70.2%	-	-	-	-52.5%
90-Day Readmissions	-34.0%	-	-53.8%	-90.0%	-
365-Day Readmissions	-1.2%	-80.7%	-	-	-

Limited details were available to assess the robustness of these findings, such as whether data were risk-adjusted, were compared to a control group, or were collected before and after the MIH pilot. Estimates provided in Table 3 also mask important details. For instance, results represent averages across all pilot participants rather than only those enrolled in commercial health insurance plans (and it is likely that many program enrollees are Medicare or Medicaid beneficiaries).

These and other limitations notwithstanding, there was a decline in ED use (-14% to -64%, depending on study), inpatient hospital service use (-36% to -81%), the number of 9-1-1 calls (-1% to -81%), and hospital readmissions (-1% to -90%) across the five pilots among program participants. This implies that mandating coverage of MIH services could lead to a substitution effect that substantially reduces unnecessary utilization of health care services. There could

also be a diminishing impact on these utilization measures as the length time a participant is in a program increases, as evidenced by results from the Queen Anne's County MIH pilot program.

4.5 Payer Options

Payers have at their disposal numerous tools to alter patient and provider incentives to utilize health care services. Demand-side levers for patients include cost sharing (e.g., co-pays, co-insurance, deductibles), utilization management, gatekeeping, and benefit design. Supply-side levers for providers include the underlying payment structures (e.g., fee-for-service, bundled payments) and rates.

Across the three EMS models, payers would likely apply demand-side levers to curb the volume of 9-1-1 calls by patients and, to a lesser extent, care delivery decisions (e.g., whether patients are transported to an ED or an urgent care center). For instance, patients will be less likely to utilize MIH services if they incur some level of cost sharing. Supply-side levers would impact where first responders transported patients, as well as the types of services and intensity of care provided during on-site visits. If payment rates for transport to an alternative destination (e.g., urgent care center) were significantly lower than to an ED, EMS responders will have greater financial incentives to transport patients to the latter.

Payers' use of these tools to control utilization would depend on several factors. For instance, the tools would be of limited value in cases where utilization of health care services is driven by exogenous factors outside of a payer's control (e.g., a patient's clinical condition or provider availability). Statutory and regulatory requirements would also impact payer options.

5.0 Financial Assessment

In Section 4.0, we projected the pathways through which demand and utilization for benefits from each of the three EMS models could increase, as well as strategies payers could take to mitigate unnecessary use of those benefits. We then quantified the potential demand for all three EMS benefits, as well as changes in utilization of health care services that drive costs without necessarily improving health outcomes. In the following section, we apply these findings to forecast the financial impact of the three EMS models.

5.1 Methodology

5.1.1 Data Sources

Estimating the cost impact of establishing a mandate for covering alternative destination, treat and release, and MIH programs on premiums requires assessing the incremental impacts of added cost and potential savings for each of the three EMS models. We estimated the incremental costs and savings using the following data sources:

- Information about the intended effect of the proposed mandate for health insurers in the fully-insured market to cover the three EMS care delivery models, gathered from MHCC and MIEMSS
- Surveys from commercial health insurance carriers in Maryland
- Claims data from the Maryland Medical Care Database (MCDB)
- eMEDS®, a database of EMS data
- Academic literature, published reports, and population data
- Survey data from Maryland EMS model pilot programs
- Interviews with clinical experts and health care providers

5.1.2 Analytic Approach

For the alternate destination model, we used the MCDB to measure the cost of coverage for a single EMS transport and the number of calls with no transport. The incremental cost is based on any increase in EMS transport utilization due to the proposed coverage mandate for the patients who were not currently transported. The added claims cost is the product of the cost of a transport and the additional number of transports. We also used the MCDB to calculate savings, which were a function of the number of EMS transports that substituted the ED for an alternate destination multiplied by the difference in cost between an ED visit and an urgent care visit. These steps are presented in greater detail in Appendix D.

For the treat and release model, we estimated the cost per service of urgent care services using the MCDB (using the cost of urgent care services as a proxy for treat in place costs). We then calculated the number of potential treat and release events, using data from the Baltimore City pilot program and defined in the literature as the percent of EMS calls. We determined the

number of EMS transports of individuals in fully-insured plans in the commercial health insurance market based on the pilot program's proportion of total EMS transports. Finally, we multiplied the cost per urgent care service by the number of potential treat and release events to obtain an incremental cost. Our estimated savings was a function of the projected number of treat and release patients multiplied by the difference in cost between an ED visit and the cost of a treat and release event. These steps are presented in greater detail in Appendix E.

For the MIH model, we pulled data from Maryland pilots and peer-reviewed literature to estimate the portion of commercial insured members who would utilize MIH benefits. We applied the percentage of members enrolled in MIH programs to total commercial fully insured membership from the MCDB to estimate the number of commercial fully insured MIH participants. We calculated total costs by multiplying the cost per enrollee for existing MIH pilots by the estimated number of individuals with commercial insurance in Maryland who would use MIH benefits. We measured savings through reductions in hospital readmissions and ED use from Maryland and other State-level MIH pilot programs. These steps are presented in greater detail in Appendix F.

5.1.3 Limitations

Projections are only as robust as the underlying data used to develop them. We applied parameters from a range of data sources, including peer-reviewed studies and reports. Those sources may have used different study design criteria, evaluation techniques, approaches for operationalizing measures, or populations not perfectly generalizable to Maryland. While measuring costs using historical claims is straightforward, our projections rely on several assumptions.

1) Demand and utilization rates are unknown for each of the three EMS models. As discussed in Section 4.0, it is unclear what proportion of individuals who are clinical eligible for these EMS would seek to use them over being transported to the ED. BerryDunn used literature, eMEDS®, and pilot data to estimate the number of people that will utilize the models of care. For the EMS alternate destination model, we assumed 5.5% of eligible individuals would go to an alternate destination, and that 1.0% of eligible individuals would choose health care services through a treat and release program. We further assumed that 0.03% of the fully insured commercial members would utilize MIH benefits. Discussion of the development of these assumptions is including in the Results sub-sections of this report.
2) Eligibility protocol and criteria are emerging as pilot programs are developed. The program criteria if coverage for the models is mandated is not certain.
3) Ambulance providers in three counties in Maryland did not historically bill insurance carriers for EMS transports. Using a membership distribution, BerryDunn made an adjustment to estimate EMS transports and include these counties in the projection. Our assumption was that the number of transports per member is consistent with other counties, but this is uncertain.

4) Payment rates for treat and release are uncertain. If mandated, Maryland carriers would need to negotiate rates with providers for treat and release services. We assumed a similar approach used by a commercial carrier in another market.
5) The unit cost of alternate destination services is uncertain. For example, the states only drug treatment center opened in 2018, and so no unit cost data was available in the MCDB, which is updated through the end of 2017. We assumed that urgent care costs were representative
6) The diversity of MIH services made it difficult to project the cost per enrollee. We addressed this obstacle by using data from existing MIH pilot programs and published literature to calculate low-cost and high-cost scenarios. These scenarios ultimately produced a range of cost and savings estimates.

Analyses for the three EMS models were conducted independently. While each EMS model offers unique benefits, all three models target individuals who are frequent 9-1-1 or ED users or those who have conditions not clinically severe enough to warrant an ED visit. There is thus overlap in the populations eligible for utilizing them. We nonetheless chose not to model the additive or interactive effects of the three EMS models, because there was not enough data to accurately forecast how patients and health care providers would prioritize the multitude of service delivery options. Our decision may or may not have implications for health care quality and patient outcomes; it almost certainly impacts utilization and savings estimates. These issues should thus be considered in the design and deployment of all three EMS models.

Finally, given variation in plan differences across payers and members, as well as regulatory uncertainty, the impact of legislation on any one individual, employer group, or carrier may vary from our projected results – which are averages.

5.2 Results

This section presents costs and savings estimates from our analyses for each of the three EMS models, including a low-, middle-, and high-cost scenario. The low- and high-cost scenarios apply the most liberal and conservative assumptions, respectively. In Sections 5.2.1 and 5.2.2, we describe steps used to calculate PMPM expenses and savings associated with EMS transport to an alternate destination. In Sections 5.2.3 and 5.2.4, we present steps used to calculate PMPM expenses and savings for EMS treat and release. Finally, Sections 5.2.5 and 5.2.6 include PMPM expenses and savings for EMS MIH programs.

5.2.1 EMS Alternate Destination Programs: Marginal Costs

We estimate that there were 48 EMS calls among the fully insured commercial population that were ultimately not transported to an ED. This represents only 0.3% of all 9-1-1 calls made. Thus, even under our high-end scenario, whereby all 48 calls are transported to an urgent care center, costs would be minimal.

5.2.2 EMS Alternate Destination Programs: Savings

We calculated the total number of EMS transports and those eligible for transport to an alternate destination based upon clinical protocol.[66] In 2017, 7.8% of all EMS transports were eligible for an alternate destination, even though a substantial proportion would likely still request to be taken to an ED. Evidence presented earlier in this report suggests that roughly 69% of eligible patients would consider being taken to alternative destination. Thus, we assumed 70% in our middle scenario, 50% in our low scenario, and 90% in our high scenario. Table 4 presents the estimated percent of transports going to an alternate destination for the three scenarios.

Table 4: Percent of EMS Transports Going to an Alternate Destination

	% Eligible for Alternate Destination	% Accepting Alternate Destinations	% of Total Electing Alternate Destinations
Low Scenario	7.8%	50.0%	3.9%
Mid Scenario	7.8%	70.0%	5.5%
High Scenario	7.8%	90.0%	7.0%

Most Maryland counties bill insurance carriers for EMS transport cost. Using the MCBD, BerryDunn calculated that there were 14,805 9-1-1 calls with an EMS transport for those counties that bill insurance carriers. However, St. Mary's, Calvert, and Howard counties did not bill carriers in 2017. Using a membership distribution, BerryDunn calculated that these three counties make up about 10 percent of the commercial fully-insured membership. BerryDunn made an adjustment to estimate EMS transports and include these counties in the projection. We estimated that there were 16,450 transports for the Maryland commercially fully insured population in 2017. We multiplied this figure by the percentages in Table 4 to produce the number of patients transported to an alternate destination. These results are shown in Table 5.

