Healthforce Center at UCSF

Evaluation of AB 1544: Community Paramedicine and Triage to Alternate Destination

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Executive Summary

Emergency medical services agencies across the United States are increasingly implementing models of care that seek to improve health care delivery by using specially trained paramedics in partnership with other health care providers. These models include community paramedicine, which involves paramedics providing services outside traditional 911 response, and triage to alternate destinations, such as mental health crisis centers and sobering centers.

On November 14, 2014, the California Office of Statewide Health Planning and Development (OSHPD), now known as the Department of Health Care Access and Information (HCAI), approved a Health Workforce Pilot Project (HWPP #173) sponsored by the California Emergency Medical Services Authority (EMSA) to test multiple community paramedicine concepts. The community paramedicine HWPP encompassed 20 projects in 14 communities across California, that tested seven different community paramedicine concepts. On September 25, 2020, Governor Newsom signed AB 1544 (Chapter 138, Statutes of 2020) which authorizes local emergency medical services agencies to develop community paramedicine or triage to alternate destination programs. When AB 1544 was implemented on January 1, 2021, responsibility for the 13 existing pilot projects were transferred from HCAI to EMSA. EMSA adopted regulations to implement AB 1544 in November 2022.

AB 1544 requires EMSA to contract with an independent evaluator to prepare a report for the California State Legislature on the impact of community paramedicine and triage to alternate destination programs on patients, the health care workforce, and the emergency medical services system. EMSA contracted with a team of evaluators at HealthForce Center and the Philip R. Lee Institute for Health Policy Studies at the University of California, San Francisco (UCSF) to complete the evaluation. On February 16, 2021, an evaluation of community paramedicine HWPP was completed.

This report presents a summary of major findings from the evaluation. Beginning in October 2015, most data was submitted to UCSF by project sites on a quarterly basis. These findings are supplemented by qualitative interviews with project sites and data obtained from the sites. The report presents cumulative findings for projects that were in operation on January 1, 2021, from the time they began enrolling patients through September 2022. It also breaks out findings from January 1, 2021 (the effective date of AB 1544) through September 30, 2022. Findings are limited to the former pilot projects because no additional jurisdictions have sought EMSA's approval for community paramedicine or triage to alternate destination projects.

Types of Community Paramedicine and Triage to Alternate Destination Projects

AB 1544 authorizes new and existing projects that implement one of the following five community paramedicine and triage to alternate destination concepts.

Community Paramedicine

- **Frequent EMS User:** Provide case management services to people who are frequent 911 callers and frequent visitors to Emergency Departments (ED) to identify needs that could be met more effectively outside of an ED, and assist patients in accessing primary care, mental health services, substance use disorder services, social services, and other services.
- **Directly Observed Therapy for Tuberculosis:** In collaboration with a public health agency, provide directly observed therapy (i.e., dispense medications and observe patients taking them) to people with tuberculosis to ensure effective treatment of tuberculosis and prevent its spread.
- **Hospice:** In response to 911 calls made by or on behalf of hospice patients, collaborate with hospice agency nurses, patients and family members to treat patients in their homes according to their wishes instead of transporting them to an ED.

Triage to Alternate Destination

- **Alternate Destination – Mental Health:** In response to 911 calls, offer people who have mental health needs but no acute medical needs transport directly to a mental health crisis center instead of to an ED where they may subsequently be transferred to a mental health facility.
- **Alternate Destination – Sobering Center:** In response to 911 calls, offer people who are acutely intoxicated but do not have acute medical or mental health needs transport directly to a sobering center for monitoring instead of to an ED.

AB 1544 also authorizes continuation of Post-Discharge – Short-Term Follow-Up projects that were established under HWPP #173 but prohibits the establishment of new projects of this type. Post-Discharge – Short-Term Follow-Up projects provide short-term, home-based follow-up care to people within several days of hospital discharge due to a chronic condition (e.g., heart failure). The goal of these projects is to reduce patients' risk of readmission and improve their ability to manage their condition at home. *

* Under HWPP #173 sites were authorized to pilot test a seventh concept under which, in response to 911 calls, people with low-acuity medical conditions were offered the option of transport to an urgent care center for evaluation by a physician in lieu of transport to an ED. The three sites that tested the alternate destination – urgent care concept ceased operating these projects in 2017 and AB 1544 does not permit new alternate destination – urgent care projects.

