

Community Paramedicine: A Promising Model for Integrating Emergency and Primary Care

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Introduction

Community paramedicine (CP) is a new and evolving model of community-based health care in which paramedics function outside their customary emergency response and transport roles in ways that facilitate more appropriate use of emergency care resources and/or enhance access to primary care for medically underserved populations.¹ CP programs have been independently developed in a number of states and countries, and thus are varied in nature. These programs typically have been designed to address specific local problems and to take advantage of locally developed collaborations between and among emergency medical services (EMS) and other health care and social service providers. Interest in this model of care has grown substantially in recent years in the belief that it may improve access to and quality of care while also reducing costs.

Historically, EMS has focused on providing emergency treatment for persons suffering acute medical problems in community settings, while transporting such persons to a hospital emergency department (ED), and when needed, in the ED until care is taken over by hospital staff. EMS personnel also have been utilized to transport ill or injured persons between hospitals.

The inherent nature of emergency care makes it more expensive than many other types of health care services. EMS systems and hospital EDs must be prepared to handle a wide array of routine and unusual problems that occur unexpectedly and often require a rapid response with specialized skills and equipment because the problems are serious and sometimes life threatening. Consequently, the fixed costs associated with operating and maintaining emergency care services are high.

As concern about rising health care costs has grown in recent years, increased efforts have been directed at ensuring that expensive emergency care resources are optimally utilized. Also, because the overwhelming majority of EMS systems rely on fire departments and other publicly funded agencies to provide at least some services, and because most local governments are under significant financial strain, local EMS providers have increasingly sought to secure additional sources of financial support. Early experiences with CP programs suggest that they may lead to more optimal use of EMS assets and offer some potential for diversification of the EMS funding base. In particular, CP programs may result in:

1. **More appropriate use of emergency care services.**

Perhaps the best demonstrated benefit of CP programs has been in getting persons who have accessed the EMS system, but do not have a medically emergent condition, to more appropriate destinations than a hospital ED. This may yield financial savings and, in some cases, improve the coordination and continuity of care.

2. **Increased access to primary care for medically underserved populations.**

Some CP programs have provided solutions to primary care problems that were otherwise not being well addressed. For example, some CP programs provide short-term (e.g., within 72 hours of discharge) follow-up home visits for patients who have just been discharged from a hospital or ED until other providers are able to provide the home visits or other follow-up care. Such follow-up care may help prevent ED or hospital readmissions.

3. **Enhanced opportunities for EMS personnel skills development and maintenance.**

CP programs aimed at providing primary care for medically underserved populations may also provide opportunities for EMS personnel in low-call-volume settings (e.g., rural areas) to further develop patient assessment skills, as well as more frequently utilize their basic skills. This helps them maintain their skills and expand their clinical experience.

Recognizing the widening gap between the demand for health care services and California's supply of health care workers, and of the need for health care resources to be optimally utilized, including providers working as much as possible at the top of their skills, the California HealthCare Foundation and California Emergency Medical Services Authority (EMSA) asked the Institute for Population Health Improvement (IPHI), University of California Davis Health System, to assess the feasibility of developing community paramedicine programs in California.² They asked IPHI to explore whether use of paramedics in expanded roles might be a practical option for California communities to consider when addressing health care needs in coming years.

This report provides a brief history of EMS systems and paramedicine in California, a broad overview of the development

of community paramedicine in other states and countries, a summary of current perspectives on CP in the state based on interviews with key stakeholders, and a discussion of the barriers to implementing CP programs in California. We conclude the report with several recommendations for further exploration of the role of community paramedicine in California.

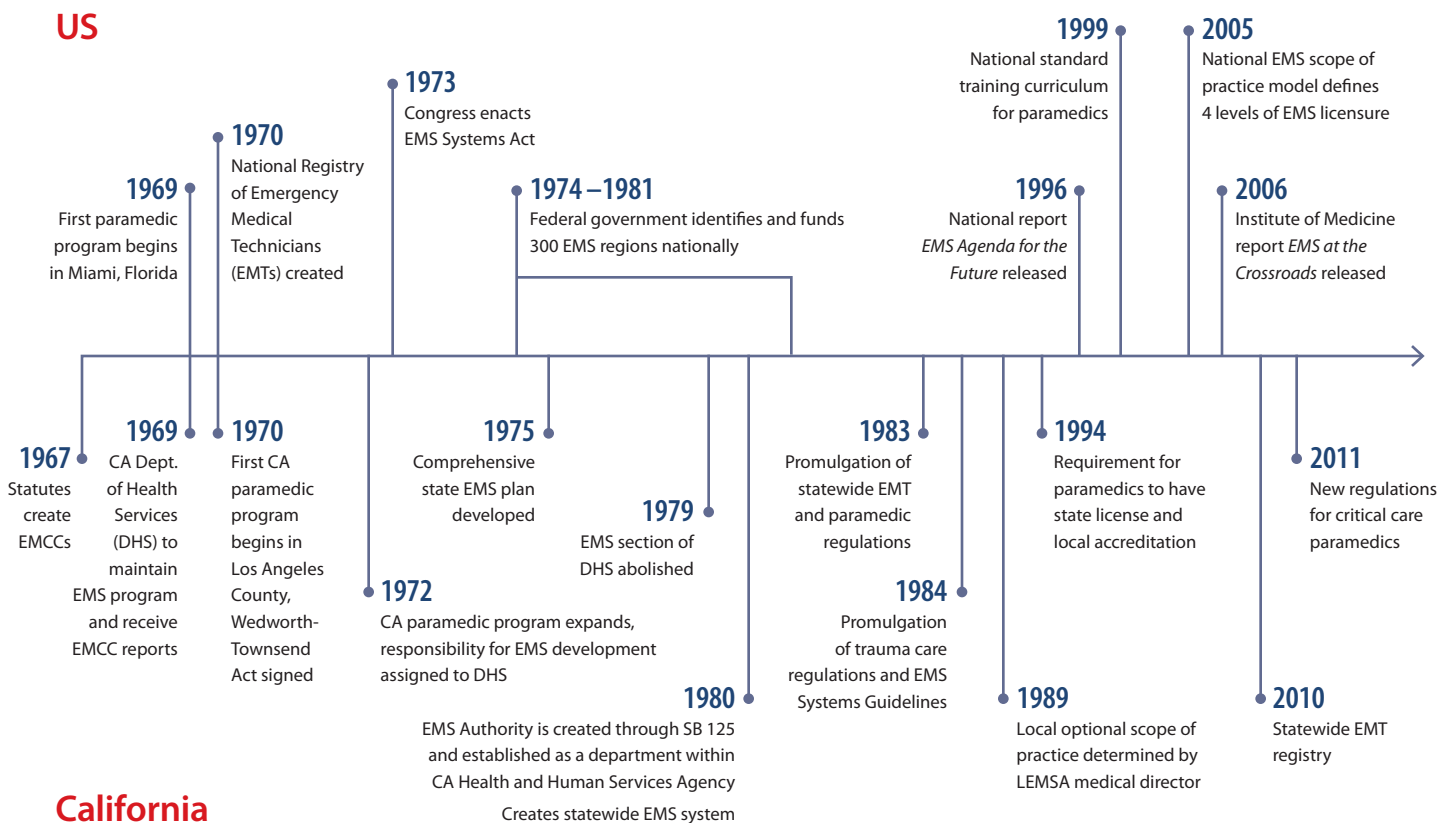
The Evolution of Emergency Medical Services in California

The term paramedicine refers to public health or health care-related activities performed by nonphysicians working as adjuncts or assistants to doctors. Paramedicine has been used most often to refer to emergency medical care provided outside of hospitals, although it is by no means limited to emergency care. The history of emergency care paramedicine is especially linked to military medicine and dates back to the Roman legions, when aging centurions no longer able to fight were used to provide aid to and remove wounded warriors from the battlefield.

The evolution of modern paramedicine and EMS in California began in the late 1960s, concomitant with the growing awareness in the state and nation of the alarmingly high number of out-of-hospital deaths from trauma and cardiac arrest.³ A pilot project using mobile intensive care paramedics was formally launched in Los Angeles County in early 1970. The Wedworth-Townsend Paramedic Act, which defined the role and scope of practice of mobile intensive care paramedics and nurses, was signed into law by then governor Ronald Reagan on July 14, 1970. It made California the first state to adopt legislation permitting paramedics to provide advanced medical life support.⁴ The LA County paramedic pilot program was expanded in 1972, and other California counties soon began to develop EMS programs.

Responsibility for coordinating EMS development in the state was initially assigned to the EMS Section of the then California Department of Health Services (DHS). However, the department did not place a high priority on EMS and found itself increasingly at odds with the state's growing EMS community. DHS abolished

FIGURE 1. Timeline of EMS Milestones in the US and California



Note: EMCC = emergency medical care committee, LEMSA = local EMS agency.

its EMS Section in 1979, resulting in counties becoming the focal point of EMS systems development and leading to enactment of legislation in 1980 creating a new standalone EMS Authority within the then California Health and Welfare Agency.⁵ EMSA was charged with being the lead state agency for emergency and disaster medical services, although DHS retained responsibility for many aspects of emergency and disaster public health and medical response.

