



REVIEW

GOALS, SERVICES, AND TARGET PATIENT POPULATIONS OF COMMUNITY PARAMEDICINE IN RURAL UNITED STATES: A LITERATURE REVIEW

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INTRODUCTION

Rural counties account for more than half of the designated health professional shortage areas in the United States. Rural, remote, or frontier areas contain one-fifth of the U.S. population and only 10% of the nation's physicians. In addition to challenges with geographically isolated providers and limited primary care resources, rural populations tend to be sicker and older than urban populations. Medicare beneficiaries have a high hospital readmission rate as one in five are readmitted within 30 days of hospital discharge, while more return to the emergency department (Pearson et al., 2014).

Community paramedicine is a growing healthcare delivery model within emergency medical services (EMS) in which emergency medical professionals, such as paramedics or emergency medical technicians (EMTs), provide nonemergent medical care (Pearson et al., 2014). In a rural context, community paramedics (CPs) work in an expanded role under the direction of a primary care provider, emergency physician, or medical director to increase access to preventative health and primary care services (Huang et al., 2017). CPs may help fill the primary healthcare gap for rural residents by performing patient assessments and procedures that are within their skill set within the comfort of the patients' home (Pearson et al., 2014; Huang et al., 2017).

The goals and services of community paramedic (CP) programs are determined by the specific health needs of the community. CP programs across the country differ in their program organization, target patient population, collaboration with providers and social services, reimbursement strategies, scope of practice, and educational requirements (Huang et al., 2017; Coffman & Kwong, 2019).

The goal of this literature review is to examine the limited number of peer reviewed publications about rural community paramedicine programs in the United States. This paper will provide an overview of the common goals, services, and target populations of rural CP programs and further highlight the reported outcomes of the top three most common goals of rural CP programs: chronic disease management, reduction in emergency department (ED) transports, and reduction in healthcare costs. It will also examine the limited number of reported patient and paramedic perspectives of the evolving CP position and summarize the problems identified in rural community paramedicine.

This paper highlights the lack of research investigating patient outcomes secondary to preventative health and primary care services provided by CPs, which may identify if CPs are an effective means of filling the primary care gap for rural communities.

METHODS

The systematic review process followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and was not formally registered. PubMed and Google Scholar databases were searched in June 2021 using the search terms: “community paramedicine/paramedic” and “rural, remote, frontier” with a date restriction of 2000-2021. Two investigators reviewed all abstracts independently and identified 56 articles relevant to community paramedicine. International literature and research about CP programs in urban locations were excluded because this literature review is focused on CP programs in rural US. The study team extracted publications that reported data through observational ethnographic studies, observational cohort studies, observational case studies, structured interviews, and systematic reviews about existing rural CP programs in the US. Commentaries, opinion articles, incomplete research, and guidelines on CP program development or national calls for CP research were excluded because they are considered lower quality under the Standards for Reporting Qualitative Research (SRQR) criteria (O’Brien et al., 2014). Additional articles were identified by searching bibliographies of articles identified in this process. The exclusion criteria resulted in 12 publications about rural CP programs in the United States.

RESULTS

SEARCH YIELD

Figure 1 depicts the selection of articles from the preliminary review to the articles used in this literature review. PubMed and Google Scholar databases and bibliography hand-search identified 56 articles related to community paramedicine. Abstract review identified 21 articles about rural CP programs in the US. Analysis of the full text identified 12 articles that reported data through observational ethnographic studies, observational

cohort studies, observational case studies, structured interviews, and systematic reviews.