Status of Community Paramedicine and Triage to Alternate Destination Projects

- Twenty pilot projects were launched by fourteen emergency medical services (EMS) agencies from 2015 to 2019 as part of the HWPP. Each project implemented a specific community paramedicine or triage to alternate destination concept.
- Thirteen of these projects were operating when AB 1544 was implemented on January 1, 2021. Several sites had two projects each, including San Francisco, Los Angeles, Gilroy, Alameda, and Ventura.
    - One Post-Discharge project
    - Three Frequent EMS User projects
    - One Tuberculosis project
    - One Hospice project
    - Four Triage to Alternate Destination – Mental Health projects
    - Three Triage to Alternate Destination – Sobering Center projects
- Four projects have closed since AB 1544 was implemented.
    - One Frequent EMS User project closed because the community paramedic staffing went on an extended medical leave.
    - One Triage to Alternate Destination – Mental Health project closed due to a change in jurisdiction.
    - One Triage to Alternate Destination – Mental Health and one Triage to Alternate Destination – Sobering Center project closed due to lack of local behavioral health resources.

Training of Community Paramedics and Triage to Alternate Destination Paramedics

- All community paramedics have completed 152 hours of instruction per curriculum developed by the State of California Community Paramedic Educational Taskforce and approved by HCAI.
- Triage to alternate destination paramedics have completed 8 hours of training focused on applying protocols for screening patients to determine whether they can be treated safely and appropriately at alternate destinations.
- Sixty-two additional community paramedics have been trained since AB 1544 was implemented on January 1, 2021.

- Additional triage to alternate destination paramedics have been trained as part of onboarding processes that EMS agencies that operate these projects require all newly hired paramedics to complete.

Accomplishments

Leaders of community paramedicine and triage to alternate destination projects cited three major accomplishments:

- Building rapport with patients, some of whom are wary of other healthcare providers
- Improving coordination of care for patients
- Enhancing ability to provide patients with the right services at the right time

Challenges

Leaders of community paramedicine and triage to alternate destination projects report that their projects face three major challenges:

- Limited availability of resources that many patients need, such as supportive housing, inpatient psychiatric beds, and residential detoxification beds
- Tensions with other organizations serving their clients that have different organizational cultures
- Changes in leadership and staffing at EMS agencies and partner agencies

Findings

Post-Discharge – Short-Term Follow-Up Findings

- From June 2015 through September 2022, the five Post-Discharge – Short-Term Follow-Up projects enrolled 1,833 patients. The one Post-Discharge project that has continued under AB 1544 (Solano) enrolled 310 patients, of which 17 were enrolled after AB 1544 implementation.

- The Post-Discharge – Short-Term Follow-Up projects have improved patient safety and health outcomes by performing home visits within a few days of a patient's hospital discharge to ensure that patients understand their discharge instructions, are taking medications as prescribed, have sufficient refills to manage their conditions, have follow-up visits scheduled with their physicians and are adhering to any dietary restrictions pertinent to the management of their condition.

- The all-cause 30-day readmission rates for persons enrolled in Solano's project are lower than the partner hospital's 30-day readmission rates for the conditions this project targets (chronic obstructive pulmonary disease and heart failure).

    - For heart failure, the 12.5% of patients in the project were readmitted to the hospital between January 2021 and September 2022, compared to a historical 30-day readmission rate of 22%.
    - For chronic obstructive pulmonary disease, no patients (0%) were readmitted to the hospital between January 2021 and September 2022 compared to a historical 30-day readmission rate of 20.5%.

Frequent EMS User Findings

- The three Frequent EMS User projects enrolled 778 people from July 2015 through September 2022; 264 of those individuals were enrolled after AB 1544 implementation.

- The three Frequent EMS User projects have achieved large reductions in the number of 911 calls made on behalf of their clients and the number of transports to EDs.
    - Among persons enrolled in San Diego's Frequent EMS User project during the time at which the community paramedics were initially on duty (November 2015 through December 2016) and for whom data are available for 12 months prior to enrollment and 12 months following enrollment, the total number of 911 calls decreased by 35%.
    - Among persons enrolled in Alameda's Frequent EMS User project through September 2019 for whom data are available for 12 months prior to enrollment and 12 months following enrollment, the total number of 911 calls decreased by 29%.
    - For clients who have a personalized Prehospital Care Plans, San Francisco's Frequent EMS User Project has compared 911 calls and ED visits during the four months prior to implementation of a patient's care plan and the four months after implementation. The number of ED visits per patient decreased by 19% following implementation.