Table 5: Number of EMS Transports Going to an Alternate Destination

	Total EMS Transports	% Electing an Alternate Destination	Number of Transports
Low Scenario	16,450	3.9%	642
Mid Scenario	16,450	5.5%	905
High Scenario	16,450	7.0%	1,152

Next, we calculated the average cost per visit to a Maryland ED and urgent care center. ED paid claim expenses for the commercial fully insured population in Maryland were divided by the number of visits to calculate the average cost per visit. [67] Urgent care paid claims expenses[68] for the commercial fully insured population in Maryland were divided by the number of visits to

calculate the average cost per visit. We subtracted the urgent care cost per visit from the ED cost per visit to calculate the cost per visit savings. We present these results Table 6.

Table 6: 2017 Estimated Cost Per Visit Savings

	ED Visits	Urgent Care Visits	Savings
Paid Costs of All Visit	$97,732,990	$9,565,966	-
Number of Visits	201,806	105,255	-
Cost Per Visit	$484.29	$90.88	$393.41

Finally, we multiplied the number of alternate destination transports from Table 5 by the difference in the average cost per visit calculated in Table 6 to estimate total savings. We divided the total savings by the total fully-insured membership to determine the PMPM savings on premium, as shown in Table 7.

Table 7: Estimated Savings for EMS Transport to an Alternate Destination

	Claim Savings	PMPM Savings
Low Scenario	$252,391	$0.02
Mid Scenario	$355,936	$0.03
High Scenario	$453,009	$0.04

5.2.3 EMS Treat and Release Programs: Marginal Cost

We estimated the number of patients who would utilize the EMS treat and release benefit. Using 167 patients from the Baltimore City MIH pilot in 2018, we estimated that approximately 0.4% of all EMS calls utilized treat and release.[69] The Pennsylvania Bureau of Medical Emergency Services alternatively found in its mid-year treat and release pilot report[70] that roughly 1.8% of 9-1-1 calls utilized the service. Thus, we used 0.4% as our low scenario, 1.1% as our mid scenario, and 1.8% as our high scenario.

We then multiplied the total number of EMS transports for the Maryland commercially fully insured population by these percentages to estimate the number of patients utilizing treat and release services. Table 8 contains these figures.

Table 8: Number of EMS Calls Treated and Released

	Total EMS Transports	% Treated and Released	Number of Patients
Low Scenario	16,450	0.4%	66
Mid Scenario	16,450	1.1%	181
High Scenario	16,450	1.8%	296

Next, we calculated the average unit cost for a treat and release visit. Treat and release services are not covered by insurance carriers, so we used a portion of the average cost of an EMS transport as a proxy. In an interview with a commercial carrier that covers treat and release services, the carrier indicated that its payment rates for treat and release services are 75% of EMS transport rates. EMS transport paid claim expenses for the commercial fully insured population were divided by the number of transports and then multiplied by 75% to calculate the EMS treat and release unit cost. Results are presented in Table 9. In addition, a follow-up primary-care provider visit is recommended for treat and release patients, so the cost of an office visit is also included. Office visit paid claim expenses for the commercial fully insured population were divided by the number of visits to calculate the average cost per visit. Results are presented in Table 9.

Table 9: 2017 Estimated Unit Cost Per Treat and Release Service

	EMS Transport	Office Visits
Paid Costs	$5,090,298	$201,485,944
Number of Services/Visits	14,805	3,537,943
Contract Adjustment	75%	
Treat and Release Unit Cost	$257.87	$56.95

Finally, we multiplied the number of treat and release services from Table 8 by $314.82, which is the sum of the two average cost per service metrics from Table 9, to estimate the treat and release marginal cost. We divided this figure by the total fully-insured membership to determine PMPM costs, as shown in Table 10.

Table 10: Estimated 2017 Cost for EMS Treat and Release Service

	Claims	PMPM Cost
Low Scenario	$20,715	$0.002
Mid Scenario	$56,966	$0.005
High Scenario	$93,217	$0.008

5.2.4 EMS Treat and Release Programs: Savings

To produce savings from avoided ED visits, we multiplied the sum of the average cost of per ED visit and the average cost of an EMS transport by the number of treat and release patients from Table 8. The estimated claim savings were divided by the corresponding membership to calculate PMPM savings amounts. Results are shown in Table 11.

Table 11: Estimated Savings for EMS Treat and Release

	Number of Services	ED Cost Per Visit	Cost Per EMS Transport	Savings	PMPM Savings
Low Scenario	66	$484.29	$343.82	$54,490	$0.00
Mid Scenario	181	$484.29	$343.82	$149,847	$0.01
High Scenario	296	$484.29	$343.82	$245,205	$0.02

5.2.5 EMS MIH Programs: Marginal Costs

The cost of the MIH coverage stems from the additional services performed by the EMS providers. We requested and received data from four of the nine Maryland MIH pilot projects. Using their most recent fiscal periods, we summed expenditures and the number of enrollees participating in those pilots. We divided expenditures by the total number of enrollees to calculate an average cost per enrollee. Results are shown in Table 12.

Table 12: Maryland MIH Pilot Costs

	MIH Pilot Expenses
MIH Pilot Total Costs	$1,587,505
MIH Enrollees	792
MIH Cost Per Enrollee	$2,004

Coverage of MIH benefits vary by program, and thus create uncertainty in our projection estimates. Three of the pilots fall in expenditure range of $1,200 to $2,800 per enrollee. To account for this variability, we assumed a low scenario of $1,200 per enrollee, a mid scenario of $2,000 per enrollee, and a high scenario of $2,800 per enrollee.

We then estimated the number of Maryland commercial MIH participants. Currently, about 13% of pilot program enrollees are covered by commercial insurance, and—across the four counties—make up roughly 0.01% of commercial members. One county has a higher penetration of about 0.1%. Our low scenario thus assumed that 0.01% of fully insured commercial members would utilize MIH benefits, 0.03% of members in the mid scenario, and 0.05% of members in the high scenario. These figures were multiplied by 1.017 million commercial fully insured members in Maryland as shown in Table 13.

Table 13: Estimated MIH Enrollees

	% of Fully Insured Commercial Members	Enrollees
Low Scenario	0.01%	101
Mid Scenario	0.03%	304
High Scenario	0.05%	507

The number of MIH enrollees for MD was multiplied by the cost per enrollee to estimate the marginal claims cost. This cost was divided by the total fully-insured membership to get the PMPM cost, as presented in Table 14.

Table 14: Estimated 2017 Cost for MIH

	Enrollees	Cost Per Enrollee	Claims Cost	PMPM Cost
Low Scenario	101	$1200	$121,200	$0.01
Mid Scenario	304	$2,000	$608,000	$0.05
High Scenario	507	$2,800	$1,419,600	$0.12

5.2.6 EMS MIH Programs: Savings

Savings from MIH coverage occurs through a reduction in 9-1-1 transports, ED use, and hospital admissions. Med Star has been operating an MIH pilot program in Fort Worth, Texas, since 2009, and has experienced reduced EMS transports, ED use, and hospital readmissions. A report from the Med Star pilot[i] program cites 779 enrollees, whereby EMS transports and ED visits have declined by roughly 1 per pilot program enrollee per year. In-patient readmissions have also declined about 0.3 per enrollee per year. An evaluation of California's CP pilot programs[i] found similar results. In those CP MIH pilot programs, ED visits fell by 1, 4, and 9 per enrollee per year across three different cities, respectively. In-patient readmissions have also fallen by roughly 0.1 to 0.2 per enrollee per year.

We projected savings for MIH by first calculating the avoided number of EMS transports, ED visits, and hospital readmissions. In-patient readmissions have come down about 0.3 per enrollee per year. The estimated number of enrollees in MIH programs was multiplied by the

number of reduced EMS ED visits per enrollee to arrive at the avoided number of EMS transports and ED visits. We also multiplied the number of enrollees by the number of reduced admissions per enrollee to obtain the number of avoided readmissions. Table 15 contains these results.

Table 15: Estimated Reduced Utilization Due to MIH

	Enrollees	Reduce Transports/ED Visits Per Enrollee	Avoided Transports/ED Visits	Reduced Readmissions Per Enrollee	Avoided Readmissions
Low Scenario	101	1	101	0.1	10
Mid Scenario	304	1	304	0.2	61
High Scenario	507	2	1,014	0.3	152

We multiplied the number of avoided EMS transports, ED visits, and readmissions from Table 15 by their respective costs, to calculate MHI savings, as shown in Table 16. Savings were added to produce total MIH savings and then divided by the total fully-insured membership to arrive at PMPM savings, presented in Table 17.

Table 16: Estimated EMS Transport and ED Savings for MIH

	Cost per Transport & ED Visit	MIH Saving for Transports and ED Visits	Cost Per Readmission	MIH Saving for Readmissions
Low Scenario	$828.11	$83,640	$13,144	$132,754
Mid Scenario	$828.11	$251,747	$13,144	$799,155
High Scenario	$828.11	$839,708	$13,144	$1,999,202

Table 17: Total Estimated Savings for MIH

	Savings	PMPM Savings
Low Scenario	$216,394	$0.02
Mid Scenario	$1,050,902	$0.09
High Scenario	$2,838,911	$0.23

5.3 Discussion

Our findings, presented in Table 18, include our best estimate mid scenario and a range of low- and high scenarios if Maryland were to mandate benefits from the three EMS models. Variation across each scenario is attributable to the uncertainty (and thus assumptions) surrounding utilization rates for all three programs, as well as the cost of MIH services.

For the alternate destination model, our low scenario estimate suggests $252,000 in savings per year, based on an assumption that 3.9% of the EMS transports would be redirected to an alternate destination. The mid scenario assumes that 5.5% would be transported to an alternate destination, thereby achieving annual savings of $356,000, or $0.03 PMPM. The high scenario applies the most aggressive assumption, or 7.0% of the EMS transports, and achieves $453,000 in savings.

The low scenario for the treat and release model results in $34,000 in net savings per year, based on the assumption that 0.4% of all 9-1-1 calls would be treated on-site. The mid scenario assumes 1.1% of the calls would be treated on-site for annual net savings of $93,000. The high scenario assumes 1.8% for annual net savings of $152,000.