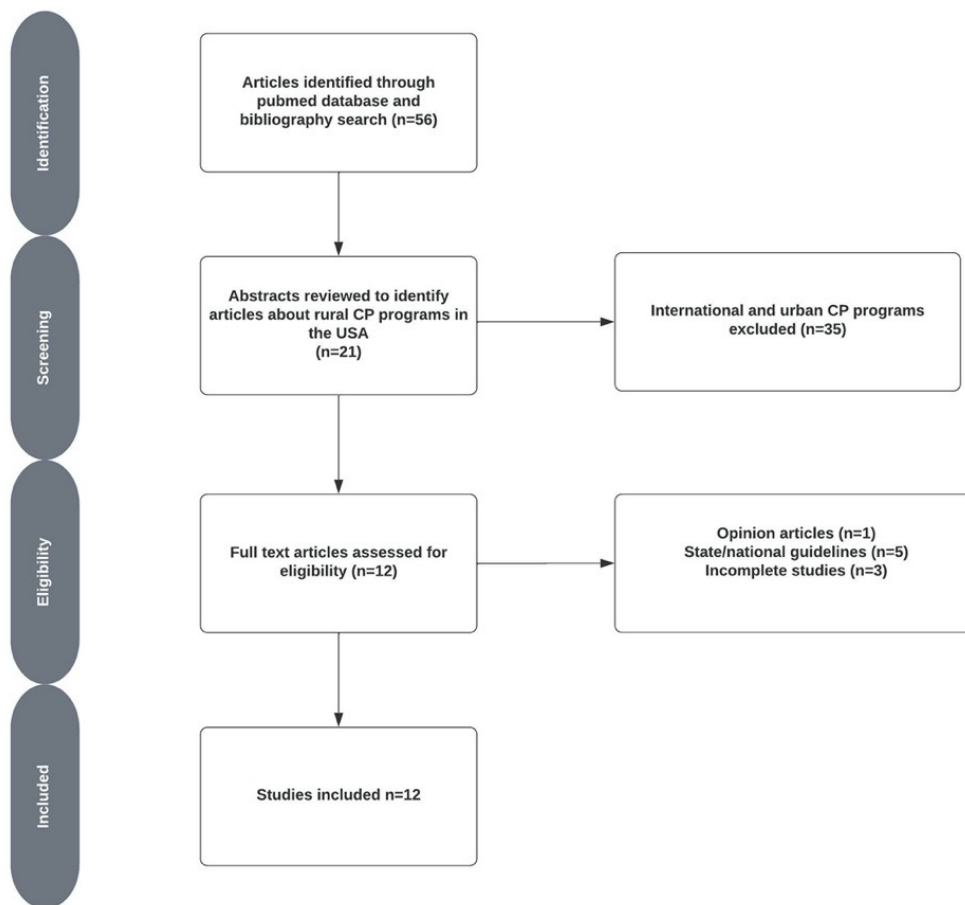


Figure 1- Flowchart of Data Collection

GOALS, TARGET PATIENT POPULATION, AND SERVICES

GOALS

Rural serving CP program goals are developed according to the needs of the community and CP services are integrated into the community’s resources and existing health-care system (Huang et al., 2017). The most common program goals are to aid patients in chronic disease management, reduce emergency department visits, reduce hospital admissions/readmissions, and reduce healthcare costs (Patterson et al., 2016). A rural CP program in South Central Pennsylvania reports their program goal is to reduce the number of patients readmitted to the hospital within 30 days after hospital discharge (Huang et al., 2017).

TARGET PATIENT POPULATION

Programs report targeting their services toward patients who are chronically ill,

post-hospital discharge, and frequent ambulance users (Patterson et al., 2016). A rural CP program in Texas provided a list of the most common diagnoses of the patients who receive their coordinated CP care: hypertension, injured in accident, dementia, constant falls, diabetes, respiratory problems, anxiety, chronic pain, seizure disorder, depression, and osteoarthritis (Pennel et al., 2018). Another program reported their target service group to be patients with chronic disease and high risk for readmission such as patients with CHF, COPD, chronic kidney disease, or asthma (Huang et al., 2017).

SERVICES

Community paramedics can provide services included in a care plan designed by a patient’s primary care provider, or services within their scope of practice defined by protocols that have been approved by a program’s medical director (Table 1). Practice authority varies by state (Coffman & Kwong, 2019).