- Frequent EMS User projects have linked patients to organizations that provide primary care, dental care, mental health services, substance abuse treatment, food, housing, transportation and other services that can address their needs more effectively than the EMS system.
    - Since the start of these projects up until September 2022, the three Frequent EMS projects made 1,445 referrals during their first visits with patients, and patients have been transported to non- ED service providers 995 times.

Directly Observed Therapy (DOT) for Tuberculosis Findings

- The tuberculosis (TB) project enrolled 58 persons from June 2015 through September 2022; six of those individuals were enrolled after AB 1544 implementation.

- Most patients are enrolled for multiple months because treatment for TB typically spans six to nine months.

- Community paramedics dispense appropriate doses of TB medications, and their TB patients do not experience side effects any more frequently than typically associated with TB treatment.

- Overall, people with TB who received DOT from community paramedics were more likely to receive all doses of TB medications prescribed by the TB clinic physician than people who received DOT exclusively from the TB clinic's staff, most likely because community paramedics operated throughout the county and were available 24 hours per day, 7 days per week.

Hospice Findings

- The Hospice project enrolled 858 persons between August 2015 and September 2022; 398 of these patients were enrolled after AB 1544 implementation.
- The Hospice project reduced the likelihood that patients who preferred treatment at home were transported to an ED, which could result in loss of hospice benefits. Prior to May 2020, 12% of patients enrolled in this project had their hospice benefits revoked. This data was not consistently tracked after May 2020 due to the revocation of benefits not being a required element and not shared by hospitals.

- Among hospice patients enrolled in the pilot project, the percentage of 911 calls that resulted in transport to an ED decreased from 80% to 38%.

- No patients were denied transport to an ED when it was indicated and consistent with the patient's preference.

Alternate Destination – Mental Health Findings

- The four Alternate Destination – Mental Health projects enrolled 8,332 persons between September 2015 and September 2022; 2,757 were enrolled after AB 1544 implementation.

- Across the four Alternate Destination – Mental Health projects, large percentages of patients screened were transported to the mental health crisis center rather than an ED.

  - Stanislaus' project transported 28% of the 1,997 patients screened to a mental health crisis center between September 2015 and its closure in July 2022.
  - Fresno's project transported 33% of the 23,152 patients screened between July 2018 and September 2022 to a mental health crisis center.
  - Gilroy's project transported 40% of the 287 patients screened between November 2018 through September 2022 to a mental health crisis center.
  - Los Angeles' project transported 27% of the 302 patients screened between June 2019 and June 2020 to a mental health crisis center.

- Some patients who were eligible for transport to a mental health crisis center were taken to an ED instead because the crisis center was at capacity.
- Transport of patients directly to a mental health crisis center has reduced the number of persons in EDs who only need mental health services, which may help reduce ED overcrowding.
- Only 2% of patients enrolled in the three Alternate Destination – Mental Health projects (n = 160) were transferred from the mental health crisis center to an ED within six hours of admission. None of the transfers involved a life-threatening condition, and only twenty of the patients transferred to an ED were admitted for inpatient medical care.
- Ambulance patient offload times at mental health crisis centers are substantially shorter than at EDs in the same communities, which enables 911 response crews who transport patients to the crisis centers to return to the field to respond to other 911 calls more quickly.
  - For example, the 90th percentile ambulance patient offload time for the Fresno project's transports to its mental health crisis center is 9 minutes, whereas the 90th percentile ambulance patient offload time for all patients transported to EDs in the ambulance company's service area is 33 minutes.
- Law enforcement officers report that having community paramedics available enhances their ability to respond effectively to persons with mental health needs.

Alternate Destination – Sobering Center Findings

- The three Alternate Destination – Sobering Center projects enrolled 3,906 persons from February 2017 through September 2022; 847 of those patients were enrolled after AB 1544 implementation.
- Most patients (3,810) were enrolled in San Francisco's Alternate Destination – Sobering Center project. Los Angeles' Alternate Destination – Sobering Center project has enrolled 96 people since it launched in late June of 2019, however no new patients have enrolled since early 2020.

The Santa Clara County EMS Agency and the Gilroy Fire Department's Alternate Destination – Sobering Center project closed in May 2022.

- 98.3% of patients enrolled in San Francisco's Alternate Destination – Sobering Center project were treated safely and effectively at the sobering center. Only 64 patients (1.6%) were transferred to an ED within six hours of admission to the sobering center, and only three (0.1%) were rerouted from the sobering center to an ED because registered nurses at the sobering center declined to accept them. Only twelve patients were admitted to a hospital for inpatient medical care.