For the MIH model, the low scenario achieves $95,000 in net savings per year and is based on an assumption that 0.01% of the fully insured commercial members would utilize MIH benefits. The mid scenario uses the assumption that 0.02% of the fully insured commercial members would utilize MIH benefits and has annual net savings of $443,000, or $0.04 PMPM. The high scenario assumes enrollment of 0.05% with savings of $1,419,000, or $0.12 PMPM.

Table 18: Summary Results (Medical Expense in $000s)

	Net Impact Alternate Destination	Cost Treat and Release	Savings Treat and Release	Treat and Release Net Impact	Cost MIH	Savings MIH	Net Impact MIH
Medical Expense/ Savings Low	-$252	$21	-$54	-$34	$121	-$216	-$95
Medical Expense/ Savings Mid	-$356	$57	-$150	-$93	$608	-$1,051	-$443
Medical Expense/ Savings High	-$453	$93	-$245	-$152	$1,420	-$2,839	-$1,419
PMPM Low	-$0.02	$0.00	$0.00	$0.00	$0.01	-$0.02	-$0.01
PMPM Mid	-$0.03	$0.00	-$0.01	-$0.01	$0.05	-$0.09	-$0.04
PMPM High	-$0.04	$0.01	-$0.02	-$0.01	$0.12	-$0.23	-$0.12

Appendix A: MIEMSS ADP EMS Provider Protocol

PILOT PROGRAM
ALTERNATIVE DESTINATION PROGRAM

V. ALTERNATIVE DESTINATION PROGRAM

1. PURPOSE

To provide quality care in a more timely fashion, with potential for cost savings for patients, and a rapid return to service for EMS units. This program may also allow patients to receive care within their HMO services, where their medical records and physicians are readily available.

Any Maryland EMS Operational Program (EMSOP) may establish an alternative destination program tailored to the needs of its community, if the program meets all the requirements set forth in this protocol. Montgomery County Fire and Rescue Services (MCFRS) conducted a pilot alternative destination program in FY 2017, which is detailed below beginning with "b) Start Point."

a) Background
   (1) Emergency departments across the country spend a disproportionate share of staff and financial resources providing non-urgent care to patients who often would have been better served in a primary care setting. According to a 2010 study by the RAND Corporation, between 14% and 27% of all ED visits are for non-urgent care and could take place in a different setting, such as a doctor's office, after-hours clinic, or retail clinic with a potential cost savings of $4.4 billion annually. A 2010 study published in the Annals of Emergency Medicine found that frequent users comprise 4.5% to 8.0% of all ED patients, yet account for 21% to 28% of all visits.
   (2) Montgomery County Alternative Destination Pilot Program
      (a) In 2014 MCFRS received 80,000 EMS calls and performed 65,000 transports. Of the 65,000 transports, 60% were BLS (low-acuity) and 40% were ALS. The EMS growth rate is unsustainable. At current rates, MCFRS would need to add an ambulance each year to service the needs of residents in the county. In an effort to encourage appropriate use of 9-1-1 services and disposition to an emergency department, and to better serve the state under the new Medicare All Payer System (waiver), Holy Cross Health, Kaiser Permanente, and MCFRS piloted the alternative destination program (ADP) protocol to optimize EMS resource use and assure appropriate patient care.
      (b) Through a joint release, all entities involved provided a general notice to the population being serviced under the pilot for Phase 2.
      (c) Montgomery County identified a highly-qualified "pilot triage expert" to consistently apply the Provider Quick Form, consent the patient, and make the destination determination. The designated expert was a state-certified EMT for Montgomery County who also is a registered nurse, and who was previously an ALS provider. Using a highly-qualified pilot triage expert not only reduces risks to the patient, but also requires special skills that are not necessarily applicable to all EMTs across Maryland.
      (d) The objective of this quality improvement pilot was to assess the accuracy and safety of triaging dispatch-identified "IAED Alpha determinate code" BLS patients to either Holy Cross Hospital Express Care (co-located with Holy Cross's emergency department) or Kaiser Permanente's Clinical Diagnostic Unit (CDU) by applying the Provider Quick Form.

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b) Start Point
Due to changing federal and state health care delivery systems, Montgomery County is seeking to develop a process for improving the management of the EMS and health care delivery system for stable, low-priority patients.

c) Quality Improvement Design
A literature review reveals there are multiple strategies to match the right patient with the right clinical resources. This is a modification of current practices, amended by the addition of the Kaiser CDU, ensuring access to the patient's own insurance and personal medical records, as well as improved continuity of care, in Phase 2.

d) Benefits
As emergency department off load times have increased, the alternative destination process may improve the EMS resource utilization. It is designed to improve patient satisfaction by providing patient cost savings and time savings while matching patients to the appropriate resource and continuity of care.

e) Risks
(1) As the EMS Operational Program will be dispatching the normal resources to the patient with the addition of the "pilot triage expert," and the patient will be voluntarily participating in the ADP pilot and destination determination, there is no increased risk.
(2) There are multiple safety checks incorporated in this ADP pilot, so no patient is placed at increased risk. These include:
(a) The use of an EMS unit response for all patients, as would routinely occur
(b) The use of the Internal Association of Emergency Dispatchers (IAED) Medical Priority Dispatch (MPD) standard public service access point screening and dispatch algorithm, which is highly accurate at determining low-acuity patients.
(c) The use of the pilot triage expert, who has both EMS and nursing training and experience
(d) Medical director oversight group access and review of all ADP medical records through Holy Cross and Kaiser Permanente, with an objective State EMS Medical Director review
(e) If at any time a patient at an alternative destination is identified to need a higher level of care, Holy Cross Express Care will immediately transfer the patient to the Holy Cross Hospital Emergency Department (same building) and Kaiser Permanente CDU will call MCFRS, who will dispatch the appropriate EMS resource to transport the patient to the appropriate emergency department.

f) End Points
(1) The ADP pilot metrics are designed to assess the benefit to the system of using the Provider Quick Form and the ADP pilot protocol.
(2) If, at any time, a patient has been identified as being placed at risk.
(a) A review demonstrates that the patient required admission to the hospital or observation unit, following under-triage to an alternative destination with proper use of the Provider Quick form, or a truly untoward outcome were to occur.
(3) If there has been no demonstrated benefit to the delivery of EMS services, such as extended EMS unit cycle time or availability.
(4) If the costs of delivering this program exceed benefit gained in EMS service to the community, as determined by MCFRS.

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g) Analysis
The ADP metrics will be compared before and after the implementation of this pilot protocol to determine if system improvement occurred. The Provider Quick Form will be reviewed and compared for accuracy and safety.

h) Adoption of Results
As the proposed is using a pilot triage expert with both EMS provider and nursing experience and training, the results of the ADP pilot cannot be generalized to all EMTs or other EMS providers. If demonstrated to be accurate, safe, and reliable, the Provider Quick Form screening tool and the ADP pilot protocol could be considered for EMS provider trials with the goal of improving the delivery of EMS care.

i) The patient satisfaction survey may demonstrate positive customer service.

j) Phases

(1) The ADP pilot protocol will be implemented in two phases. All of the indications, contraindications, procedures, quality assurance, the Provider Quick Form, eMEDS®, and consent form will be consistent in both Phase 1 and Phase 2. The Phase 2 documents will include the Kaiser CDU as an additional destination option.

(a) Phase 1 will use one alternative destination: Holy Cross Hospital Express Care in Silver Spring, Maryland. This will assure that all patients will have access to the full array of diagnostic services and a full-service emergency department in case of under-triage. This will also allow for comprehensive follow up on all patients seen and straightforward evaluation of the Provider Quick Form. In an effort to implement an additional safety net for these patients in the pilot, Montgomery County will be using a very small group of EMS providers that are specially-authorized by the MCFRS medical director as the pilot triage experts for MCFRS services. These providers have decades of EMS experience and also many years of experience as registered nurses.

(b) Phase 1 will be conducted for 60 days from the start date. Upon the conclusion of this phase, or earlier if untoward events have arisen or MCFRS terminates the pilot protocol, there will be a summary report generated to MIEMSS using the metrics outlined in the quality assurance section of this protocol. MIEMSS will review the summary report and metrics and, with Montgomery County, will evaluate the feasibility of moving the pilot into Phase 2. During this evaluative period, Phase 1 will continue unless the pilot is ceased due for any reason.

(c) After reviewing the results of Phase 1, the participants in this pilot, including MIEMSS, will determine the feasibility of implementing Phase 2 of the project. Phase 2 will allow for the addition of one alternative destination (Kaiser Permanente Gaithersburg Medical Center Clinical Decision Unit), assuming the conditions listed below are met.

(d) The addition of this second alternative destination will demonstrate how to program functions under a different cost structure. The destination added in Phase 2 of the pilot will have the following minimum patient care capabilities:

(i) 12-lead EKG
(ii) UA
(iii) Urine Pregnancy
(iv) Minor Suturing

(e) Phase 2 will be conducted for 60 days. Upon the conclusion of Phase 2, or earlier if untoward events have arisen or MCFRS terminates the pilot protocol, there will be a summary report generated to MIEMSS using the metrics outlined in the quality assurance section of this protocol.

(2) This ADP pilot protocol cannot be extended or modified, including its timeline, without the approval of MIEMSS and the EMS Board.

2. INDICATIONS

Certain low-acuity Priority 3 patients who match the ADP pilot protocol criteria, within the geographic boundaries and available hours of the pilot, will be offered transportation to an appropriate receiving facility. The receiving facility will be offered based on the medical needs of the patient, the corresponding capabilities of the receiving facility, and Kaiser Permanente patients based on receiving facility coverage. The ADP pilot protocol (Phases 1 and 2) will be run during the pilot hours on weekdays.

a) Receiving facilities Phase 1:
   (1) Holy Cross Hospital Express Care, located at 1500 Forest Glenn Rd, Silver Spring, Maryland, will be the receiving facility for all included patients.

b) Receiving facilities Phase 2:
   (1) Kaiser Permanente Gaithersburg Medical Center CDU, located at 655 Watkins Mill Road in Gaithersburg, Maryland, will be a receiving facility for Kaiser Permanente patients.
   (2) Holy Cross Hospital Express (see location above) will be a receiving facility for other insured or uninsured patients who select this alternative destination and who need to be seen after clinic hours or require diagnostic imaging services.