	Services Provided by Rural CP Programs	Specific Examples Reported by Rural CP Programs
Preventative Health Services	<ul style="list-style-type: none"> Vaccine administration Patient education (ex. wound care education, diabetes education, medication education) Home safety evaluation Assessment of the patients’ perception of their health 	Installation of a bathroom chair and education on an in-home lift device for a patient with frontal lobe dysplasia and constant falls.
Resource Navigation	<ul style="list-style-type: none"> Social services Healthcare providers: Primary care facilities, hospitals Community resources: Meals on Wheels, nutrition assistance programs, housing and utilities assistance programs, and transportation assistance 	<p>A program connected 60% of patients to a community resource and all patients eligible for affordability programs or a health care plan were enrolled, which expanded their access to healthcare providers.</p> <p>Referrals to the following resources: a hospital benefit counselor for a Medicaid application, PCP for the establishment of primary care, dental clinic, diabetes program, pharmacy program, neurology specialist, and transportation resources for patients to travel to appointments. CPs reached out to local faith-based organizations to help their patients, utilizing the ‘shared obligation’ values of a small community</p>
Behavioral Health	<ul style="list-style-type: none"> Depression screening 	A service of 30-45 minutes of sitting and talking with a patient who experienced anxiety and respiratory problems, which resulted in reduced anxiety about her condition and no 911 call since program enrollment.
Medical Reconciliation	<ul style="list-style-type: none"> Review of patients’ current medications including dosage, daily schedule, adherence Identification of other medications prescribed by another provider Assistance with medication sorting system 	A primary care provider changed a patient’s medication dosage after communicating with the patients CP.
Physical assessment	<ul style="list-style-type: none"> Evaluation of patients’ activity level Blood glucose tests Weight measurement Blood pressure monitoring 12-lead electrocardiogram 	<ul style="list-style-type: none"> Oxygen saturation checks ING monitoring Blood draw Ultrasound

Table 1 - Services Provided (Coffman & Kwong, 2019; Bennett et al., 2018; Huang et al., 2017; Myers et al., 2020; O’Meara et al., 2018; Patterson et al., 2016; Pennel et al., 2016)

GOAL 1: CHRONIC DISEASE MANAGEMENT

CP provision of preventative and primary care services has improved health outcomes for patients with diabetes, hypertension, CHF, and COPD. Literature also reports CPs successfully referring patients to local resources which may improve health outcomes. However, programs may have failed to improve health outcomes among underserved and minority populations.

Abbeville County's CP program reported that 85% of their patients with diabetes experienced a decrease in fasting blood glucose level compared to their baseline and 70% of the patients with hypertension had a decrease in blood pressure. Though the program lacked the resources to track metrics of COPD participants, the COPD patients recorded significantly fewer ED admissions for shortness of breath during the project period (Bennett et al., 2018). A program in South Central Pennsylvania reports a 12% reduction in readmission rates for CHF patients and a 10% reduction for COPD patients (Huang et al., 2017). Two programs reported 67% of patients claimed to have the same or better health status as at their first CP visit, 59% of patients had the same or fewer physical limitations as at their first CP visit, and 7% had an improvement in quality of life indicated by an increase on a standardized quality of life instrument. The timeframe from the first visit to data collection was not reported (Patterson et al., 2016).

One way CPs impact patient outcomes is through referring patients to community resources. A program in Texas reported a primary care provider changed a patient's medication dosage after communicating with the patient's CP. A CP referral to a hospital benefits counselor resulted in the patient receiving Medicaid and utilizing Medicaid transportation to obtain medications. A referral for a diabetic patient who stretched his insulin use due to cost resulted in the patient receiving financial assistance for diabetes medication and lancets (Pennel et al., 2016).

The MEDICVAX Project in Pennsylvania demonstrated the feasibility of paramedics providing influenza vaccination to citizens in public buildings. Of the 2,075 adults immunized, 1,014 (49%) of patients did not receive an influenza vaccine the year prior and 705 (35%) reported they probably would not have been vaccinated elsewhere (Mosesso et al., 2003).

UNDERSERVED PATIENT POPULATIONS

Most vaccine recipients in the MEDICVAX project were white and younger than 60 years old. The author suggests distributing vaccinations at senior citizen centers to increase vaccinations among at-risk elderly individuals and implementation of culturally sensitive recruitment to target the attention of underserved and minority groups (Mosesso et al., 2003).

The Texas program reported a Spanish speaking only patient (no Spanish speaker on the care team) was dropped from the program after being labeled "non-compliant" (Pennel et al., 2016). CP programs may need to address language barriers in their services. Out of 31 rural serving CP programs, only 6.5% of programs report referring patients to mental health care facilities and 0% refer patients to addiction treatment centers (Patterson et al., 2016). However, rural regions may lack addiction centers to refer patients to.