State regulations establishing training and other standards for paramedics were promulgated by EMSA in 1983. These were followed in 1984 by statewide guidelines for local EMS systems, standards for local trauma care systems, and training standards for other EMS providers.⁶ These standards and guidelines have been incrementally revised and updated over the years, but the regulatory framework established in the early 1980s has remained the basic foundation for the state’s EMS systems. Figure 1 (page 3) provides a timeline of key EMS milestones in the US and California.

EMS activities in California are regulated at the state level by EMSA pursuant to Division 2.5, California Health and Safety Code, and Division 9, Title 22, California Code of Regulations. EMSA is one of 13 departments administered by the California Health and Human Services Agency. Day-to-day EMS activities are

governed by local EMS agencies, which follow state regulations and standards established by EMSA. Currently, there are 25 single-county and 7 multicounty local EMS agencies in California (see Appendix A).

EMSA is statutorily authorized to develop and implement regulations governing the medical training and scope of practice for emergency medical care personnel, including emergency medical technicians (EMTs), public safety personnel (e.g., firefighters, law enforcement officers, lifeguards), and mobile intensive care nurses, among others. EMTs are trained according to state standards and then licensed (paramedics) or certified (basic and advanced EMTs) to render emergency medical care in pre- and inter-hospital settings.⁷

There are three levels of EMTs in California: basic (EMT), advanced (A-EMT), and paramedic (EMT-P). Paramedics are trained and licensed in advanced life support skills, including endotracheal intubation and selected other invasive procedures, as well as the intravenous and intramuscular administration of medications. They are typically employed by public safety agencies (e.g., fire departments) or private ambulance companies. Requirements for EMT and paramedic initial training and continuing education are listed in Figure 2, and the skills and activities in the scope of practice for EMTs and paramedics is summarized in Figure 3.

FIGURE 2. Education and Training Requirements for California EMTs

| | Emergency Medical Technician (EMT) | Advanced EMT | Paramedic |
|--------------------------------|---|---|--|
| Minimum Requirements | 18 years of age | 18 years of age, high school diploma or equivalent, EMT certification, CPR card | 18 years of age, high school diploma or equivalent, EMT certification |
| Training | 160 hours of training: <ul style="list-style-type: none"> • 136 didactic • 24 clinical | 160 hours of training: <ul style="list-style-type: none"> • 80 didactic and skills lab • 40 clinical • 40 field internship 15 Advanced Life Support patient contacts (minimum) | 1,090 hours of training: <ul style="list-style-type: none"> • 450 didactic and skills lab • 160 clinical • 480 field internship 40 Advanced Life Support patient contacts (minimum) |
| Exams | National Registry of EMTs, written and skills | Local EMS agency, written and skills | National Registry of EMTs, written and skills |
| Certification / License | Certified by local EMS agency or public safety agency, recognized statewide | Certified by local EMS agency, only valid locally | Licensed by EMS Authority, recognized statewide Accreditation by local EMS agency |
| Renewal | Recertification every 2 years by: <ul style="list-style-type: none"> • 24-hour refresher course, or • 24 hours continuing education units and 10 skill competencies | Recertification every 2 years by: <ul style="list-style-type: none"> • 36 hours continuing education units and 6 skills competencies | License renewal every 2 years by: <ul style="list-style-type: none"> • 48 hours continuing education units <small>Note: Certified paramedics in other states or counties or NREMT registries must provide documentation and fill out an application to become a licensed California paramedic</small> |

Source: EMSA, 2013.

Services by EMTs and paramedics are provided under medical control (typically by an emergency physician) through pre-established, locally approved medical policies and protocols and through direct linkage to locally designated hospital EDs (base hospitals). These services are typically initiated by a telephone call to 911 or other emergency telephone number. See Appendix B for a depiction of the current typical EMS response to a 911 call for emergency assistance.

Paramedics became a statewide *licensed* health care practitioner in California in 1994. Licenses are issued by EMSA and are valid statewide, but paramedics must be accredited by a local EMS agency before practicing. Licensure by EMSA must be renewed every two years. In contrast, EMTs and A-EMTs are *certified* by local EMS agencies, and they must be recertified every two years. EMT certifications are valid statewide, but EMTs can only work in areas after they are certified by a local EMS agency.

Paramedics are now widely distributed throughout California but are more prevalent in urban areas. In 2010, there were approximately 19,000 licensed paramedics and nearly 60,000 EMTs in California.⁸ There were approximately 3 million prehospital emergency ambulance responses in California in

2011.⁹ Nationally, there were approximately 826,000 credentialed EMS professionals in 2011, including EMTs (64%), advanced EMTs (6%), and paramedics (24%).¹⁰

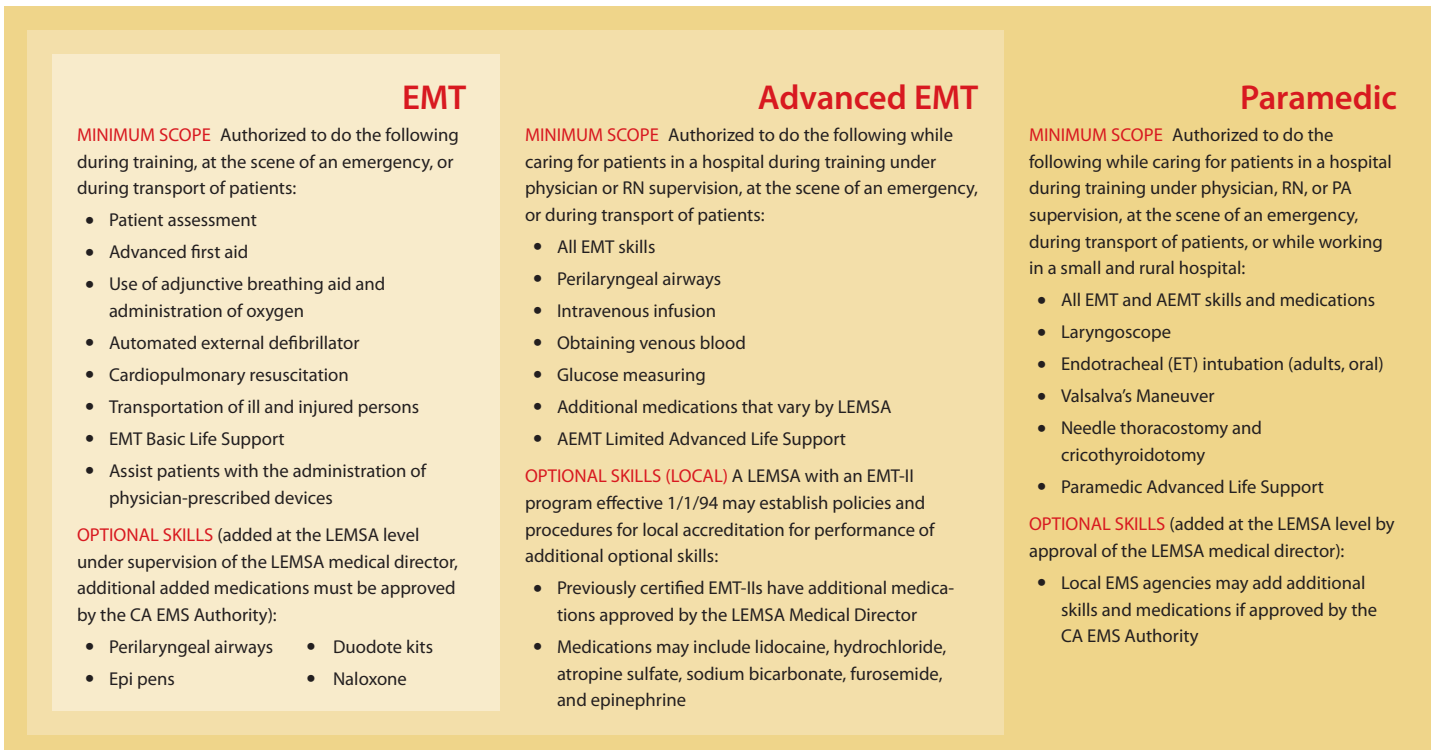
EMS systems are universally regarded as being an essential part of the health care delivery system today. However, they operate at the intersection of health care, public health, and public safety and generally have not been well integrated into the

DEFINITION: SCOPE OF PRACTICE

Refers to the “defined parameters of various duties or services that may be provided by an individual with specific credentials. Whether regulated by rule, statute, or court decision, it represents the limits of services an individual may legally perform.”

— NHTSA REPORT:
NATIONAL EMS SCOPE OF PRACTICE MODEL (2005)

FIGURE 3. Skills and Activities Included in the Scope of Practice for California EMTs



health care delivery system because of their overlapping roles and responsibilities. The Institute of Medicine highlighted this problem in a 2006 report, noting that “local EMS systems are not well integrated with any of these groups and therefore receive inadequate support from each of them.”¹¹ The incentives for care coordination and greater use of community-based care provided by the Affordable Care Act present an opportunity for greater integration of EMS into the health care delivery system through new models of care such as community paramedicine.