3. CONTRAINDICATIONS

a) Patients who have not yet reached their 18th birthday
b) Patients who are 60 years of age or greater
c) Patients who do not meet the criteria for the MIEMSS-approved inclusion/ exclusion checklist
d) Patients who are not able to communicate with pilot triage expert provider, including non-English speaking patients
e) Patient who are not able to understand the consent process
f) Patients who refuse to participate in pilot

4. PROCEDURE

a) This pilot protocol may only be used by MCFRS EMS providers who are identified as pilot triage experts and specifically authorized to do so by the MCFRS medical director.
b) General Patient Care Protocol
c) Under the ADP pilot protocol, all patients will be offered an appropriate definitive care destination.
d) For inclusion in the ADP pilot protocol, the patient must agree and must have:
   (1) No chief complaint consistent with a comprehensive evaluation that would traditionally need the capabilities of a full service emergency department
      (a) High-risk chief complaints are currently defined as dyspnea, AMS, syncope, chest pain, focal neurological deficits, unexplained back or abdominal pain, seizures, and sometimes fever.

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(2) No physical findings consistent with time-dependent needs for assessment or stabilization
  (a) Signs on exam that indicate a threat to airway, breathing, circulation, circulation to an extremity, disability (deficit) or deformity, as well as severe tenderness (ABCDE, etc.)
(3) No reasonably foreseeable signs or suspicion of any deterioration of condition (eg, airway or hemodynamic compromise)
(4) No requirement for either ALS monitoring or ALS interventions
(5) All affirmative answers on the ADP consent form

e) In order to include the patient in the ADP pilot protocol, the authorized MCFRS EMS pilot triage expert must obtain a complete set of vital signs, a complete history, and a signed pilot consent, and they also must complete the Provider Quick Form.
f) If the patient does not agree to be included in the pilot, the consent form will have the "declination" box checked and the patient will be transported to the emergency department per normal MCFRS practice.
g) If patient is stable, has met the inclusion criteria of the ADP pilot protocol and Provider Quick form, and has a disease/injury process that can be safely treated by a primary care or urgent care practitioner:
(1) Phase 1
  (a) The consented patient will be transported to Holy Cross Express Care.
  (b) If patient refuses to participate, patient condition deteriorates, or changes their mind during transport and declines to participate, the patient will be taken to nearest full service emergency department.
(2) Phase 2
  (a) Determine if the patient has Kaiser Permanente health insurance.
    (i) If they are a Kaiser patient, they may be transported to the Kaiser CDU in Gaithersburg.
  (b) If patient has other health insurance or is uninsured, or select this alternative destination, they should be transferred to Holy Cross Hospital Express Care in Silver Spring.
  (c) Contact the proposed receiving facility and discuss patient with receiving licensed health care professional (MD/DO, NP, or RN) and ensure that the facility is willing to accept the patient. This contact must be made on a recorded line. Upon arrival, have the receiving health care professional sign off on the MCFRS pilot consent form.
h) The MCFRS ambulance crew will transport the patient to the alternative destination and provide both a written and verbal report to the receiving health care professional.
i) If patient refuses to participate, patient condition deteriorates, or changes their mind during transport and declines to participate, or the receiving facility refuses the patient, the patient will be transported to nearest appropriate full service emergency department without argument or delay.
j) The transporting unit and the MCFRS specially-authorized EMS provider will complete an eMEDS® report, which will include a sign-off from the receiving licensed health care professional.

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5. QUALITY ASSURANCE

a) The overall pilot is under the shared medical direction of MCFRS EMS medical director, who will collaborate with the physician designee from Holy Cross Health Center, Silver Spring; medical director for Holy Cross Hospital Emergency Department; and physician assigned by Kaiser Permanente, to ensure that triage protocols are safe and effective for each receiving facility. Upon beginning the pilot, the local site medical directors will be accountable for ensuring adherence to pilot protocols, communication, and training. This group, along with MIEMSS' state EMS medical director, will meet or hold a teleconference weekly during the pilot to review all cases evaluated by the pilot triage expert and evaluate emergent trends, ensure the pilot protocols are not leading to suboptimal triage, and evaluate any sentinel events as necessary.

b) In addition, the medical directors and MCFRS operational leadership will meet weekly to review and a report to the state EMS medical director within three days of the conclusion of these meetings. The report will include:
   (1) Report on PILOT METRICS (below)
   (2) Patient satisfaction survey results
   (3) Unscheduled reentry of patient into health care system within 72 hours of transport
   (4) Any untoward events or formal patient complaints with detailed explanation
   (5) Any deviation or challenges regarding the pilot triage experts' implementation of the ADP pilot protocol or Provider Quick Form.

c) Pilot Metrics
   (1) Each patient transported to and treated at any of the alternative destinations must have a discharge diagnosis. Data for any patients who are secondarily transported to another facility must also be captured.
   (2) Number and type of upgrades from alternative destination (specific signs/ symptoms on presentation, where slipped though inclusion/exclusion criteria, and final diagnosis)
   (3) Number of patients who qualified, the number who accepted transport to an alternative destination, and the number who refused (ideally with reason for refusal)
   (4) The number of patients who were screened but failed one or more items on the Provider Quick Form checklist
   (5) Any patients who failed to be accepted at one of the alternative facilities and reason for refusal
   (6) Any identified problems by the pilot triage expert to comply with or apply the pilot protocol
   (7) EMS average "arrival destination to back in service" time (turnaround time) for Holy Cross and the alternative facilities
   (8) EMS "first unit notification time until transport unit is back in service" time (total call duration time)
   (9) Patient standardized satisfaction survey results
      (a) Did patient have additional unscheduled reentry into urgent care, PMD, or emergency department within 72 hours of alternative destination?
      (b) Was patient satisfied with choice?
      (c) Rate EMS care on scale of 1-5
      (d) Rate destination care on scale of 1-5
      (e) Any complications or complaints associated with care decision?
   (10) What are their pre-implementation performance measures (above) for the units in the pilot area?

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Montgomery County Alternative Destination Program Protocol Provider Quick Form

	Yes	No
1. Patient is an Alpha MPD dispatch and meets MIEMSS triage and treatment category Priority 3.	❑	❑
2. Patient is between the age of 18 and 59 years of age	❑	❑
3. **Criterion 1:** Vital Signs are within these limits a. Respirations 12–18 b. Blood Pressure: 100–140 systolic 60–100 diastolic c. Pulse: 60–100 d. Temperature: less than 101 F and greater than 96 F	❑	❑
4. **Criterion 2:** High-risk indications are Absent a. Severe Pain b. Chest or Abdominal Pain c. Shortness of breath or respiratory distress d. Altered Mental Status or new neurologic deficit e. Unable to walk (if able to walk before illness) f. Patient high-risk condition 1. Active malignancy 2. HIV 3. Immunosuppressive therapy 4. Transplant	❑	❑
5. **Criterion 3:** Physical exam performed to assure patient does not have exclusion criteria.	❑	❑
6. **Criterion 4:** Criterion 4: Patient has one or more of the non-emergency chief complaints (refer to back).	❑	❑
7. EMS provider is able clearly communicate with patient and the patient is able to communicate with EMS.	❑	❑
8. Patient is able to understand the consent process.	❑	❑
9. Patient has read and signed the **MCFRS Alternative Destination Pilot Consent Form.**	❑	❑
10. Paperwork is completed for Alternative Destination Case Review a. eMEDS® b. Original **MCFRS Alternative Destination Pilot Consent Form** c. Provider Quick Form	❑	❑

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Criterion 4: Non-Emergency Chief Complaints

1. Allergy or hay fever
2. Back pain, mild; able to walk without assistance
3. Contusions or abrasions, minor
4. Cough, mild; without hemoptysis or respiratory impairment
5. Non-traumatic dental problems
6. Diarrhea, without dizziness or other signs of dehydration
7. Dizziness, chronic (recurrent or known history)
8. Dysuria, mild; female
9. Ear pain
10. Ingrown toenails
11. Itching without systemic rash
12. Eye irritation without signs of active infection, minor
13. Fracture, distal extremity (forearm, lower leg), isolated injury, not open, With neuro/vascular intact
14. Headache, minor without neurological impairment
15. Injury follow-up (minor injury, treated previously)
16. Joint pain
17. Mouth blisters
18. Muscle aches
19. Nausea, vomiting
20. Neck pain (no history of acute trauma)
21. Nosebleed (resolved)
22. Painless urethral discharge
23. Physical exam requests (except patients with diabetes, CHF, kidney failure, cancer)
24. Plantar warts
25. Rectal pain/itching, minor
26. Sexual disease exposure
27. Simple localized rash
28. Sinusitis, chronic
29. Skin infection or sores, minor
30. Sore throat without stridor
31. Sunburn (localized without blisters)
32. Vaginal discharge
33. Vaginal bleeding (Hx non-pregnant, not postpartum, and requires less than one pad in 5 hours)
34. Upper respiratory infection
35. Work release or disability
36. Wound checks

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Draft MCFRS Alternative Destination Pilot Consent Form
(Method for copy to each: One patient, One MCFRS and ONE receiving)

I have called 9-1-1 to seek medical treatment. After assessment by and discussion with the Montgomery County Fire and Rescue Services (MCFRS) EMS provider, I have been offered transportation by the MCFRS to one of the following destinations:

PHASE 1:
- o Holy Cross Hospital Express Care in Silver Spring
- o I DECLINE TO PARTICIPATE in the pilot and want to go to Holy Cross Emergency Department or nearest appropriate emergency department

PHASE 2:
- o Kaiser Permanente Clinical Decision Unit in Gaithersburg
- o Holy Cross Hospital Express Care in Silver Spring
- o I DECLINE TO PARTICIPATE in the pilot and want to go to Holy Cross Emergency Department or nearest appropriate emergency department

I understand that the choice of where to receive medical care is my decision and that I can decide to be transported to a hospital emergency department or one of the destinations listed above.

I understand that if I have an emergency medical condition, a hospital emergency department is required under federal law to provide me a screening exam and stabilization regardless of my health insurance, and I further understand if I am a member of an HMO, under Maryland law an out-of-network hospital emergency department cannot balance bill me for treatment for an emergency medical condition.

I understand that I may revoke this decision and request transportation to a hospital emergency department at any time.

I understand that I may need to be transferred to the nearest appropriate emergency department if my illness or injury is found to be too serious to be managed at the alternative destination.

I understand that because of my participation in this pilot and transport to an alternative destination, MCFRS will not bill me for ambulance transport to the initial alternate destination.