GOAL 2: REDUCTION IN ED TRANSPORTS

Rural community paramedicine programs achieved a common goal of reducing patients' transportation to emergency departments. A reduction in unnecessary ambulance transports may be especially beneficial to rural communities where EMS agencies have limited numbers of ambulances and personnel, and transport patients longer distances to reach emergency departments (Gregg et al., 2019).

A CP program reported educational efforts and connections with other services allowed the patients participating in their program to use healthcare more appropriately, resulting in a 48.5% decrease in 911 calls made related to patients' primary conditions. Furthermore, there was 100% decrease in 911 calls for nonemergent issues and ambulances experienced a decrease in return to service times thus increasing their availability for patients in need of emergent care (Bennett et al., 2017).

Emergency department visits among patients who saw a CP decreased by 58.7% while those in a control group increased by 4%. Additionally inpatient admissions among patients who saw a CP decreased by 68.8% while the control group increased by 187.5%. Out of the CP program participants with a hospitalization, there was a 41% reduction in 30-day readmissions compared to 35.9% increase in the comparison group. Specifically, COPD patients enrolled in the CP programs saw a 75% decrease in readmissions (Bennett et al., 2017).

In rural Wisconsin county, patients identified as "high utilizers" by a referring physician experienced a statistically significant decline in utilization of primary care and ED visits during participation in an in-home CP program. However, the reduction of primary care and ED visits was replaced and exceeded by the number of CP visits (Myers et al., 2020).

Outcomes data from MedStar Mobile Health program in Texas reports 146 patients avoided 1,893 transports to the emergency department and the CHF readmission rate for patients who saw CPs was 6.7% lower than the national median (Choi et al., 2016).

Between December 2012 and June 2014, Washoe County, Nevada's CP program estimated 1,795 ED visits, 354 ambulance transports, and 28 hospital readmissions avoided by the delivery of CP services (Choi et al., 2016).

GOAL 3: COST REDUCTION

Through reduction in ED transports and hospital readmissions, CP programs in rural communities have reported cost savings for the healthcare payer and patient. Furthermore, a reduction in 30-day hospital readmission rates may help rural hospitals avoid financial penalties from Medicare and Medicaid Services (Myers et al., 2020).

A rural county in Colorado reported a healthcare cost savings of \$412,000 in 3 years due to the implementation of a CP program (Pennel et al., 2016). Washoe County, Nevada's CP program reported \$7.9 million in charge avoidance and \$2.8 million in Medicare

payments avoided within 2.5 years because of the ED visits, ambulance transports and hospital readmissions avoided by patients supported by the CP program. The MedStar Mobile Health program in Texas reported Medicare charge avoidance of \$21,627 and payment avoidance of \$5,536 per patient due to the avoidance of ED transportations (Choi et al., 2016).

On the other hand, a case study reports a decrease in primary care and ED visits resulted in an increase in utilization of healthcare resources when the number of CP home visits is taken into consideration. The cost of a CP visit compared to ED visit and ambulance transport must be considered. CP visits may result in an overall financial savings to the patient by reducing the time a patient has to travel and time away from work. A decrease in ED use also implies smaller charges to the patient and a reduction in unreimbursed expenses to the health system (Myers et al., 2020).

PATIENT AND PARAMEDIC ATTITUDES

Patients report positive perception of CP services with an emphasis on valuing the trust-based relationship developed through multiple in-home visits. Though paramedics report a positive perception of the CP position, some struggle with peers not understanding the new CP role and being viewed as a threat by other healthcare professionals.

PATIENT SATISFACTION

Community paramedics are described as having a more personal and trust-based relationship with their patients by conducting multiple visits in the comfort of the patients' home. CPs receive positive satisfaction scores from patients and patients report feeling "a lot safer" and "not afraid" of being home by themselves knowing that community paramedics are available to help them, especially if they are unsure if their health issue are serious enough to call an ambulance (Bennett et al., 2018; Pennel et al., 2016). CPs reduce stress on patients' family members by checking in on how the family is handling the patients' health condition and offering support. A family member reported feeling more comfortable with her decision to go on vacation because a CP she trusted was available to support the family member's mother, if needed (Pennel et al., 2016).