Funding for Local EMS Services

Funding to support local EMS services comes from diverse public and private sources, including state and municipal taxes, state and federal grants, philanthropic and charitable donations, in-kind contributions, subscription programs, individual self-payment, and fee-for-service payments from Medicare, Medicaid, and private health insurance. In addition to the above sources, California counties may designate a portion of traffic fines to support EMS services for uninsured persons — known as the Maddy EMS fund.¹² Funding for local EMS agencies is often derived primarily from revenues generated from patient transport, and is therefore dependent on the number of transports and the payer mix. One national estimate of funding sources indicated that “an average EMS agency receives 42% of its operating budget from Medicare fees, 19% from commercial insurers, 12% from Medicaid, and 4% from private pay; it requires approximately 23% in additional subsidization, most often provided by local taxes.”¹³ There is no central data source that tracks funding sources for California’s local EMS agencies, so California-specific data are not readily available.

Payments from commercial payers, and to a lesser extent Medicare, have historically been used to subsidize the costs of treating Medicaid and uninsured patients. Medicare plays a significant role both in revenues for local EMS agencies and in payment policy. Because individuals age 65 and over are four times more likely to use EMS services than younger individuals, Medicare represents a large proportion of utilization and revenues for local EMS agencies.¹⁴ In California, for example, Medicare patients account for about 35% of all ambulance transports and 25% of reimbursements. Medi-Cal patients account for about 21% of ambulance transports and only 5% of reimbursements. Much of the cross-subsidization in California comes from commercial health plans, whose patients represent

18% of transports and 38% of reimbursements.¹⁵ Medicare has shaped the provision of EMS through policies requiring patient transport for payment, a practice other payers have followed.

“At the very broadest level, the health care system is ill-equipped to take care of the volume of patients and provide the care needed. We have to deliver health care and bring about health in new ways.”

— STATE AGENCY OFFICIAL

Changing EMS and Health Care Environments in California

The overall health care environment of California and the state’s health care delivery system are rapidly changing due to efforts to control health care costs, improve care quality and service, deploy health information and advanced telecommunication technologies, and implement the Affordable Care Act, among other reasons. A description of the myriad activities in this regard is beyond the scope of this report; however, the widening gap between the demand for health care services and the supply of physicians and other health care workers to provide such services is especially pertinent to the consideration of community paramedicine.¹⁶

California has experienced and for the next few years will continue to experience a significantly increased demand for health care services. This increased demand is being driven primarily by population growth and aging, the rising prevalence of chronic diseases, and increased health insurance coverage consequent to the Affordable Care Act. An additional 3.4 million Californians are expected to be covered by health insurance by 2016.¹⁷ At the same time that the demand for health care services is sharply rising, the workforce to supply those services is shrinking due to aging, health care cost control strategies, and growing dissatisfaction with private practice among physicians,

among other causes. The number of physicians graduating from the state's eight medical schools has not materially increased in recent years, and about a third of California's physicians are age 60 or over.¹⁸ Some counties are anticipating that a quarter or more of currently practicing physicians will retire in the next five years. The gap between health care service demand and health care provider supply is widening the most in rural and other medically underserved communities.¹⁹ This growing gap raises the specter of an impending health care access crisis. Ironically, instead of being driven by the lack of health insurance, this impending access crisis is due in significant part to the increased availability of insurance.

To mitigate the gap between the demand for services and the workforce available to provide those services, it is essential to optimally utilize all caregivers. This will require that all providers work at the top of their training and skills. In addition, more needs to be done to coordinate and integrate services across the continuum of care and to increase the number of caregivers. Using paramedics in expanded roles to address locally determined community health needs may be a promising opportunity to leverage an existing caregiver resource to address identified needs and provide overall greater value.

History and Development of Community Paramedicine

In recent years, a number of community-based programs have been developed that utilize paramedics in roles or settings outside their traditional emergency response and transport roles. These CP programs have been implemented in a number of states in the US (e.g., Colorado, Minnesota, Texas) and other countries, including Canada, England, and Australia. The implementation, operational costs, and outcomes of these programs in the US are still being assessed, and little data is available at this time.²⁰ There is a longer history and more literature on the outcomes of CP programs in other countries, but differences in methods of financing and delivering care in these countries make it difficult to generalize the findings to the US. Interest in developing CP programs has been especially high in rural and other medically underserved areas.²¹

Utilizing paramedics in expanded roles is attractive because they are already trained to perform patient assessments and to recognize and manage life-threatening conditions in out-of-hospital settings. They are accustomed to providing care

in home and community settings under relatively austere medical care conditions, are available 24/7/365, and are widely trusted and respected by the public. Further, paramedics are accustomed to collaborating with other health care providers in a variety of settings.

There are multiple definitions of community paramedicine, but most embrace three key tenets:²²

1. CP programs begin with a community-specific health care needs assessment.
2. Community paramedics are specially trained to provide services to meet those local needs.
3. Community paramedics provide services under clear medical control (i.e., under a physician's direction and supervision).

DEFINITION: MEDICAL CONTROL

Physician direction over prehospital activities to ensure efficient and proficient trauma triage, transportation, and care, as well as ongoing quality management

— NHTSA REPORT:
TRAUMA SYSTEM AGENDA FOR THE FUTURE (2002)

In this report, the following working definitions are used:

- **Community paramedicine** is a locally designed, community-based, collaborative model of care that leverages the skills of paramedics and EMS systems to address care gaps identified through a community-specific health care needs assessment.
- A **community paramedic** is a paramedic with additional standardized training who works within a designated community paramedicine program under local medical control as part of a community-based team of health and social services providers.

*“EMS should be doing more in health care;
we should be part of the solution.”*

— EMS PROVIDER

A number of principles underlie the structure and goals of CP programs. These principles are briefly described below:

- Community paramedicine programs are *not intended to duplicate or compete with other community health care services*, but rather are intended to fill identified gaps in care working in collaboration and partnership with existing health care providers.
- Community paramedics would be licensed, as are all paramedics in California. *They would not be independent practitioners*, but rather would work under approved protocols and a physician’s direction (i.e., under “medical control”).
- Community paramedics would *undergo additional education and training*, the exact requirements of which would depend, in part, on the objectives and scope of the CP program. At least one standardized curriculum for community paramedics is publicly available.²³ Communities also could tailor additional education to address local needs. Training would occur in the various settings in which community paramedics would potentially work with collaborating providers, including primary care clinics, physician offices, nursing homes and other long term care facilities, substance abuse treatment programs, and mental health facilities, among others.
- It is expected that the *additional training will provide community paramedics with enhanced decision-making skills to prepare them for expanded clinical decision-making responsibilities*. When they are providing services in the community, they would be supported through protocols, and direct online (telephone or video) medical control would be available.

- It is likely that *only a small percentage of more experienced paramedics would become community paramedics*.
- Medical control for community paramedics may involve other types of physicians (e.g., general internists, family practitioners, pediatricians, geriatricians) in addition to emergency medicine physicians, depending on the type of services being provided in the CP program.
- The goal of CP programs would be to *get the patient to the right care, delivered by the right provider, at the right time, resulting in the best outcomes and most efficient use of the region’s health care resources*, as specified in the Affordable Care Act.

Components of Community Paramedicine Programs

A variety of services and activities have been included in CP programs in other states and countries. Six services have been selected for this report, and these can be divided between prehospital and post-hospital or community health services (see Figure 4). Each is described in detail in Figures 5–10.

FIGURE 4. Potential Community Paramedicine Services

Prehospital Services

- Transport patients with specified conditions not needing emergency care to alternate, non-emergency department locations.
- After assessing and treating as needed, determine whether it is appropriate to refer or release an individual at the scene of an emergency response rather than transporting them to a hospital emergency department.
- Address the needs of frequent 911 callers or frequent visitors to emergency departments by helping them access primary care and other social services.

Post-Hospital or Community Health Services

- Provide follow-up care for persons recently discharged from the hospital and at increased risk of a return visit to the emergency department or readmission to the hospital.
- Provide support for persons with diabetes, asthma, congestive heart failure, or multiple chronic conditions.
- Partner with community health workers and primary care providers in underserved areas to provide preventive care.

Prehospital Services

1. Transport patients with specified conditions not needing emergency care to non-ED locations (“alternate locations”) such as a mental health facility, sobering center, urgent care clinic, or primary care physician’s office. A program in San Francisco to address the needs of chronic inebriates is described in Case Study 1 (page 14). Figure 5 summarizes the opportunities and challenges associated with this activity.

2. After assessing and treating as needed, determine whether it is appropriate to refer or release an individual at the scene of an emergency response rather than transport the person to a hospital ED.

In the 1990s, the Orange County EMS agency in North Carolina had a treat-and-release policy, so for situations not requiring emergency care, patients could either be treated at home and follow up with their doctor, or the paramedics would arrange for alternative care. Current

FIGURE 5. **Community Paramedics (CPs) Transporting Patients to Locations Other Than the Hospital Emergency Department**

Opportunities

OVERARCHING: Method for getting right level of care to patients in an efficient, effective, and timely manner. May reduce crowding in some emergency rooms.