At this time I wish to be transported to the destination checked above.

I also understand that this transportation and care choice arises out of a time-limited pilot project that has been authorized by MCFRS and by the State EMS Board. I understand that if I call 9-1-1 in the future, this pilot may be over and my transportation and care choice may be limited to only emergency departments. I also understand that other MCFRS patients may not be offered the same choices due to factors that may exclude them from the pilot program.

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Name:_____

Signature:_____ Date: _____

Patient Phone Number for Survey:_____

Witness Name and Relationship:_____

Signature:_____ Date: _____

MCFRS Pilot Triage Expert Provider: _____

Signature:_____

Upon delivery to alternative destination and after the patient has been screened and accepted:

Name of receiving staff (MD/DO/NP/RN):_____

Signature of receiving staff:_____

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Appendix B: MIEMSS Treat and Release/MDCN EMS Provider Protocol

PILOT PROGRAM
Minor Definitive Care Now, Baltimore City Fire Department

X. MINOR DEFINITIVE CARE NOW, BALTIMORE CITY FIRE DEPARTMENT (NEW '19)
Note: This document does not contain all of the material approved by the EMS Board. For the entire text of the protocol, contact the Office of the Medical Director

1. **PURPOSE**
   The objective of this pilot program is to assess the impact, accuracy and safety of providing low-acuity patients, identified as Alpha patients by IAED criteria (Basic Life Support), with immediate on-scene care by a two-person team composed of a BCFD Minor Definitive Care Now (MDCN) paramedic provider, and one of the following Advanced Level Providers (ALP): a UMMC Nurse Practitioner (NP), a Maryland-licensed physician affiliated with UMMC with board certification in emergency medicine ("Physician"), or UMMC Physician Assistant (PA). This will be referred to as the MDCN Team.

2. **INDICATIONS**
   a) Low-acuity patients, identified by the IAED™ MPDS® protocol as an 'Alpha determinant code Basic Life Support,' who meet additional criteria outlined in the MDCN protocol below; AND
   b) Patients with an incident address that falls within the geographic boundaries of the UMMC, Midtown Campus or Bon Secours catchment areas; AND
   c) Patients who consent to participate in the MDCN Pilot Program.

3. **CONTRAINDICATIONS**
   a) Patients who decline enrollment in MDCN Pilot Program;
   b) Patients who are deemed clinically inappropriate for on-scene treatment by the MDCN Team following assessment;
   c) Individuals who refuse participation by revoking written consent, verbal refusal of care at time of visit;
   d) Patients who possess a language or communication barrier that inhibits the MDCN Team's ability to appropriately address the patient's needs at the scene;
   e) Patients who are not able to or lack the capacity to understand the informed consent process; and
   f) Patients who have not yet reached their 18th birthday.

4. **GENERAL PROCEDURES**
   a) When a 911 call response for EMS service is dispatched, the MDCN Team will respond to the scene concurrently with the typical BCFD EMS response unit to Alpha-level calls within the UMMC, Midtown Campus and Bon Secours patient catchment areas.
   b) If a patient refuses EMS care and transport, a patient refusal form and eMEDS should be completed per MIEMSS Protocols while on scene.
   c) If the patient is determined to be a low acuity candidate for MDCN program (as defined in Section VI below), the BCFD EMS response personnel will offer the patient the option to be seen by the MDCN Team.
   d) The MDCN Team will request patient consent (see MDCN Consent Form) to provide minor definitive treatment on scene.

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e) Once consent is provided, patient information, including information collected by the EMS response personnel can be shared with the ALP.
f) The EMS response personnel will return to service. If the MDCN Team determines that the patient needs to be transported and the patient decides they want to be transported, or if for any reason, the patient decides they want to be transported, the MDCN Paramedic will radio PSAP for an EMS transport unit. After requesting the unit, the BCFD MDCN Paramedic will perform any advanced life support skills, as defined by the MIEMSS Protocols for EMS Providers, to provide all necessary care within their scope of practice, until additional EMS providers arrive on scene and assume patient care and transport to the closest appropriate hospital. Any care rendered under the MIEMSS Protocols will be documented in eMEDS.
g) The MDCN Team performs any additional assessment and if indicated, the ALP will render treatment (see 12. Formulary, below). The MDCN Paramedic may assist with patient assessment (e.g., vital signs, pulse oximetry), the ALP will provide treatment associated with the MDCN Pilot Program.
h) The ALP may also offer to assist patients with setting up clinic appointments. The Operations Center, located at UMMC, may call and connect patients to appropriate care, either inside or outside of the University of Maryland Medical System (UMMS), depending on need, preference, and insurance status of the patient.
i) The MDCN Team documents the patient care encounter in the UMMC electronic health record system ("Epic"). If at any time during the encounter the patient refuses further assessment or treatment, the refusal must be documented in Epic.

j) The UMMC ALP and BCFD MDCN Paramedic providers will be restricted to their respective scopes of practice set by the Maryland Board of Nursing, Maryland Board of Physicians and MIEMSS.

5. ADVANCED LEVEL PRACTITIONER PROCEDURES

a) This protocol may only be used by the Advanced Level Practitioner (ALP).
b) MDCN Paramedics will follow MIEMSS Protocols for EMS Providers.
c) Under the MDCN Pilot Program, all eligible patients will be offered the choice to "opt in" to receive on-scene definitive care. Participation in this pilot program is voluntary and will require patients to provide signed, informed consent. The on-scene treatment provided by the ALP will be in accordance with the medication and procedure list detailed in 12. Formulary and 13. Supply List, below.
d) Inclusion Criteria: the patient must provide consent and must not have any of the following exclusion criteria:

(1) A chief complaint consistent with evaluation that would indicate a need for the capabilities of a full service ED
   (a) High risk chief complaints are currently defined as dyspnea, altered mental status, syncope, chest pain, focal neurological deficits, unexplained back or abdominal pain, seizures, and sepsis (see vital sign criteria listed in 8. Medical Consultation, below).
(2) Physical findings consistent with time-dependent needs for emergent assessment or stabilization
   (a) Signs on exams that indicate a threat to airway, breathing, circulation, circulation to an extremity, disability (deficit) or deformity, as well as severe tenderness (as indicated by an assessment of airway, breathing, circulation, disability, exposure (ABCDE), etc.).
(3) Reasonably foreseeable signs or suspicion of any deterioration of condition (e.g. airway, breathing, hemodynamic or neurologic compromise)
(4) Any requirement for any advance life support (ALS) monitoring or ALS interventions

e) In order to include the patient in the MDCN Pilot Program, the MDCN Team will obtain a complete set of vital signs, medical history, and the ALP will obtain a signed MDCN Pilot Program Consent Form.
f) If the patient is stable and deemed by the ALP to meet the criteria of the MDCN protocol, and has an injury or disease process, which can be safely treated on scene:
   (1) The consenting patient will receive definitive on-scene care by the ALP member of the MDCN Team.
   (2) If the patient refuses to participate in the MDCN Pilot Program, the patient's condition deteriorates, or while on scene the patient changes their mind and declines to participate, the patient will be taken to the closest appropriate ED via ambulance. See 4. General Procedures above for response steps.
g) The MDCN Team will provide discharge instructions for each patient who participates in the MDCN Pilot Program.
h) In the event that the MDCN Team evaluates the consented patient and recommends ED transfer but the patient refuses, see 4. General Procedures for appropriate actions.

6. MEDICATION MANAGEMENT

The ALP is authorized to manage drugs and devices under the following protocols:

a) The management of drugs or devices includes evaluating, initiating, altering, discontinuing, furnishing and ordering of prescriptive and over-the-counter medications.
b) Medication evaluation includes assessment of:
   (1) Other medications being taken
   (2) Prior medications used for current condition
   (3) Medication allergies and contraindications, including appropriate labs and exams

c) The drug or device is appropriate to the condition being treated, and:
   (1) Accepted dosages per references.
   (2) Generic medications are ordered if appropriate.
d) A plan for follow-up is written in the patient's chart and provided to the patient.
e) The prescription must be written in patient's Epic chart including name of drug, strength, instructions and quantity, and signature of the ALP.

7. DISPENSING MEDICATIONS

The ALP may dispense prescription drugs and devices, under the following protocols:

a) They have current prescriptive authority, including Maryland CDS registrations.
b) All drugs and devices ordered are limited to the Formulary, OR are per the recommendations in the Resources listed in this document.
c) The drugs and devices ordered are consistent with the ALP's educational preparation or for which clinical competency has been established and maintained.
d) The drug or device ordered is appropriate to the condition being treated.
e) Patient education is given regarding the drug or device.
f) The name, title, and licensing number of the ALP is written on the transmittal order.
g) A physician affiliated with the MDCN Pilot Program is available during hours of operation for in person or telephone medical consultation.
h) The drug or device utilizes required pharmacy containers and labeling.
i) All appropriate record keeping practices of the dispensary are performed.
j) All other applicable Standardized Procedures in this document are followed during health care management.
k) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

8. MEDICAL CONSULTATION

While it is the intent of MDCN Pilot Program to respond to low-acuity calls, if immediate patient deterioration should occur, EMS transport resources shall be utilized.