Paramedics are in an advantageous position to increase the rate of preventative health methods, such as immunizations, within their community because they often live in the community they serve and are therefore known and trusted by the residents (Moseso et al., 2003). Patient interviews provided evidence of the importance of meeting in-person at a patient's home - It was reported that phone calls were less effective means of communicating with the patient because patients did not trust the unknown caller (Pennel et al., 2016).

PARAMEDIC SATISFACTION

Paramedics are motivated to provide CP care out of a genuine interest of positively impacting their community and are also attracted to the innovative role of delivering preventative care to their patients (Martin & O'Meara, 2019).

A survey of EMS professionals servicing Missouri, Arkansas, Kansas, and Oklahoma indicates the majority believe they understand CP programs and perceive their communities want CP-level care. Fewer, however still the majority, reported they were willing to obtain additional education to provide CP care to their community. However, there is a concern about splitting dual responsibilities between emergency response and CP care during a shift, suggesting the preference for staff members to be committed directly to CP duties. There are no statistically significant differences in willingness to participate in a CP program between EMS provider level, age, level of education, type of shift, community served, or rank (Steeps et al., 2017).

Community paramedics report that skepticism from other paramedics and role boundary tensions with nurses have resulted in challenges to accept the CP role. Overall, CPs reported contentment with their positions and experience job satisfaction by making small differences in patients' lives, despite often being misunderstood by their peers (Martin & O'Meara, 2019).

PROBLEMS IDENTIFIED

The major problems identified are acquiring sustainable funding to develop CP programs and reimburse CP services, lack of consistency between CP scope of practice and educational requirements across states, role tensions with other healthcare professions, and lack of research about the safety of CP programs for patients.

FUNDING

A major concern for the sustainability of CP programs is funding the implementation of programs and reimbursement of CP services. Programs in the past, such as a program in California, have terminated operations once funding concluded (Pennel et al., 2016; O'Meara et al., 2018). Funding for many programs thus far have been achieved by federal and state grants as well as by ambulance services themselves (Choi et al., 2016). Several states have legislation declaring that EMS services are only reimbursed if a patient is transported to the emergency department (Bennet et al., 2018). Therefore, changes in state legislation and Medicare/Medicaid reimbursement models are required to sustain operations on a larger scale (Choi et al., 2016).

One-third of states have enacted community paramedicine into legislation and there is a large variation in Medicaid and commercial insurance reimbursement between states. For example, only Medicaid reimburses CP services in three state, only commercial health plans reimburse CP services in twelve states, and both Medicaid and commercial health plans reimburses CP services in four states (Coffman & Kwong, 2019).

There is also a concern that a reduction in emergency department transports may financially devastate rural hospitals and contribute to rural hospital closures. This may further reduce rural communities' access to healthcare providers (Gregg et al., 2019).

ROLE TENSIONS

Community paramedicine does not fit the traditional EMS definition of responding to medical emergencies. For this reason, this relatively new role has been met with resistance by some physicians, nurses, and paramedics who are unfamiliar with the newer concept of community paramedicine (Gregg et al., 2019). There are reports of concern about role tension because nurses, especially home health nurses, may feel that paramedics are encroaching on their job description (O'Mera et al., 2018).

NO CONSISTENCY IN SCOPE OF PRACTICE OR EDUCATION ACROSS STATES

There is a large variation between states in defining the CP scope of practice and educational requirements. There are twelve states that require formal CP recognition beyond paramedic training. The type of recognition varies between receiving a certification, endorsement, or simply approval. On the other hand, three states are currently developing formal CP education guidelines. For example, in Idaho there is no formal training requirement codified in the law other than completion of "additional training." On the other hand, a CP endorsement in Colorado is achieved by the completion of a CP course from an accredited paramedic school or college and passing a nationally offered exam (Coffman & Kwong, 2019).

This variation in reimbursement, scope of practice, and education creates challenges for policy makers to determine which elements to include in CP legislation. Research is needed to assess the consequences of this wide variation between states (Coffman & Kwong, 2019).

SAFETY

CP remains a relatively new model of care and its long-term outcomes are not well documented in peer-reviewed literature, especially in the rural United States. More evidence is needed to verify that CP care is safe and effective (Patterson et al., 2016; Choi et al., 2016). Furthermore, there are few CP interventions that describe addressing patients' mental or behavioral health (Gregg et al., 2019).