- Many patients may be treated appropriately in a location other than a hospital emergency department (e.g., patients with minor upper respiratory infections, chronic inebriates).
- Means of getting patients to services they need more quickly and efficiently. Reduction and/or elimination of secondary transfers or referrals if the individual is taken to the most appropriate treatment facility initially.
- May reduce overcrowding in EDs if fewer patients with non-emergent conditions are there, potentially reducing costs and making more efficient use of ED resources. May also reduce ED diversion rates and EMS wait times.
- CPs would be connected to other community resources where appropriate treatment could be obtained by patients not needing ED level of care.
- Use of technology such as telehealth consultations could help to ensure accurate assessment of patients, particularly in rural, underserved areas.
- Patients may prefer being taken to a facility where they can immediately obtain the appropriate level and type of care, and they may perceive improvements in the quality of service.

Challenges

OVERARCHING: CPs must be well trained to assess patients in the field using protocols and must have access to online medical experts, and state regulations must be changed.

- CPs will need additional training and protocols for patient assessment, along with greater online medical control for consultation on patients, since potential for error is greater than current practice of transporting all patients to EDs, where they are evaluated by ED staff.
- Need for viable alternate locations for patients to be transported to; often, there are limited resources in communities for mental health care, substance abuse treatment, urgent care, and primary care. Need exchange of data with all providers and quality assurance/improvement processes in place.
- Need appropriate medical condition evaluation prior to transport to an alternate facility.
- Difficult to accurately assess complex patients (e.g., those with psychological or substance abuse issues) with the potential of underlying medical conditions.
- Because the current system takes everybody to a hospital ED, transport to alternate locations may be seen by patients as lower-quality care. Appropriate education is needed so the public accepts that this approach is beneficial.
- May result in overutilization of transportation resources by patients.
- Need to change statute and regulations to allow transport of patients to non-ED locations and to allow community paramedics to practice in locations other than those currently specified.

EMS practice at times involves a form of treat and release where 911 callers decline transport against medical advice, sometimes apparently at the informal suggestion of emergency responders. However, adequate records are not kept to indicate how widespread this practice is. See Figure 6 for the opportunities and challenges associated with this activity.

3. Assist frequent 911 callers or frequent visitors to EDs to access primary care and other social services, as this will improve the efficiency of 911 service. A program in San Diego that leverages technology to help connect frequent 911 callers to health care and social services is described in Case Study 2 (page 14). See Figure 7 (page 11) for the opportunities and challenges associated with this activity.

Post-Hospital or Community Health Services

4. Provide support for persons who have been recently discharged from the hospital and are at increased risk of a return visit to the ED or readmission to the hospital. Some recently discharged patients may have difficulty following their medical care regimen and for various reasons do not have family or other social services support. These patients may suffer from congestive heart failure, diabetes, asthma, or multiple chronic conditions and would benefit from close monitoring to prevent readmission or need for emergency intervention. See Figure 8 (page 11) for the opportunities and challenges associated with this activity.

FIGURE 6. Assess, Treat as Needed, and Refer or Release by Community Paramedics

Opportunities

OVERARCHING: Improve patient care by treating at home or at incident site, and then releasing patient or referring for additional care in non-ED setting; potential for systemwide cost savings when patient is not transported to an emergency department.

- Ambulances are often sent in response to nonemergency situations; community paramedics could assess patients, treat and release them if appropriate, or if needed, refer patients to providers other than the ED.
- For nonemergency situations, care may be administered appropriately in settings other than the ED that are less expensive. There would potentially be lower costs for patients, insurers, and the health care system overall.
- Frees up resources for patients in the ED who need emergency care.
- CPs would be connected to other community resources where they could refer patients not needing ED level of care for appropriate treatment.
- Provides formal policy and protocols with training and accountability for CPs working with patients in nonemergency situations, versus current informal suggestions that these patients decline transport against medical advice (AMA).

Challenges

OVERARCHING: Risk and liability associated with inaccurate evaluations by CPs. Need for protocols to ensure that all patients are treated equally and that none are denied care.

- CPs will need protocols for patient assessment, along with greater online medical control for consultation on patients, since potential for error is greater than current practice of transporting all patients to EDs, where they are evaluated by ED staff.
- Can be challenging to make accurate patient assessment with incomplete information about patient's condition. Electronic transfer of health information would help improve decision-making related to patient assessment.
- Necessary for CPs to be sufficiently trained and know limitations of decision-making and liability. Medical directors may incur extra liability.
- Patients and families could think care is being inappropriately denied, potentially based on patient characteristics. CPs will need to be alert to equity in patient care.
- Need to change statute and regulations to allow community paramedics to treat and release or refer and to change policies to allow payment for care that does not involve transport of patients to EDs.

FIGURE 7. Community Paramedics Addressing Needs of Frequent 911 Callers

Opportunities

OVERARCHING: *Potential to improve patient care and reduce inappropriate use of EMS resources.*

- Paramedics are often very familiar with frequent 911 callers, who in addition to their medical conditions, often have mental health or substance abuse issues, are homeless, or are in need of other social services.
- CPs would be connected to other community resources where patients could obtain assistance to address basic needs such as housing, food, and utilities, as well as to obtain care for their medical, mental health, or substance abuse conditions.
- Patients whose basic needs are met would potentially be better able to interact with the health care system and to manage their own care. Lower and more appropriate use of EMS resources, through fewer 911 calls and fewer ED visits, could result.

Challenges

OVERARCHING: *Assessment and treatment of patients with complex social and medical care needs requires additional training and collaboration with a wide variety of providers.*

- CPs will need additional training with protocols for patient assessment, and greater online medical control will be needed for consultations on patients with complex social and medical care needs.
- Extensive coordination will be required so that assessment, treatment, and referral efforts by CPs, hospital discharge planners/ social workers, and social service employees are complementary and not duplicative. Electronic systems to allow for identification of frequent users and for exchange of medical records will be needed.
- These services should be structured so as to not detract or interfere with rapid response to 911 calls.
- Need to change statute and regulations to allow community paramedics to determine to transport 911 callers to alternative destinations and to refer them to other providers, and change policies to allow payment for care that does not involve transport of patients to EDs.

FIGURE 8. Community Paramedics Providing Follow-Up Care for Patients Recently Discharged from the Hospital

Opportunities

OVERARCHING: *Potential to improve patient care and reduce hospital readmissions by bridging gaps in care.*

- CPs can serve as an integral part of the patient's care transition team. Patients recently discharged from a hospital may benefit from assistance prior to regular scheduled follow-up care in understanding post-discharge instructions, medications, self-care, and the timing and importance of follow-up appointments. CPs could review these with patients and, if applicable, their families. The CP could ensure there is a safe home environment for the patient to recover in, and could provide feedback to primary care and emergency care providers about the patient's function at home. These types of activities could improve patient follow-up and integration in the health care system and overall quality of patient care, and may reduce 911 calls, ED visits, and hospital readmissions.
- Patients and their families would have a resource (CP or 911) for any immediate needs.
- Care provided by CPs would be ordered by the discharging physician and designed to complement care from other health care providers, with the goal of improved communication and coordination among providers, leading to better patient care.

Challenges

OVERARCHING: *Management of patients with complex medical conditions requires extensive collaboration and communication with other providers.*

- CPs will need additional training with protocols for patient assessment, and there will need to be greater, and potentially additional types of online medical control (i.e., emergency physicians and primary care physicians or other specialists) for consultation on patients with complex medical conditions.
- Electronic systems to allow for exchange of records and other information between CPs and other primary care, specialty care, and emergency care providers will be needed. Exchange of information across state lines may be challenging.
- Need to change statute and regulations allowing community paramedics to provide services in additional situations, and change policies to allow payment for care that does not involve transport of patients to EDs.

5. Provide support for persons with congestive heart failure, diabetes, asthma, or multiple chronic conditions by making periodic checks and providing education about how to proactively manage the conditions when regular home health services are not available. A program in Ft. Worth, Texas, to address the needs of patients with congestive heart failure is described in Case Study 3 (page 15). See Figure 9 for the opportunities and challenges associated with this activity.

6. Partner with community health workers and primary care providers in underserved areas to provide preventive care such as flu vaccines, blood pressure monitoring, selected disease screening tests, and basic education about illness, injury prevention, and disease risk reduction. See Figure 10 (page 13) for the opportunities and challenges associated with this activity.

FIGURE 9. **Community Paramedics Providing Care for Patients with Chronic Conditions**

Opportunities

OVERARCHING: Potential to bridge gaps between primary care and emergency care, reduce volume of 911 calls, and reduce readmissions.