MDCN Medical Director notification and/or emergent ALS transport to the closest appropriate ED with the following being examples of patients and scenarios that shall generate ALS transport:

a) Acute myocardial infarction (AMI) or symptoms consistent with AMI
b) Acute central nervous system or focal neurologic deficits
c) Severe CHF
d) Severe respiratory distress
e) O_2 Saturation < 90% on room air, if acute
f) Hypotension
g) Acute altered mental status, unless intoxicated
h) Adult heart rate > = 140
i) Emergency hypotension
j) Moderate to severe CHF

k) SBP > = 240 or DBP > = 140 at presentation (asymptomatic) with preexisting hypertension history
l) Adult heart rate > = 110 at time of disposition
m) The MDCN Team responds in < 14 days for same acute complaint *Does not apply to chronic recurrent complaints unless there is a change in the complaint*
n) Elevated BP or heart rate in pregnancy or < = 6 weeks post-partum
o) Pregnancy complications
p) Chest pain (potentially consistent with angina or angina equivalent symptoms)
   (1) Nonspecific chest pain age > = 30 with history of:
      - Hypertension
      - Diabetes
      - Smoking
      - Coronary artery disease
      - Hyperlipidemia
      - Family history of coronary artery disease by age of 60; OR

      Nonspecific chest pain age > = 50 without risk factors
      - Abdominal pain
      - Requiring analgesic

      Nonspecific chest pain age > = 70
      - Diabetic
      - Uncertain diagnosis

   (2) Lab Criteria:
      - D-Stick –low less than70 or greater than300
      - O2 Sat 2% less than chronic levels

   (3) Vital sign and age consult criteria
      - Heart rate/minute
        - Adult heart rate > = 110
      - Hypertension
        - Adult asymptomatic hypertension of SBP > 220 or DBP > 120 at time of disposition with history of hypertension
        - Adult asymptomatic SBP > 195 or DBP > 115 at disposition without history of hypertension

9. DOCUMENTATION AND DATA COLLECTION

The MDCN Paramedic will document signed patient initiated refusals in eMEDS®. The MDCN ALP will document patient assessment and care data in UMMC's electronic health record system ("Epic"). If emergent management and transport is required, the MDCN ALP will document the time and reason of 911 system activation in the Epic System note. The MDCN Paramedic will document patient information in eMEDS® per MIEMSS protocol.

10. QUALITY ASSURANCE/QUALITY IMPROVEMENT

The MDCN Pilot Program is operating under the medical direction of the Jurisdictional Deputy Medical Director, upon the designation by and under the supervision and direction of the Jurisdictional Medical Director, who will ensure that triage protocols are safe and effective for each patient who participates in the MDCN

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Pilot Program. The Jurisdictional Deputy Medical Director and BCFD Deputy Chief of EMS, will provide oversight for adherence to pilot protocols, communication and training. The MDCN QA/QI committee (MDCN QA/QI) will meet or hold weekly teleconferences during the duration of the MDCN Pilot Program to review cases, discuss emergent trends, ensure that pilot protocols are not leading to suboptimal triage and identify areas for improvement. Any time there is an unscheduled reentry of a MDCN patient into emergency health care system, within 72 hours of receiving on scene care, this will trigger an automatic review. The MDCN QA/QI will report MDCN Pilot Program metrics to the State EMS Medical Director on a quarterly basis.

a) The internal quality improvement process will be managed by BCFD Office of QA/QI MDCN QA/QI Committee.
b) Pilot Metrics: key metrics include, but are not limited to, the following:
   (1) Number and type of upgrades from on-scene care through the MDCN Pilot Program to 911 emergency transport (with information on specific signs/ symptoms, presentation, type of treatment rendered, and final diagnosis)
   (2) Number of patients that qualified for MDCN Pilot Program, the number of patients that qualified and consented to receive MDCN services, the number of patients that qualified and refused to receive in MDCN services (including reason for refusal if available)
   (3) Time from when EMS transport units and suppression units are first notified until back in service (Total call duration time – Cycle Time) for MDCN calls
   (4) Time from when MDCN units consent until back in service (Total call duration time – Cycle Time) for MDCN calls
   (5) Listing of the ALP diagnosis, treatment interventions, disposition and destination/referral and re-entry into the health care system (associated with original EMS complaint) within 72 hours.
   (6) Patient satisfaction survey results:
      (i) Was patient satisfied with the choice to receive services through MDCN Pilot Program? (Y/N)
      (ii) How does the patient rate the MDCN Pilot Program on a scale of 1-5 with 1 being the lowest and 5 being the highest
      (iii) Did the patient experience any complications associated with the care received through the MDCN Pilot Program? In the event a patient reports a complication, the Ops Center will offer to assist the patient in coordinating appropriate follow-up care.
      (iv) Did the patient have any complaints with the care the patient received from the MDCN Pilot Program?
      (v) Did the patient report satisfaction with the care received from MDCN Pilot Program?
      (vi) Did the patient report re-entry into the health care system?
      (vii) Did the patient have additional unscheduled re-entry into the health care system (associated with original EMS complaint) within 72 hours?
      (viii) What are the pre-implementation performance measures (above) for the units in the MDCN Pilot Program area?

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(ix) Any untoward events or formal patient complaints with detailed explanation
(x) Any deviation or challenges of the ALP's implementation of the MDCN protocol
(xi) Average Midtown, UMMC ED and Bon Secours wait time changes related to implementation of the MDCN Pilot Program.

11. FORMULARY

- Acetaminophen 500MG
- Amoxicillin 500MG
- Amoxil/Clav 875MG
- Antipyrine & Benc OTIC 10ML 5.4%-1.4%
- Azithromycin 250MG 1X6 tab single card
- Bacitracin
- Benzonatate 100MG
- Cephalexin 500MG
- Cyclobenzaprine HCL 10MG
- Cerumenex ear drops
- Diphenhydramine 25MG
- Diphenhydramine Spray (topical)
- Doxycycline 100MG
- Erythromycin optho ointment .5%
- Famotidine 20MG
- Ibuprofen 600MG
- Ketorolac (intramuscular)
- Levofloxacin
- Lidocaine INJ 1%
- Lidocaine VISC 2%
- Loratadine 10MG
- Meloxicam 7.5MG
- Ondansetron 4MG ODT
- Penicillin VK 500MG
- Piperocaine (ophthalmic)
- Polymyxin B (topical)
- Prednisone 10MG
- Promethazine 25MG
- Silver sulfadiazine cream
- Tramadol HCL 50MG
- Triamcinolone cream 0.1% 15GM
- Ventolin HFA 90 MCG 8 GM/60 inhaler
- TDAP INJ

12. SUPPLY LIST

In addition to the full BCFD Advance Life Support equipment, the following supplies will be added:

- Syringes and needles for local irrigation and wound infiltration
- Irrigation splash guard

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- Glucometer
- Single-use medical procedure trays and kits
- Eye Shield
- Ear syringes
- Ear wicks
- Ear wax removers
- Alligator forceps
- Clinical swabs, applicators, specimen collectors, sponges, pads, tongue depressors, wooden spoons, cotton balls, or cotton rolls
- Antiseptic wipes
- Splints
- Crutches
- Orthopedic supports, braces, wraps, shoes, boots, or pads
- Medical bandages, gauze, dressings, tape, swabs, sponges, and burn dressings
- Surgical sutures and staples; and removal kits
- Tourniquet
- Thermometer
- Clinical basin
- Medical bags for medical supplies and equipment; including pre-packed bags
- Medical linens (e.g., blankets, sheets, pillow cases, towels, washcloths, drapes, covers)
- Stool, stand
- Privacy screen
- Adhesive tape
- Spirometer
- Disposable nitrile gloves
- Eyechart
- Sharps container
- Waste bin
- Headlamp
- Saline for irrigation
- Oto/ophthalmoscope
- Scalpels
- Stitch/staple removal set
- Lodoform packing - 1/4 inch x 5 yards
- Dermabond
- Irrigation splash field
- Fluorescein eye
- Woods Lamp

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MINOR DEFINITIVE CARE NOW, BALTIMORE CITY FIRE DEPARTMENT CONSENT FORM

Informed Consent for
Minor Definitive Care Now

The Baltimore City Fire Department ("BCFD") and the University of Maryland Medical Center ("UMMC") are collaborating to offer you the opportunity to participate in the Minor Definitive Care Now ("MDCN") Program. If you are receiving this Consent form, it means that the EMS team has determined you might benefit from the MDCN Program. The MDCN Team consists of either a UMMC Nurse Practitioner, UMMC Physician Assistant or UMMS Physician (a "UMMC Provider"), and a BCFD Paramedic. The MDCN Team can provide on-site minor care to you.

Please read this Consent carefully. Ask questions about anything that is not clear at any time.

- Receiving a medical assessment and care from the MDCN Team is completely voluntary – your choice.
- If you decide to receive a medical assessment and care from the MDCN Team, you can still stop at any time.
- No one can promise that the additional medical assessment and care will help you.
- Treatment provided on an emergency basis is not intended to be comprehensive in scope and it may be necessary for you to seek care from another physician for further diagnosis and continuation of treatment.
- Do not consent unless all of your questions are answered.

This Consent will:

- Describe the medical assessment and types of minor care that can be provided, including what services and benefits may be available to you as a participant;
- Describe how your personal health information will be treated as a participant in the Program; and
- Describe whether receiving medical assessment and care could involve any cost to you.

The Program. The MDCN Program is a community-based, cost-effective health care solution designed to provide effective and efficient care outside of the hospital.

Goals. A goal of the MDCN Program is to improve minor definitive care in the out-of-hospital setting, specifically for patients like you, with minor conditions.

Receiving a medical assessment and treatment requires your agreement. A UMMC Provider and BCFD Paramedic will perform additional medical assessment and discuss the findings before asking you whether you want treatment. They will also discuss your medications, physical, social and mental health history and answer any related questions. You will not be charged for the minor care provided onsite by the MDNC Team. The services of the BCFD EMS for transportation should you decide to go to a hospital, any other services provided by the BCFD EMS or to you at a hospital or as the result of a referral to another health care provider; however, may be billed to you and/or your insurance provider.

Primary Care Provider. Receiving medical assessment and treatment for minor care is not a substitute for seeing your primary care provider (PCP) for regular appointments. If you do not have a regular PCP, we can find one for you. This intervention is not meant to take the place of the care you receive from any other provider, including your regular PCP.

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Photography and/or Video Record. Your UMMC Provider may need to photograph and/or record you to document a medical condition and/or help with the diagnosis and/or treatment of a condition. Photographs and/or recordings taken for these clinical reasons do not require your written permission.

Your Health Information. The UMMC Provider and BCFD Paramedic providing medical assessment and care to you will maintain the privacy of your health care information in compliance with Maryland and federal laws and regulations.

Questions. If you have any questions at any time, you can call: (410) 328-4321

Consent to Participate. BY SIGNING THIS CONSENT BELOW, YOU ARE CONFIRMING THAT YOU HAVE VOLUNTARILY CHOSEN TO RECEIVE MEDICAL ASSESSMENT AND CARE FROM THE MDCN TEAM PROVIDERS DESCRIBED ABOVE AND THAT YOU HAVE READ THIS CONSENT AND FULLY UNDERSTAND IT.