- None of the patients enrolled in Los Angeles' Alternate Destination – Sobering Center project were transferred to an ED within six hours of admission.

- The 90th percentile ambulance patient offload time at San Francisco's sobering center is 17 minutes, whereas the 90th percentile ambulance patient offload time for patients transported to all EDs in San Francisco is 34 minutes. This enables 911 response crews who transport patients to the crisis centers to return to the field to respond to other 911 calls more quickly. Data were not available for Los Angele's Alternate Destination – Sobering Center project.

Conclusion

The community paramedicine and triage to alternate destination projects have demonstrated that specially trained paramedics can provide services beyond their traditional scope of practice in California. No adverse outcome is attributable to any of these projects. The projects enhanced patients' well-being by improving the coordination of medical, behavioral health and social services, and reducing ambulance transport, ED visits and hospital readmissions.

These projects integrate with existing health care resources and utilize the unique skills of paramedics and their around the clock availability. Interviewees at hospitals, Emergency Nurses Association and Social Workers reported that the projects have not displaced any other health professional. No partner agencies indicated that they had reduced their staffing because paramedics were providing services that their staff previously provided. Interviewees with EMS agency representatives reported that the projects have not negatively affected EMS agencies' ability to respond to 911 calls. Instead, they have demonstrated that community paramedics and triage to alternate destination paramedics can collaborate with physicians, nurses, behavioral health professionals, and social services workers to fill gaps in the health and social services safety net. The paramedics participating in these projects operate at all times under medical control – either directly or by protocols developed by physicians experienced in EMS and emergency care.

Findings from this evaluation are consistent with other research regarding community paramedicine and triage to alternate destination programs. Other studies also suggest that the effectiveness of community paramedicine programs continue to grow as they mature, solidify partnerships, and find their optimal structure and role within a community.

Introduction

When the paramedic profession first emerged in the United States in the 1960s and 1970s, the primary roles of paramedics were to respond to medical emergencies by assessing critically ill or injured people in the field, providing care per protocols, and transporting people to emergency departments (EDs). Over time, paramedics have increasingly responded to 911 calls from persons whose needs fall outside these traditional boundaries of traditional 911 response, such as people with chronic mental health conditions or substance use disorders. Simultaneously, many EDs around the country care for large numbers of patients whose needs could be better met elsewhere or whose ED visits may have been avoided if they had better access to primary care or behavioral health services.

In response to these challenges, emergency medical services (EMS) agencies across the United States are increasingly implementing new models of care. These models include community paramedicine, which involves paramedics providing services outside traditional 911 response, and triage to alternate destinations that are better equipped than EDs to meet some patients' needs, such as mental health crisis centers and sobering centers.

Community paramedics receive additional training beyond what is required for licensure and provide care outside of their traditional role. They are supervised by physicians and nurses who work for the emergency medical services (EMS) agencies that employ them and collaborate with staff from the health care, social services, and community service agencies with which their EMS agencies partner.

Jurisdictions that have triage to alternate destinations programs train paramedics to screen patients to assess whether they can be treated safely and appropriately in a facility other than an ED, such as a mental health crisis center or a sobering center. The training is similar to the training paramedics receive to assess whether a patient should be transported to the nearest ED or to an ED at a hospital that provides specialized services, such as a comprehensive stroke center or a level one trauma center.

On November 14, 2014, the California Office of Statewide Health Planning and Development (OSHPD), now known as the Department of Health Care Access and Information (HCAI) approved an application submitted by the California Emergency Medical Services Authority (EMSA) for a Health Workforce Pilot Project (HWPP) to evaluate community paramedicine and triage to alternate destination concepts. California established the HWPP program (HSC §§ 128125-128195), which was originally called the Health Manpower Pilot Projects program, in 1972 to enable health care organizations to test and evaluate innovative models of care that utilize health professionals in new roles. An HWPP is necessary to establish community paramedicine initiatives in California because the sections of the Health and Safety Code that govern the paramedic scope of practice (HSC §§ 1797.52, 1797.218) limit the settings where paramedics can provide services and the destinations to which they can transport patients. The community paramedicine HWPP operated from 2014 to 2020 and encompassed 20

projects in 14 communities across California that tested seven different community paramedicine concepts.[†]

On September 25, 2020, Governor Newsom signed AB 1544, which authorizes local emergency medical services agencies to develop community paramedicine or triage to alternate destination programs and permitted continuation of the 13 pilot projects that remained in operation on January 1, 2021. EMSA adopted regulations to implement AB 1544 in November 2022. The 13 pilot projects have until November 2023 to submit an EMS Plan Addendum meeting the requirements of the regulations one year from adoption to be compliant.