- Could be a new resource for people with serious chronic conditions who have limited access to primary care, and for patients newly diagnosed with a chronic condition who may need additional help with care management, and could serve as a bridge between emergency and follow-up care.
- CPs could evaluate patients with chronic conditions and review medications and care instructions to ensure that patients and, if applicable, their families, understand them. CPs could also consult with a patient's physician to address any needs identified during a visit (e.g., to adjust medication).
- Effective care management could reduce 911 calls, ambulance transport, ED visits, hospitalizations, and rapid ED returns/rehospitalizations. CPs could serve as provider extenders in underserved areas.
- Quality of care may be higher through enhanced one-on-one care, coordination of care, and communication about care with other health care providers. Care could be more timely if complications are detected early that require additional primary or emergency care.
- Cost-effective way to integrate EMS assets into the health care delivery system. Should be designed so that care provided by CPs is complementary to and does not supplant services provided by the broader medical community.
- In some jurisdictions, may increase operational efficiency of paramedics by providing a beneficial community service between calls and allowing paramedics to maintain and improve their skills.

Challenges

OVERARCHING: Need rules and guidelines for this type of care provided by CPs. Costs will need to be offset by savings in ED and hospital readmissions.

- CPs will need additional training to learn about care for people with chronic conditions. Because this type of care is different from emergency care, it may require a different or additional type of medical supervision (i.e., by emergency physicians and primary care physicians or other specialists).
- Need rules and guidelines regarding the types of chronic care CPs provide.
- Need electronic systems to allow for exchange of records and other information between CPs and other primary care, specialty care, and emergency care providers.
- Patients may perceive there are tiers of care or lower levels of care being provided by the CP if the patient is accustomed to receiving care from doctors or nurses.
- May increase health care costs depending on the amount of time spent with patients, extra travel costs, etc.
- These services should be structured so as to not detract or interfere with rapid response to 911 calls.
- Need to change statute and regulations allowing community paramedics to provide services in additional situations, and change policies to allow payment for care that does not involve transport of patients to EDs.

FIGURE 10. Community Paramedics Providing Preventive Care for Patients

Opportunities

OVERARCHING: *Uses skills paramedics already have and increases ability to reach communities that have little access to health care.*

- Paramedics already provide services in a variety of home and community settings, including high-risk neighborhoods and medically challenged settings (e.g., streets and businesses).
- Paramedics currently give injections, check blood pressure, and assess home environments for safety, so very little additional training will be required for CPs to provide preventive services such as administering flu shots, screening for diseases, and educating patients about how to avoid asthma triggers or prevent falls.
- These types of services would be particularly beneficial to medically underserved communities that are not reached by standard health care resources.
- May be especially useful in rural areas and could be provided when doing follow-up care after patient is discharged from ED or hospital.

Challenges

OVERARCHING: *Nontraditional role for paramedics. CPs will need additional training to learn about preventive care and need to exchange information with other providers to ensure patient safety.*

- Because this type of care is divergent from the primary mission of EMS, it may require a different or additional type of medical supervision (e.g., by primary care physicians, extended practice nurses).
- Preventive care services should be structured so as to not detract or interfere with rapid response to 911 calls.
- Systems to allow for exchange of records and other information between CPs and other primary care, specialty care, and emergency care providers will be needed.
- Need to address organizational issues of when and where these services would be provided (e.g., at doctor's request vs. regularly scheduled, at patient's home vs. at fire station).
- Costs will need to be offset by health care savings or assumed as part of basic primary care.
- Need to change statute and regulations allowing community paramedics to provide services in additional situations, and change policies to allow payment for care that does not involve transport of patients to EDs.

CASE STUDY 1

San Francisco Program to Address the Needs of Chronic Inebriates

San Francisco developed a program to appropriately address the needs of chronic inebriates — The San Francisco Fire Department (SFFD) Homeless Outreach & Medical Emergency (HOME) Team. The program was developed in response to a small number of individuals who were chronic inebriates that frequently called 911, had extensive ED use, and incurred high uncompensated health care costs.

The San Francisco HOME Team was designed to connect at-risk individuals with a system of care to better serve their needs and to stop the unproductive cycle of ambulance transports and hospital stays. Analysis by the HOME Team found that heavy EMS system users are typically 40- to 60-year-old homeless male chronic inebriates who have comorbid mental illness and medical conditions, and high mortality rates. Prior to this program, San Francisco General Hospital estimated a total of \$12.9 million in annual uncompensated charges associated with 225 frequent users.

The HOME Team program started in October 2004 under the SFFD EMS through a joint effort of SFFD, San Francisco Department of Public Health, and San Francisco Human Services Agency. The team was led by one paramedic captain and included intensive case managers or outreach workers as well as nurse practitioners. Typical response involved outreach to find all frequent users, connect them to community-based care (typically, substance abuse treatment and medical detoxification), and advocate for long term care when necessary. The program was able to develop a web of resources and partners including case workers, mental health professionals, primary care providers, housing resources, substance abuse treatment programs, and law enforcement. These partners came together to create and evaluate systems of care for the frequent users. This clinical planning brought forth new long term care placement options for dual-diagnosis patients with both mental health and substance abuse conditions, including locked programs and boarding programs with care management. Over an 18-month period, there were reductions in ambulance activity for high users and a decrease in ED diversion rates at local hospitals. The HOME Team was funded by the San Francisco Department of Public Health at approximately \$150,000 annually; however, funding was rescinded due to the department having other budget priorities, and the program has been on hiatus since June 2009.

Source: *The San Francisco Fire Department HOME Team: An Urban Community Paramedic Pilot Project*, presentation by Captain Niels Tangherlini, June 27, 2012.

CASE STUDY 2

San Diego Program Leveraging Technology to Better Serve Frequent 911 Callers

A program designed to address the needs of individuals who repeatedly call 911 in San Diego began in 2008 as a collaboration between the San Diego Fire-Rescue Department and Rural/Metro Ambulance. The San Diego Resource Access Program (RAP) is coordinated by a paramedic and integrates health information technology with real-time EMS and computer-aided device surveillance.

A unique element of San Diego's approach is its integration of technology into the RAP program. As part of the San Diego region's \$15-million Beacon Community grant for health information exchange (HIE) development from the Office of the National Coordinator, there is information exchange between EMS and hospitals. This exchange facilitates detection of abnormal patterns of activity, both by repeat users of 911 and by equally vulnerable but less noticeable individuals. Algorithms are used to identify frequent users of the EMS system and to engage them through a patient-centered case management system involving RAP and other social and judicial systems.

Essential for RAP's success are the partnerships with related stakeholders including law enforcement, the courts, homeless outreach teams, social workers, and housing providers.

An evaluation involving 51 individuals enrolled in RAP over a 31-month period from 2006 to 2009 found several positive outcomes, most notably in EMS and ED use:

- EMS encounters decreased by 38%, EMS charges by 32%, EMS task time by 40%, and EMS mileage by 48%.
- ED encounters at the participating hospital decreased by 28%, and ED charges decreased 12%.
- The number of inpatient admissions decreased by 9%, and inpatient charges decreased by 6%.
- Hospital length of stay decreased by 28%.
- Across all services, charges declined by over \$314,000.

One of RAP's goals is to create bidirectional data sharing with all stakeholders and to link to the HIE being developed as part of the Beacon grant. With such a system, RAP will be able to move beyond serving its most frequent users to help others in the community with disproportionate health burdens.

Sources: Jensen, AM, and Dunford, J, "Putting the 'RAP' in 'Rapport,'" *JEMS*, January 2013; and Tadros, AS, et al., "Effects of an Emergency Medical Services-Based Resource Access Program on Frequent Users of Health Services," *Prehospital Emergency Care*, October/December 2012, 16(4):541–7.

CASE STUDY 3

MedStar EMS Community Health Program, Fort Worth, Texas

MedStar, a private EMS provider in Fort Worth, serves about 880,000 residents and has about 112,000 EMS responses annually. In 2009, MedStar began an EMS Community Health Program (CHP), with an initial focus on individuals who use EMS frequently and as a health care safety net. MedStar developed the program after an analysis showed that 21 patients had been transported to a local ED over 800 times in a 12-month period, generating almost \$1 million in ambulance charges and even larger ED expenses. The main goals of the CHP are to navigate patients toward more appropriate non-ED health care options, to reduce unnecessary 911 responses and EMS transports that strain an already-overloaded EMS system, and to reduce overall health care costs.

As the CHP evolved, MedStar began using advance practice paramedics who work with congestive heart failure (CHF) patients referred to the program by cardiac care case managers. CHP paramedics provide routine home visits to educate patients, conduct an overall assessment of the patient and their environment, provide a nonemergency access number for episodic care, and refer patients to their primary care physician as needed.

For 23 patients enrolled in a CHF program over a 12-month period, it was determined that 44 hospital admissions were prevented (a 47% decrease), and there was a substantial decrease in use of ambulance transports to the ED — a 44% decrease during the program and 56% after graduation from the program. MedStar estimated a savings of over \$16,000 per patient enrolled in the program. Using a new enrollment protocol beginning in June 2012, MedStar enrolled 10 patients at risk of CHF-related readmissions in a program; over an 8-month period, there were no 30-day readmissions and only one cardiac-related ED visit. Savings were estimated at almost \$39,000 per patient enrolled in this program.