IN CONSIDERATION FOR RECEIVING MEDICAL ASSESSMENT AND CARE FROM THE MDCN TEAM DESCRIBED ABOVE, YOU HEREBY WAIVE ANY CLAIM OR CAUSE OF ACTION OF ANY NATURE THAT YOU HAVE, OR MAY HAVE IN THE FUTURE, AGAINST ANY AND ALL INDIVIDUALS OR ORGANIZATIONAL PARTICIPANTS IN THE MINOR DEFINITIVE CARE NOW PROGRAM, INCLUDING BUT NOT LIMITED TO THE UNIVERSITY OF MARYLAND MEDICAL SYSTEM CORPORATION AND ITS AFFILIATES, AND THE MAYOR AND CITY COUNCIL OF BALTIMORE, ITS BALTIMORE CITY FIRE DEPARTMENT AND ITS OFFICERS, AGENTS OR EMPLOYEES; AND FURTHER, YOU AGREE TO RELEASE AND HOLD HARMLESS ANY AND ALL MEMBERS OF THE PROGRAM TEAM FROM AND AGAINST ALL DAMAGES OF ANY KIND, TO PERSONS OR PROPERTY, GROWING OUT OF OR RESULTING FROM THE MEDICAL ASSESSMENT AND CARE.

Signature: _____ Date: _____

Print Name: _____

Street Address: _____

City, State, Zip: _____

Daytime Phone: _____ Evening Phone: _____

Person Obtaining Consent. By signing below, I confirm that I have explained this form to the above-named participant and answered all of the participant's questions to the best of my ability.

Signature: _____ Date: _____

Print Name: _____ Time: _____

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Appendix C: MIEMSS MIH EMS Provider Protocol

OPTIONAL SUPPLEMENTAL PROGRAM
MOBILE INTEGRATED COMMUNITY HEALTH PROGRAM

R. MOBILE INTEGRATED COMMUNITY HEALTH PROGRAM

1. PURPOSE

The purpose of this pilot protocol is to establish guidelines for the Mobile Integrated Community Health Pilot Program (MICHPP). The MICHPP is part of a jurisdictional/commercial or regional oversight committee. The oversight committee has, at a minimum, representatives from a Jurisdictional/Commercial EMS Operational Program (EMS Medical Director and EMS Operations), local health department, and local/regional hospital system(s). The EMSOP oversight committee must conduct a community gap/needs assessment to identify frequent utilizers of 9-1-1 services.

This program is established to identify individuals who frequently utilize 9-1-1 for non–life-threatening or medical reasons, and to assist in linking them with community resources and unexplored medical/social programs that will most appropriately meet their needs. The MICHPP team consists of a nurse practitioner/registered nurse and experienced Paramedic. The uniformed MICHPP Paramedic may perform an abuse/neglect evaluation, conduct a home safety check, perform vital sign acquisition (i.e., temperature, pulse, RR, BP, pulse oximetry) for the nurse practitioner/registered nurse (NP/RN), and document findings jointly with the NP/RN. The NP/RN will perform the individual assessment, medication reconciliation/compliance, make referrals, interface with the primary health care professional/physician, and make recommendations to the patient.

2. INDICATIONS

Individuals who may qualify for a home visit by the MICHPP team include:

a) Patients who have called 9-1-1 for any medically-related reason five times in any six-month interval (individual's consent required) or
b) Patients who are referred to the MICHPP by other allied health professionals or EMS providers (individual's consent required)

3. PRECAUTIONS

Upon initiation of the home visit, if any individual were to exhibit any signs or symptoms that would require transport to an emergency department, the MICHPP team will contact the county dispatch center who will be directed to generate an emergent response for that individual.

The MICHPP Paramedic will perform all assessments and care based on current Maryland Medical Protocols for EMS Providers until the appropriate EMS resource's arrival; care may then be transferred to that EMS unit. The NP/RN cannot direct the Paramedic to perform any skill or medical intervention that is not within his or her scope of practice nor provide "Medical Consultation" as referenced in the Maryland Medical Protocols for EMS Providers.

4. CONTRAINDICATIONS

Individuals who will not qualify for this program include:

a) Individuals already receiving care from a patient-centered medical home (PCMH) or who have already established individual home health care or use a visiting nurse agency

OPTIONAL SUPPLEMENTAL PROGRAM
MOBILE INTEGRATED COMMUNITY HEALTH PROGRAM

b) Individuals who refuse participation by revoking written consent, verbal refusal of care at time of visit, or integration into programs as in 4. a) above
c) Patients who have not reached their 18th birthday

5. PROCEDURE

After an individual has consented to be included in this program, a scheduled home visit will be performed as follows:

a) Uniformed Paramedic will:
   (1) Provide a recognized uniformed presence for individual reassurance and familiarity.
   (2) Assess the individual's home.
      (a) Assess for signs of neglect or abuse.
      (b) Assess for safety issues (e.g., slip/fall risk, smoke detector, fire, exposed electrical).
   (3) Obtain basic vital signs.
      (a) Heart rate
      (b) Blood pressure
      (c) Pulse oximetry
      (d) Respiratory quality and rate
      (e) Temperature
      (f) Weight

ALERT PARAMEDIC WILL NOT BE PERFORMING BLOOD DRAWS (WITH THE EXCEPTION OF BLOOD GLUCOSE), MEDICATION ADMINISTRATION, OR ALS INTERVENTIONS UNLESS AN IMMEDIATE LIFE-THREATENING CONDITION HAS BEEN IDENTIFIED AND THE 9-1-1 CENTER HAS BEEN NOTIFIED AND AN EMS RESPONSE INITIATED.

b) NP/RN will
   (1) Evaluate for any immediate life-threatening condition.
   (2) Assess for signs of neglect or abuse.
   (3) Review vital signs.
   (4) Obtain and review the individual's past medical history.
   (5) Determine the individual's family and social history.
   (6) Review medication.
   (7) Review behavioral health.
   (8) Conduct a basic physical assessment including a focused review of systems.
   (9) Make appropriate health professional contacts, medication modifications education, and referrals

6. MEDICAL CONSULTATION as defined in *The Maryland Medical Protocols for EMS Providers*

a) Obtained through Jurisdictional/Commercial EMS Medical Director or designated Base Station
b) Paramedics cannot accept orders from primary care physicians on the phone or on-scene unless individual has an immediate life-threatening condition and the physician is going to the hospital with individual on EMS unit.

7. DOCUMENTATION AND DATA COLLECTION

a) All data (by Paramedic/NP/RN) will be collected in a patient care record that will have a data set that will meet the required QA/QI performance measure of section 8 of this protocol.

b) The MICH program will establish policies and procedures for sharing of protected health information across allied health, social services, and community organizations, with resources available for patients.

c) In the event that an immediate life-threatening condition is identified and the MICHPP Paramedic initiated EMS care:

(1) The MICHPP Paramedic shall complete an entire eMEDS® report (or Commercial EMSOP equivalent) documenting care provided.

(2) The NP/RN will complete the MICH patient care report documenting the activation of an EMS response due to immediate life-threatening condition and NP/RN individual care provided.

8. QUALITY ASSURANCE/QUALITY IMPROVEMENT

a) All calls will be reviewed by an EMSOP QA Committee consisting of Nursing, EMS, Administrative, and EMS Medical Director.

b) Data reports will be generated monthly (for the first year, and then quarterly) to the Office of the State EMS Medical Director and to the Oversight Committee.

c) The MICH metrics for reporting are as follows:

(1) The number of patients that qualified, and the number that have consented and enrolled in the MICHPP and the number that refused (ideally with the reason for refusal)

(2) The number and frequency of EMS transports and encounters for the recruited MICH patients (trending the access of health care services) for both pre- and post- enrollment of the patient into the MICHPP

(3) Aggregate summary of patient satisfaction survey (completed upon conclusion of each visit)

(4) Patient Quality of Life survey scores for both pre- and post- enrollment of the patient into the MICHPP (CDC HRQOL– 4, below)

(5) Any problems identified in complying with or applying the pilot program by the NP, RN, or Paramedic

(6) Any untoward events or formal patient complaints with detailed explanation

(7) Any increase of the number and percent of patients utilizing a primary care provider (PCP) (if none upon enrollment)

(8) Number of referrals to additional allied health, social services, or programs that the MICHPP determines as beneficial per patient and recruited patient compliance

(9) Number and percent of medication inventories conducted with issues identified and communicated to PCP

(10) Monthly run chart reporting and/or pre-post emergency department intervention comparison

(11) Where possible, cost expenditures and cost savings (part of quarterly and annual reporting)

(12) Number and percent of safety-related interventions (physical environment assessment tool and Hendrich fall risk assessment tool)

OPTIONAL SUPPLEMENTAL PROGRAM
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Healthy Days Core Module (CDC HRQOL– 4)
(The numbers behind answers are for coding purposes.)

1. Would you say that in general your health is:

Please Read

a. Excellent	1
b. Very good	2
c. Good	3
d. Fair or	4
e. Poor	5
Do not read these responses	
Don't know/Not sure	7
Refused	9

2. Now thinking about your physical health, which includes physical illnes and injury, for how many days during the past 30 days was your physical health not good?

a. Number of Days	– –
b. None	88
Don't know/Not sure	77
Refused	99

3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

a. Number of Days	– –
b. None	88 (If both Q2 and Q3 = "None," skip next question)
Don't know/Not sure	77
Refused	99

4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

a. Number of Days	– –
b. None	88
Don't know/Not sure	77
Refused	99

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Hendrich II Fall Risk Model™			
Confusion Disorientation Impulsivity		4	
Symptomatic Depression		2	
Altered Elimination		1	
Dizziness Vertigo		1	
Male Gender		1	
Any Administered Antiepileptics		2	
Any Administered Benzodiazepines		1	
Get Up & Go Test			
Able to rise in a single movement – No loss of balance with steps		0	
Pushes up, successful in one attempt		1	
Multiple attempts, but successful		3	
Unable to rise without assistance during test (OR if a medical order states the same and/or complete bed rest is ordered) *If unable to assess, document this on the patient chart with the date and time		4	
A Score of 5 or Greater = High Risk		**Total Score**	

Appendix D: Analytic Steps for Projecting Costs and Savings of EMS Alternate Destination

Costs:

- Used the MCDB and calculated the total number of 9-1-1 calls that were not transported for the commercially insured population
- Used the Maryland MCDB to determine the unit cost of EMS transports
- Used the Maryland MCDB to determine the average cost of an ED visit
- Multiplied the unit cost of transports and ED visits by the incremental number of 9-1-1 calls that were not transported to estimate the total claims cost
- Divided the total claims cost by the corresponding membership to determine the PMPM cost

Savings:

- Used a combination of literature and e-meds data and calculated the percentage of 9-1-1 calls that could be transported to an alternate destination
- Used the MCDB and calculated the total number of 9-1-1 calls for the commercially insured population
- Multiplied the total number of 9-1-1 calls by the percentage of calls that could be transported to an alternate destination to calculate the number of alternate destination 9-1-1 calls
- Calculated the savings by determining the difference in the average cost of the ED vs. an urgent care center visit
- Multiplied the number of alternate destination transports by the difference in average cost calculated above to estimate the claims savings
- Divided the total claims savings by the corresponding membership to determine the PMPM savings

Appendix E: Analytic Steps for Projecting Costs and Savings of EMS Treat and Release

Costs:

- Used a combination of literature and pilot program data and determined the number of commercially enrolled patients eligible for treat and release
- Calculated the percentage of 9-1-1 calls that were treat and release
- Applied the percentage of treat and release 9-1-1 calls to the total number of 9-1-1 calls in the commercially insured population to estimate the total number of treat and release patients
- Estimated the cost per service for treat and release using 75% of the average cost of an EMS transport
- Calculated the unit cost of a physician office visit that is typical follow-up to treat and release
- Multiplied the number of treat and release patients by the cost per service and the cost per office visit to get the total claims cost
- Divided the total claims cost for each payer type by the corresponding membership to determine the PMPM cost

Savings:

- Calculated the savings by determining the average cost of the ED and of an EMS transport
- Multiplied the number of treat and release services by the average cost of the ED plus an EMS transport
- Divided the total claims savings by the corresponding membership to determine the PMPM

Appendix F: Analytic Steps for Projecting Costs and Savings of EMS MIH

Costs:

- Used Maryland MIH pilot programs data to construct an historical baseline profile broken into budget amounts, expenditure amounts, and number of enrolled participants
- From the pilot program data, calculated the total expenditure per enrolled participant per year
- From the pilot program data, determined the number of commercially enrolled participants
- Calculated the percentage of participants relative to the total eligible commercial fully insured population within the pilot programs geographic area
- Applied the percentage of enrolled participants to the statewide commercial fully insured membership to estimate the number of participants for the fully insured population
- Multiplied the number of enrolled participants by the cost per enrolled participant to estimate the claims cost
- Divided the total claims cost by the corresponding membership to determine the PMPM cost

Savings:

- Calculated the savings by determining the reduction in readmissions, EMS transports, and ED use
- Used the MIH pilot program's data and published data from other states' MIH programs to determine the reductions
- Multiplied the reduction in readmissions, EMS transports, and ED use by the average cost of readmission, average cost of an EMS transport, and average ED visit cost respectively to estimate the claims savings
- Divided the total claims savings by the corresponding membership to determine the PMPM savings

Appendix G: Glossary of Terms

Fully-Insured Plan: A plan where the employer contracts with another organization to assume financial responsibility (or risk) for the enrollees' medical claims and for all incurred administrative costs.[i]

Grandfathered Plan: A health insurance policy in the individual or small group market in which an individual was enrolled on March 23, 2010 and which has not made certain significant changes that reduce benefits or increase costs to consumers since that time. These plans may not include some rights and protections provided under the Affordable Care Act (such as EHBs). Plans may lose "grandfathered" status if they make certain significant changes that reduce benefits or increase costs to consumers since that time. A health plan must disclose to consumers whether it considers itself a grandfathered plan. New employees and family members may be added to existing grandfathered plans after March 23, 2010 without that plan losing grandfathered status. Individual market plans sold after March 23, 2010 are not grandfathered plans and are subject to ACA regulations.[ii]

Group Market: The health insurance market under which individuals obtain health insurance coverage (directly or through any arrangement) on behalf of themselves (and their dependents) through a group health plan maintained by an employer.[iii]

Individual Market: The market for health insurance coverage offered to individuals other than in connection with a group health plan.[iv]

Large Group Market: The health insurance market under which individuals obtain health insurance coverage (directly or through any arrangement) on behalf of themselves (and their dependents) through a group health plan maintained by an employer who employed an average of at least 51 employees on business days during the preceding calendar year and who employs at least 1 employee on the first day of the plan year.[v]

Self-Insured Plan: A plan offered by employers who directly assume the cost (and risk) of health insurance for their employees. Some self-insured plans bear the entire risk. Self-insured

[i] Federal Government's Interdepartmental Committee on Employment-based Health Insurance Surveys, "DEFINITIONS OF HEALTH INSURANCE TERMS", Bureau of Labor Statistics, https://www.bls.gov/ncs/ebs/sp/healthterms.pdf

[ii] Definition based on "Grandfathered Health Plan" on healthcare.gov: https://www.healthcare.gov/glossary/grandfathered-health-plan/

[iii] Affordable Care Act § 1304(a) (42 U.S.C. 18024(a).

[iv] Affordable Care Act § 1304(a) (42 U.S.C. 18024(a).

[v] Affordable Care Act § 1304(a) (42 U.S.C. 18024(a) and (b).

employers may contract with insurance carriers or third party administrators for claims processing and other administrative services. [vi]

Small Group Market: The health insurance market under which individuals obtain health insurance coverage (directly or through any arrangement) on behalf of themselves (and their dependents) through a group health plan maintained by an employer who employed an average of at least 1 but not more than 50 employees on business days during the preceding calendar year and who employs at least 1 employee on the first day of the plan year.[vii]

[vi] Federal Government's Interdepartmental Committee on Employment-based Health Insurance Surveys, "DEFINITIONS OF HEALTH INSURANCE TERMS", Bureau of Labor Statistics, https://www.bls.gov/ncs/ebs/sp/healthterms.pdf

[vii] Affordable Care Act § 1304(a) (42 U.S.C. 18024(a) and (b).

Endnotes

[1] Maryland Health Care Commission (MHCC) and Maryland Institute for Emergency Medical Services Systems (MIEMSS). Coverage and Reimbursement for Emergency Medical Services Care Delivery Models and Uncompensated Services. Reports required under Senate Bill 682. Accessed 25 November 2019: https://mhcc.maryland.gov/mhcc/pages/home/workgroups/documents/EMSReimburs/MIEMSS%20MHCC%201_25_2018%20FINAL%20for%20Legislature.pdf.

[2] MIEMSS oversees and coordinates all components of the statewide EMS system in accordance with Maryland statute and regulation.

[3] HSCRC is an independent State regulatory commission appointed by the governor that is authorized to set Maryland hospital rates to promote cost containment, access to care, equity, financial stability, and hospital accountability.

[4] Maryland Institute for Emergency Medical Services Systems and Health Services Cost Review Commission. Joint Chairman's Report on Emergency Department Overcrowding. December 2017.

[5] Maryland Institute for Emergency Medical Services Systems and the Health Services Cost Review Commission, "Emergency Department Overcrowding Update", November 2019. http://www.miemss.org/home/Portals/0/Docs/LegislativeReports/miemss-ed-overcrowding-update-10-31-19.pdf?ver=2019-11-19-174743-763.

[6] Currently, health insurers do not reimburse EMS in Maryland unless a patient is transported to a hospital ED or other approved location.

[7] Maryland Health Care Commission (MHCC) and Maryland Institute for Emergency Medical Services Systems (MIEMSS). Coverage and Reimbursement for Emergency Medical Services Care Delivery Models and Uncompensated Services. Reports required under Senate Bill 682. Accessed 25 November 2019: https://mhcc.maryland.gov/mhcc/pages/home/workgroups/documents/EMSReimburs/MIEMSS%20MHCC%201_25_2018%20FINAL%20for%20Legislature.pdf.

[8] MIEMSS, "Reimbursement for New Models of EMS Care Delivery", December 2019.

[9] More information on the ET3 program is available at https://innovation.cms.gov/initiatives/et3/.

[10] Centers for Medicare & Medicaid Services (CMS.gov). The Center for Consumer Information & Insurance Oversight. Information on Essential Health Benefit Plans. Accessed 12 December 2012: https://www.cms.gov/cciio/resources/data-resources/ehb.html and Centers for Medicare and Medicaid Services. https://www.cms.gov/CCIIO/Resources/Files/Downloads/ehb-faq-508.pdf "Frequently Asked Questions on Essential Health Benefits Bulletin."

[11] Accessed 10 October 2019: https://www.govinfo.gov/content/pkg/BILLS-111hr3590enr/pdf/BILLS-111hr3590enr.pdf.

[12] Centers for Medicare & Medicaid Services (CMS), Center for Consumer Information and Insurance Oversight, Information on Essential Health Benefits (EHB) Benchmark Plans. Accessed 10 October 2019: https://www.cms.gov/cciio/resources/data-resources/ehb.html.

[13] 42 U.S.C. §1395dd. Accessed 26 November 2019: https://codes.findlaw.com/us/title-42-the-public-health-and-welfare/42-usc-sect-1395dd.html.

[14] In 2017, the U.S. District Court of Rhode Island ruled that an urgent care center that was difficult to distinguish from its associated hospital should be held to EMTALA's requirements.

[15] Priority 1 – critically ill or injured person requiring immediate attention; unstable patients with life-threatening injury or illness. Priority 2 – less serious condition yet potentially life-threatening injury or

illness, requiring emergency medical attention but not immediately endangering the patient's life. Priority 3 – nonemergent condition, requiring medical attention. Priority 4 – does not require medical attention.

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[68] The visits that are diverted from the ED to an urgent care center are more complex urgent care visits with more services. We calculated a frequency of the Maryland urgent care allowed cost per visit and used the top 50% of the allowed amounts per visit, which would represent the more complex cases. The urgent care paid claim expenses for this subset was used to calculate the cost per visit.

[69] This percentage is low for a couple of reasons. First, it occurred during the initial year of the pilot, and only lowest priority calls were included. Eligibly will eventually be expanded to include physician referrals, which should increase the number of treat and release patients. At full capacity, Baltimore City hopes to provide these benefits to approximately 1.7% of all EMS transports. We interviewed a commercial carrier that covers treat and release in their commercial market; the carrier cited similar challenges and figures to Baltimore City.

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