There are additional concerns about broadening the paramedic scope of practice in the US. For example, to include paramedic prescribing rights such as paramedics in the UK. A CP program in Colorado has introduced the use of ultrasound to paramedics (Coffman & Kwong, 2019; O'Mera et al., 2018).

DISCUSSION

The goals, target populations, and services reported in the literature by CP programs reflect the expectation of programs to provide preventative and primary care services to chronically ill patients. However, only five of the twelve publications reviewed provided data about patient outcomes. Patterson et al suggests CP programs lack access to data on patient outcomes once the patient leaves the care of the EMS agency and smaller rural programs may not have a large enough patient population to yield statistically

significant results (Patterson et al., 2016). There appears to be more data reported about reduction in ED transports and cost savings than whether CP services are effectively filling the primary care gap in rural communities. Furthermore, CP education may need to emphasize serving underserved and vulnerable populations early in the development of this evolving healthcare delivery model to ensure health disparities are not perpetuated. This may include overcoming language barriers, ensuring the program is advertised to all cultural groups, and enhancing referrals to behavioral health and addiction professionals.

This literature review highlights that there is limited literature investigating the patient outcomes of CP provision of primary and preventative care services in rural communities in the United States. Furthermore, most of the existing literature describes rural CP programs as positive.

The reported data suggests rural CP programs successfully reduce transports to the ED and may reduce the cost of health care. Future research of the cost-benefit analysis of CP programs requires a detailed analysis of the cost of developing and deploying a rural CP program compared to patient and payer cost savings (Myers et al., 2020).

Patient perception of CP services appears overwhelmingly positive. It would be interesting to investigate the extent to which patients in rural communities prefer CP services over telehealth. Research on the potential synergies that may exist between telehealth and CP is also needed to optimize care. Improving paramedic perspective of the CP position by clearly identifying the job description, separating CP duties from emergency response to avoid overwhelming EMS staff, and eliminating role tension around overlapping responsibilities of CP and home health nursing may enhance paramedic interest in obtaining a CP position. This may be especially important because rural regions traditionally struggle with EMS recruitment and staff retention (Freeman et al., 2009).

This overview of challenges echoes that funding for the development of CP programs and reimbursement of services limits the development of sustainable rural CP programs. Furthermore, lack of consistency between states regarding funding, scope of practice, and CP education may make it difficult for other states interested in implementing CP programs to identify what elements to incorporate in their CP legislation. This may impair more rural regions from initiating their own CP programs

LIMITATIONS

Community paramedicine is an evolving concept in the United States and there is limited research investigating patient health outcomes and patient safety after CP intervention. Most studies are observational studies or systematic reviews.

CONCLUSION

Rural serving CP program goals are to aid patients in chronic disease management, reduce emergency department visits, reduce hospital admissions/readmissions, and reduce healthcare costs. Programs report targeting services toward chronically ill patients,

post-hospital discharge patients, and frequent EMS users. CP provision of preventative and primary care services has improved health outcomes for patients with diabetes, hypertension, CHF, and COPD. Rural CP programs report cost savings for the healthcare payer and patient and a reduction in ED transports and hospital readmissions. Patients report positive perception of CP services with an emphasis on valuing the development of a trust-based relationship. The problems identified are acquiring sustainable funding to develop CP programs and reimburse CP services, lack of consistency between CP scope of practice and educational requirements across states, role tensions with other healthcare professions, and lack of research about the safety of CP programs for patients.

This paper highlights the lack of research investigating patient outcomes secondary to preventative health and primary care services provided by CPs, which may identify if CPs are an effective means of helping to fill the primary care gap for rural communities. Furthermore, CP programs may need to devise protocols to overcome language barriers, enhance referrals to addiction services if possible, and advertise services to all cultural groups within the community to ensure they are serving underserved and vulnerable populations early in the development of this evolving healthcare delivery model.