All of MedStar's CHP activities focus on "patient navigation" (i.e., getting the patient connected with the right resource — a patient-centered medical home that can provide coordinated care) in an effort to meet the Triple Aim of better care, better patient experience, at reduced cost.

Sources: *Trained Paramedics Provide Ongoing Support to Frequent 911 Callers, Reducing Use of Ambulance and Emergency Department Services*, AHRQ Health Care Innovations Exchange Snapshot, 2012; *EMS Systems of the Future*, MedStar presentation in San Francisco, CA, December 2012; MedStar website, 2013.

Perspectives on Community Paramedicine: Findings from Stakeholder Interviews

As part of this project, interviews were conducted with stakeholders from 37 organizations, including EMS associations (e.g., firefighters and paramedics), health care providers, health plans, and payers. Using a combination of predetermined and situation-specific questions, interviewees were asked about their knowledge of community paramedicine and their thoughts about its potential for use in the six specific health care situations described above. See Appendix C for a list of organizations represented in the interviews. Several themes emerged:

- **There is limited understanding of community paramedicine.** CP is a largely unknown model of care in California. There was a wide range of familiarity with the concept among interviewees, ranging from none at all to extensive. A few interviewees had substantial personal experience in implementing and evaluating CP programs. Several interviewees expressed uncertainty about what community paramedics might actually do, and some expressed concern about how community paramedics would interface or interact with the existing health care delivery system.
- **There is limited understanding of the EMS system.** Some interviewees noted that relatively few physicians and nurses (other than emergency physicians and nurses) have significant understanding of how the EMS system operates (and, in turn, what paramedics do and how they work) or how the EMS system interacts with the health care delivery system generally. Attitudes about how well the EMS system and paramedics function appear to be substantially influenced by the extent and quality of an individual practitioner's experience with EMS providers.
- **EMS is essential to the health care system but is not well integrated.** While the EMS system is generally perceived to be an important part of the health care delivery system, it is not perceived to be an integrated part of the system, since EMTs and paramedics currently work closely with only a small subset of health care providers and in a small subset of environments. EMS has been on the periphery of the health care reform conversation, and some interviewees expressed the belief, or assumption, that EMS would just keep doing what it

has always done despite the myriad changes in the health care system at large.

- **There is support for specific CP activities.** When asked about specific services that community paramedics could potentially provide, interviewees said the need for additional training, protocols to guide decision-making, increased availability of physicians or nurses to consult with paramedics in the field, and increased electronic information exchange were essential. With these elements in place, many interviewees expressed enthusiasm for specific CP activities, to be delivered in accordance with the needs of individual communities.
- **Additional payment is needed for CP services.** Commonly voiced was the sentiment that there will need to be additional payment for any additional services provided by CPs. While it is unclear who will pay, there seemed to be a shared belief that payment should be apportioned among all the entities that may benefit from the provision of these services.
- **It is essential to measure CP program outcomes and to ensure that high-quality care is delivered.** Most interviewees opined that if CP programs were to be implemented, it would be important to measure quality and cost outcomes. This would influence future investment in such programs. It was noted that there is much variation in quality assurance (QA) and relatively few quality improvement (QI) activities within EMS today; it will be important to incorporate enhanced QA and QI activities for community paramedics to ensure that they are providing high-quality care.
- **There may be different needs and solutions for urban versus rural areas.** Concern was expressed about the different roles and capacities of paramedics in rural versus urban areas and the different logistics that might be involved in developing and implementing CP programs in these settings. It was noted that there are relatively fewer paramedics practicing in rural California.
- **There is a need for better and ideally electronic exchange of information.** Some concern was expressed that paramedics would need to be more involved in patient information exchange with other health care providers in order to provide more services than

paramedics currently do. Several interviewees indicated that electronic systems would best support timely and complete exchange of data.

- **There are concerns about paramedic skills and training.** Several interviewees expressed uncertainty and concern about paramedics having the skills to provide nonemergency services, despite being told that paramedics would have additional training before practicing as community paramedics.
- **There are concerns about paramedic capacity.** Some concern was expressed about the capacity of EMS providers to do more than what they already do. Some interviewees felt that paramedics are already working at or near maximum capacity, particularly in urban areas, and that they probably could not do any more. A number of stakeholders expressed that they would not want any new roles to distract paramedics from performing their basic first responder and other lifesaving functions.²⁴
- **There are alternatives to supporting development of CP.** A few stakeholders who did not offer much support for the proposed CP services cited concerns over quality of care, decision-making authority of community paramedics, fragmentation of care, and the potential additional liability for those providing medical control, and opined that it may be better to put more resources into the existing non-EMS delivery system.
- **Vigilance must be maintained for possible unintended consequences, especially for safety-net providers.** Some interviewees expressed that, to minimize unintended consequences, care should be taken to anticipate what effects any changes to the EMS system would have on both emergency services and other components of the health care system. It was noted that the EMS system is part of the health care safety net, and the safety net must be preserved. Some interviewees emphasized that all patients should be treated equally by the EMS system, regardless of their ability to pay, and this principle should apply to any new activities that fall under the CP umbrella.

EMS Regulations, Statutes, and Other Barriers to CP Program Implementation

Three aspects of California's current EMS statutes and regulations preclude the development and implementation of CP programs:

1. The requirement that callers to 911 must be taken to an acute care hospital having a basic or comprehensive ED (Health & Safety Code Division 2.5, section 1797.52).
2. The locations where paramedics can practice — i.e., at the scene of a medical emergency, during transport to an acute care hospital with a basic or comprehensive emergency department, during interfacility transfer, while in the ED of an acute care hospital until responsibility is assumed by hospital staff, or while working in a small and rural hospital pursuant to sections 1797.52, 1797.195, and 1797.218 (California Code of Regulations [CCR], title 22, section 100145, and Health & Safety Code 2.5, section 1797).
3. The specification of the paramedic scope of practice. Specific procedures and medications approved for use are contained in regulation (CCR, title 22, section 100145 and Health & Safety Code 2.5, section 1797).

“Significant portions of 911 calls — 30% to 40% — are nonemergency calls. In rural communities, people call an ambulance for only serious things, but in urban areas, people will call for anything.”

—EMS PROVIDER

It is important to note that the paramedic scope of practice in California is explicitly defined in both statute and regulation as referring to a set of authorized skills and activities that emergency medical personnel may perform *and* the places in which those skills and activities may be performed.²⁵ This is unusual in that most scope of practice definitions specify skills and activities but not location. California's dual definition means that any of the potential CP scenarios described in this report would require a statutory change to one or more aspects of the paramedic scope of practice. This is further discussed below.

Prehospital Services

- **Transport to alternate destinations.** Regulations and statutes would need to be changed to allow community paramedics to: 1) transport patients to a destination other than a general acute care hospital with a basic or comprehensive ED, and 2) practice in locations other than those currently specified (assuming community paramedics would continue to care for patients at an alternate destination prior to responsibility being assumed by staff at the alternate destination). Medical specialists other than emergency physicians would likely need to become involved in medical control.
- **Assess, treat as needed, and refer or release.** Additional training and protocols would need to be developed. Medical control would always be required. A change in regulations and statutes would be required to allow community paramedics to refer or release patients instead of transporting them to an ED.
- **Addressing the needs of frequent 911 callers.** Since community paramedics may transport these patients to non-ED destinations, may coordinate their care with other social service providers, or may not transport the patients, regulatory and statutory changes would be needed. Additional medical specialists other than those in emergency medicine would likely become involved in medical control and care coordination.

Post-Hospital or Community Health Services

Because paramedics are currently authorized to function only in prehospital emergency and other specified settings, post-hospital services such as chronic care management, provision of preventive services, and conducting home visits

post-hospitalization are prohibited, so regulatory and statutory changes would be needed. Also, changes in scope of practice regarding specific skills and activities may be necessary for new diagnostic or therapeutic interventions. Increased or additional types of medical control also may be necessary.

Payment for Emergency Medical Services

Another potential barrier to the implementation of CP programs in California relates to the current EMS payment structure, which revolves around patient transport. EMS providers receive payment for advanced life support or basic life support transport to a hospital ED. This payment structure reimburses paramedics for responding to 911 calls and transporting the patient to an ED, and it encourages return to service as quickly as possible. A payment model for CP programs would likely need to separate payments for components such as assessment, treatment, and transport. Payment models such as those used by accountable care organizations (ACOs) that put a premium on efficient use of health care resources merit exploration as a source of revenue for CP programs.

Conclusion and Policy Options

Community paramedicine offers a potentially promising solution for addressing some types of health care gaps in California, and based on comments voiced at a February 2013 stakeholder meeting and a subsequent survey of local EMS agencies, there appears to be substantial support for exploring this new model of community-based care.²⁶ However, CP involves a number of complicated issues and is currently precluded by statute.

Widespread development of community paramedicine in California will require more clarity about a number of issues, including CP program purpose and the associated need for education, training, scope of practice, and medical supervision. CP programs developed in other states and countries have had varied purposes, typically being developed to address specific local needs and unique collaborations, partnerships, and other circumstances. As there is heterogeneity in the design and purpose of these other CP programs, California will need to specify a standardized CP training curriculum, scope of practice, and prescription for appropriate medical supervision.

While at their core these programs all leverage the training and experience that paramedics already possess, they vary in how

they do so. This is in contrast to current EMS systems, for which there is a more singular goal (i.e., to bring potentially lifesaving care to an ill or injured person in the prehospital setting and to transport the person to a hospital ED) and a more defined portfolio of needed skills and commensurate training for EMS personnel. Some of the potential CP program scenarios would require little additional training and a change in scope of practice only with regard to where the patient might be transported (e.g., to allow transport of certain types of patients to destinations other than an ED), while other scenarios might require substantially more education and training for enhanced decisionmaking and more significant changes in scope of practice (e.g., for primary care outreach activities). Some of the potential CP scenarios also raise a question about the utility of developing an EMT- or paramedic-like primary care technician as a new type of health care worker that would function within a formally designed primary care system much the way that paramedics function in an EMS system. However, this possibility is not the subject of this report and was not examined in detail.

For the above reasons, we recommend that further development of community paramedicine in California be done through pilot or demonstration projects so that issues related to education and training, medical supervision, scope of practice, and impact on local EMS systems, among others, can be further evaluated. To this end, two alternative pathways are available. Pilot projects could be undertaken consequent to new legislation authorizing a CP demonstration program, or pilot projects could be undertaken pursuant to the Office of Statewide Health Planning and Development's (OSHPD's) Health Workforce Pilot Projects Program (HWPP).^{27,28} The latter would be the most expedient.

We do not recommend changing California's EMS-related statutes and regulations to broadly authorize CP programs at this time. While we believe that CP has considerable promise, we also believe that more information is needed to determine the appropriate role of these programs in California and how best to operationalize them.

If CP pilot projects were to be undertaken, we believe that as many as 10 to 12 would be needed to provide sufficient diversity of program focus, geography, demography, and community partnerships to answer the many outstanding questions about these programs. If pilots were implemented, we further

recommend that EMSA and an advisory board composed of experts in emergency medicine, primary care, public health, behavioral health, and nursing, among other areas of expertise, be involved in the review, approval, monitoring, and evaluation of the projects.

Pilot projects would need to address a number of issues in the project proposal, including:

- A description of the specific need that the pilot project would address, how this need was selected, and exactly how the project would address the identified need
- A detailed explanation about how the community paramedics would be trained and would maintain their skills
- A description of how appropriate medical supervision would be assured
- A description of how data to evaluate quality assurance and quality improvement activities would be obtained and monitored
- An evaluation plan for assessing the impacts on quality and cost of care, and how the local EMS agency will ensure that all patients are treated equally regardless of insurance status and health condition, among other factors
- A plan for integrating the CP program with other community-based health care and social service programs and for analyzing the potential impacts of the CP program on these providers, including safety-net providers
- Funding sources and financial sustainability
- The role of health information exchange (HIE), telehealth, and possibly mobile-health technologies
- How to leverage the potential of electronic health records (EHRs) and HIE to facilitate communication between community paramedics and other health care providers

“Emergency medical services (EMS) of the future will be community-based health management that is fully integrated with the overall health care system. It will . . . provide acute illness and injury care and follow-up, and contribute to treatment of chronic conditions and community health monitoring. . . . It will improve community health and result in more appropriate use of acute health care resources. EMS will remain the public’s emergency medical safety net.”

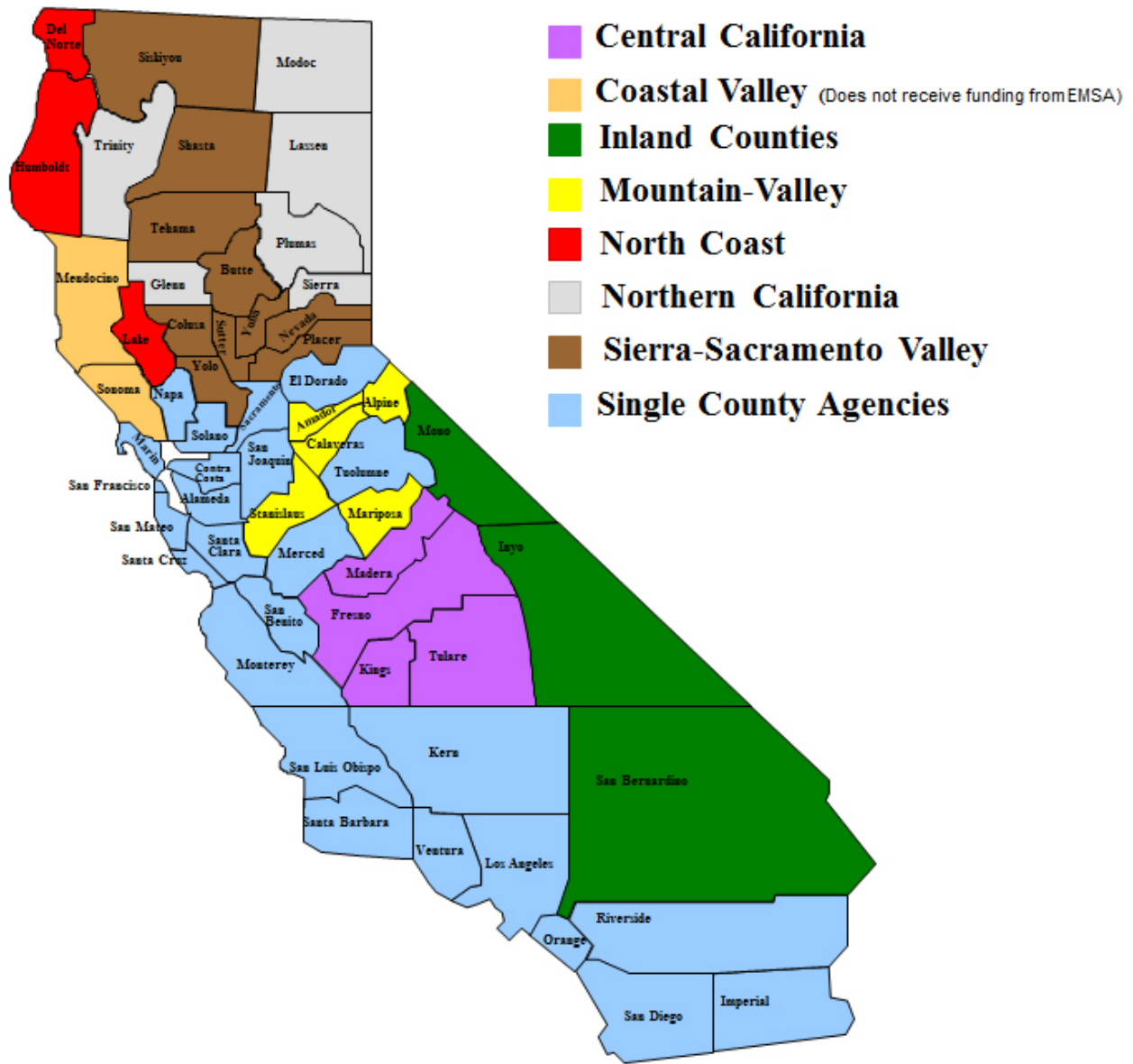
— EMS AGENDA FOR THE FUTURE, NHTSA, 1996