REFERENCES

- Bennett, K. J., Yuen, M. W., & Merrell, M. A. (2017). Community Paramedicine applied in a Rural Community. *The Journal of Rural Health*, 34. <https://doi.org/10.1111/jrh.12233>
- Choi, B. Y., Blumberg, C., & Williams, K. (2016). Mobile Integrated Health Care and Community Paramedicine: An emerging emergency medical services concept. *Annals of Emergency Medicine*, 67(3), 361–366. <https://doi.org/10.1016/j.annemergmed.2015.06.005>
- Coffman, J., & Kwong, C. (2020, June 30). Left behind in California: Comparing community paramedicine policies across states. California Health Care Foundation. Retrieved June 6, 2021, from <https://www.chcf.org/publication/left-behind-california-community-paramedicine-policies/>
- Freeman, V. A., Slifkin, R. T., & Patterson, P. D. (2009). Recruitment and retention in rural and Urban EMS. *Journal of Public Health Management and Practice*, 15(3), 246–252. <https://doi.org/10.1097/phh.0b013e3181a117fc>
- Gregg, A., Tutek, J., Leatherwood, M. D., Crawford, W., Friend, R., Crowther, M., & McKinney, R. (2019). Systematic Review of Community Paramedicine and EMS Mobile Integrated Health Care Interventions in the United States. *Population Health Management*, 22(3), 213–222. <https://doi.org/10.1089/pop.2018.0114>
- Huang, Y.-H., Ma, L., Sabljak, L. A., & Puhala, Z. A. (2018). Development of Sustainable Community paramedicine programmes: A case study in Pennsylvania. *Emergency Medicine Journal*, 35(6), 372–378. <https://doi.org/10.1136/emered-2017-207211>
- Martin, A., & O'Meara, P. (2019). Perspectives from the frontline of two North American Community paramedicine programs: An observational, ethnographic study. *Rural and Remote Health*. <https://doi.org/10.22605/rrh4888>
- Mosesso, V. N., Packer, C. R., McMahan, J., Auble, T. E., & Paris, P. M. (2003). INFLUENZA IMMUNIZATIONS Provided by Ems agencies : The MEDICVAX Project. Prehos-

- pital Emergency Care, 7(1), 74–78. <https://doi.org/10.1080/10903120390937139>
- Myers, L., Carlson, P., Krantz, P., Johnson, H., Will, M., Bjork, T., Dirkes, M., Bowe, J., Gunderson, K., & Russi, C. (2020). Development and implementation of a Community Paramedicine Program in rural United States. *Western Journal of Emergency Medicine*, 21(5). <https://doi.org/10.5811/westjem.2020.7.44571>
- O'Brien, Bridget C. PhD; Harris, Ilene B. PhD; Beckman, Thomas J. MD; Reed, Darcy A. MD, MPH; Cook, David A. MD, MHPE. Standards for Reporting Qualitative Research: A Synthesis of Recommendations. *Academic Medicine* 89(9):p 1245-1251, September 2014. <https://doi.org/10.1097/ACM.0000000000000388>
- O'Meara, P., Wingrove, G., & Nolan, M. (2018). Frontier and remote paramedicine practitioner models. *Rural and Remote Health*. <https://doi.org/10.22605/rrh4550>
- Patterson, D. G., Coulthard, C., Garberson, L. A., Wingrove, G., & Larson, E. H. (2016). What is the potential of community paramedicine to Fill Rural Health Care Gaps? *Journal of Health Care for the Poor and Underserved*, 27(4A), 144–158. <https://doi.org/10.1353/hpu.2016.0192>
- Pearson, K., Gale, J., Coburn, A., Croll, Z., & Shaler, G. (2016). Developing program performance measures for rural emergency medical services. *Prehospital Emergency Care*, 21(2), 157–165. <https://doi.org/10.1080/10903127.2016.1218978>
- Pennel, C. L., Tamayo, L., Wells, R., & Sunbury, T. (2016). Emergency medical service-based care coordination for three rural communities. *Journal of Health Care for the Poor and Underserved*, 27(4A), 159–180. <https://doi.org/10.1353/hpu.2016.0178>
- Steeps, R., Wilfong, D., Hubble, M., & Bercher, D. (2017). Emergency medical services professionals' attitudes about community paramedic programs. *Western Journal of Emergency Medicine*, 18(4), 630–639. <https://doi.org/10.5811/westjem.2017.3.32591>