ENDNOTES

1. The commonly used term “paramedic” technically refers to an emergency medical technician-paramedic (EMT-P), the most highly trained category of emergency medical technician (EMT). The three levels of EMTs in California are described on page 4, and their training and scopes of practice are shown in Figures 2 and 3.
2. Green LV, Savin S, Lu Y. “Primary Care Physician Shortages Could Be Eliminated through Use of Teams, Nonphysicians, and Electronic Communication.” *Health Affairs* 2013(32):11–19.
3. Committee on Trauma and Committee on Shock. *Accidental Death and Disability: The Neglected Disease of Modern Society*. Washington, DC. National Academy of Sciences-National Research Council. 1966.
4. California Health & Safety Code, Article 3, Sections 1480–85. Wedworth-Townsend Paramedic Act of 1970.
5. California Health & Safety Code, Chapter 2.5, Sections 1797 et seq. Garamendi-Torres EMS System Act of 1980.
6. Kizer KW, Moorhead GV, McNeil M. *Emergency Medical Services Systems Standards and Guidelines*. Sacramento, CA. Emergency Medical Services Authority, State of California. 1984.
7. All ambulance attendants are required by California law to be trained and certified to the EMT level (basic life support, or BLS), and many fire agencies require firefighters to be EMT certified.
8. EMSA. 2013.
9. EMSA. 2013.
10. Federal Interagency Committee on Emergency Medical Services. *2011 National EMS Assessment*. Washington, DC. US Department of Transportation, National Highway Traffic Safety Administration. 2012.
11. Institute of Medicine. *Emergency Medical Services at the Crossroads*. Washington, DC. National Academies Press. 2006.
12. California Health & Safety Code, Chapter 2.5, Sections 1797.98a–g. The Maddy Emergency Medical Services Fund.
13. Munjal K and Carr B. “Realigning Reimbursement Policy and Financial Incentives to Support Patient-Centered Out-of-Hospital Care.” *JAMA* 2013, 309(7): 667–8.
14. Institute of Medicine. *Emergency Medical Services at the Crossroads*. Washington, DC. National Academies Press. 2006.
15. Hobbs, Ong, and Associates, and Applied Analysis. *Industry Performance Survey*, California Ambulance Association. 2006.
16. *Fewer and More Specialized: A New Assessment of Physician Supply in California*, California HealthCare Foundation. 2009.
17. Long P, Gruber J. “Projecting the Impact of the Affordable Care Act on California.” *Health Affairs* 2011(30):63–70.
18. California HealthCare Foundation Center for Health Reporting. Los Angeles. USC Annenberg School for Communication & Journalism. 2011.
19. The shortage of primary care physicians contrasts with an oversupply of specialists in California, particularly in urban areas, although there are distribution issues with both primary care physicians and specialists.
20. Ross DW, Schullek JR, Homan MB. “EMS Triage and Transport of Intoxicated Individuals to a Detoxification Facility Instead of an Emergency Department.” *Ann Emerg Med* 2013; 61(2):175–184. Tadros AS, Castillo EM, Chan TC, et al. “Effects of an Emergency Medical Services–Based Resource Access Program on Frequent Users of Health Services.” *Prehospital Emergency Care*, October/December 2012; 16(4):541–7.
21. *Western Eagle County Ambulance District: Evaluation of the Community Paramedic Program, September 2010–June 2012*. Western Eagle County Health Services District. September 2012. Crawford CZ. *The Feasibility and Role of Community Paramedicine in Nebraska*. Nebraska EMS/Trauma Program. May 2011.
22. From, for example, the DHHS Human Resources and Services Administration (HRSA), Rural and Frontier EMS Agenda for the Future, International Roundtable of Community Paramedicine, and Minnesota Community Healthcare and Emergency Cooperative.
23. The Community Healthcare and Emergency Cooperative developed a standardized curriculum that colleges in any state, province, or nation can customize for their own certification programs. The curriculum has two phases: Phase 1 — Foundational Skills (approximately 100 hours based on prior experience), comprehensive didactic instruction in advocacy, outreach and public health, performing community assessments, and developing strategies for care and prevention; and Phase 2 — Clinical Skills (15 to 146 hours based on prior experience), supervised training by medical director, nurse practitioner, physician assistant, and/or public health provider.

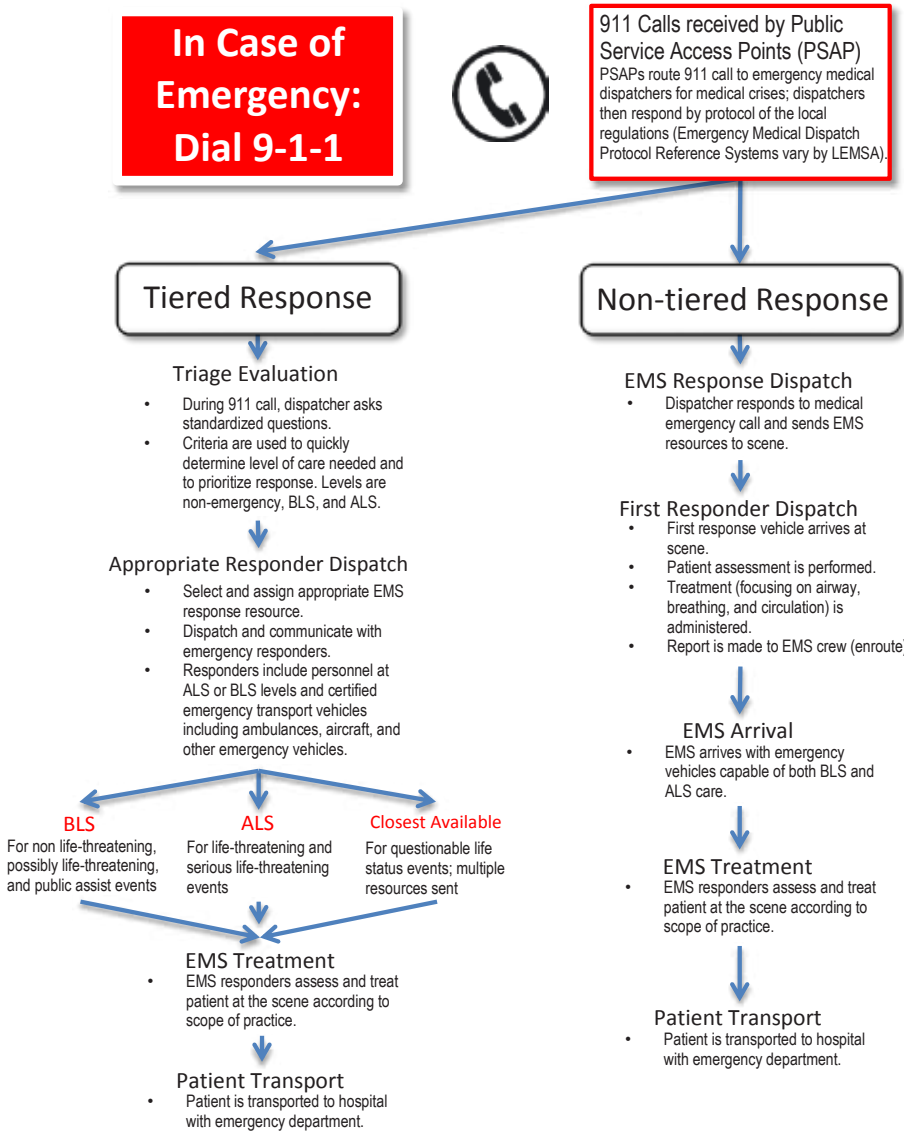
24. Most 911 contracts have clauses requiring certain staffing and response times. If unmet, the provider agency can be fined.
25. California Health & Safety Code, Chapter 2, Sections 1797.52, 1797.84, and 1797.194e, and California Code of Regulations, Title 22, Division 9, Chapter 4, Sections 100139 and 100145.
26. Eleven of 15 respondents to this EMSA-conducted survey expressed interest in participating in a CP pilot or demonstration project.
27. Maine has adopted this approach, allowing for up to 12 pilot projects that develop and evaluate a community paramedicine program.
28. OSHPD's HWPP program allows organizations to test, demonstrate, and evaluate new or expanded roles for health care professionals or new health care delivery alternatives before changes in licensing laws are made by the Legislature. Various organizations use HWPP to study the potential expansion of a profession's scope of practice to facilitate better access to health care; to expand and encourage workforce development; to demonstrate, test, and evaluate new or expanded roles for health care professionals or new health care delivery alternatives; and to help inform the Legislature when considering changes to existing legislation in the Business and Professions code.

APPENDIX A. California Local Emergency Medical Services Agencies



Source: EMSA, 2013.

APPENDIX B. 911 Emergency Response in California



Emergency Medical Dispatchers

Trained dispatcher who processes emergency medical 911 calls, determines severity and prioritizes response, and coordinates sending appropriate emergency responders to the scene.



First Responders

Dispatched to scene first, by closest/most available; member of local certified first-response agency (fire department, police, private ambulance, EMS, industrial emergency team, etc.) able to provide BLS and sometimes ALS.



EMS Responders/Transport

Emergency and non-emergency vehicles, must have BLS or ALS capabilities when appropriate; certified EMT, A-EMT, or licensed paramedic responder (LEMSA approved private or county ambulance or emergency transport vehicle)



APPENDIX C. Organizations with Representatives Participating in Stakeholder Interviews

1. Alameda County EMS Agency
2. Alameda County Health Care Services Agency
3. AMR
4. Association of State and Territorial Health Officials
5. California Ambulance Association
6. California Association for Health Services at Home
7. California Chapter of ACEP (Cal/ACEP)
8. California Conference of Local Health Officers (CCLHO)
9. California Department of Health Care Services
10. California Department of Public Health
11. California Fire Chiefs Association, EMS Section
12. California Hospital Association
13. California Medical Association
14. California Nurses Association
15. California Professional Firefighters
16. California Rescue and Paramedic Association
17. Centers for Medicare & Medicaid Services, Region 9,
Department of Health and Human Services
18. El Dorado EMS Agency
19. Emergency Nurses Association
20. Kaiser Permanente
21. Los Angeles County Department of Health Services
22. Los Angeles County EMS Agency
23. Mayo Clinic Medical Transport
24. MedStar
25. National Association of State EMS Officials
26. NorCal EMS Agency
27. North Coast EMS Agency
28. Orange County EMS Agency
29. Regional Emergency Medical Services Authority, Reno
30. Santa Clara EMS Agency
31. San Diego City EMS Agency
32. San Diego County EMS Agency
33. San Francisco EMS Agency
34. San Francisco Fire Department
35. Sierra/Sacramento Valley EMS Agency
36. WellPoint
37. Western Eagle County Ambulance District



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