AB 1544 authorizes new and existing projects that implement one of the following five community paramedicine and triage to alternate destination concepts.

Community Paramedicine

- **Frequent EMS User:** Provide case management services to people who are frequent 911 callers and frequent visitors to EDs to identify needs that could be met more effectively outside of an ED, and assist patients in accessing primary care, mental health services, substance use disorder services, social services, and other services.
- **Directly Observed Therapy for Tuberculosis:** In collaboration with a public health agency, provide directly observed therapy (i.e., dispense medications and observe patients taking them) to people with tuberculosis to ensure effective treatment of tuberculosis and prevent its spread.
- **Hospice:** In response to 911 calls made by or on behalf of hospice patients, collaborate with hospice agency nurses, patients and family members to treat patients in their homes according to their wishes instead of transporting them to an ED.

Triage to Alternate Destination

- **Alternate Destination – Mental Health:** In response to 911 calls, offer people who have mental health needs but no acute medical needs transport directly to a mental health crisis center instead of to an ED where they may be subsequently transferred to a mental health facility.
- **Alternate Destination – Sobering Center:** In response to 911 calls, offer people who are acutely intoxicated but do not have acute medical or mental health needs transport directly to a sobering center for monitoring instead of to an ED.

AB 1544 also authorizes continuation of **Post-Discharge – Short-Term Follow-Up** projects that were established under HWPP #173 but prohibits the establishment of new projects of this type. Post-Discharge – Short-Term Follow-Up projects provide short-term, home-based follow-up care

to people within several days of hospital discharge due to a chronic condition (e.g., heart failure). The goal of these projects is to reduce patients' risk of readmission and improve their ability to manage their condition.

AB 1544 requires EMSA to contract with an independent evaluator to prepare a report for the California State Legislature on the impact of community paramedicine and triage to alternate destination programs. The report is required to include:

- A detailed assessment of each community paramedicine or triage to alternate destination program operating in local EMS agency jurisdictions.
- An assessment of patient outcomes in the aggregate resulting from services provided under approved plans under the program.
- An assessment of workforce impact due to implementation of the program.
- An assessment of the impact of the program on the emergency medical services system.
- An assessment of how the currently operating program specialties achieve the legislative intent stated in HSC Section 1801.
- An assessment of community paramedic and triage training.

EMSA contracted with a team of evaluators at HealthForce Center and the Philip R. Lee Institute for Health Policy Studies at the University of California, San Francisco (UCSF) to complete the evaluation. These evaluators were chosen because they previously completed an evaluation of the community paramedicine HWPP.

This report presents major findings from the evaluation. Most data were submitted to UCSF by project sites on a quarterly basis. These findings are supplemented by qualitative interviews with project sites and additional data obtained from the sites themselves. The report presents findings for the 13 projects that were in operation on January 1, 2021, from the time they began enrolling patients through September 2022, as well as findings for four pilot projects that closed prior to January 1, 2021, that tested community paramedicine and triage to alternate destination concepts authorized under AB 1544. No additional projects are included because no jurisdictions have requested EMSA's approval for new projects.

Methods

Information presented in this report was obtained from multiple sources. Each of the projects used a standardized, online data collection tool to report data to the independent evaluator on a quarterly basis. Metrics for which data were collected included number of people enrolled, characteristics of enrollees and outcomes of community paramedic and triage to alternate destination services, including patient safety outcomes. Sites also reported information about people who were eligible for their projects but not enrolled.

In addition, the evaluators conducted a series of interviews in early 2023 with representatives from all 13 projects that were in operation on January 1, 2021. Where possible, researchers interviewed staff from partner programs to understand the impact of these projects on collaboration and the local health care system. The purpose of these interviews was to understand the current status of these projects, as well as their impact on patients and the EMS system.

This evaluation focuses solely on the community paramedicine and triage to alternate destination projects and does not consider other changes in health care delivery that may have affected the outcomes observed. These changes include the substantial increase in the use of telehealth services during the COVID-19 pandemic. Although telehealth use has ebbed since the first months of the pandemic, it remains higher than prior to the pandemic, especially for primary care and behavioral health services. The expansion of telehealth may have improved access to primary care and behavioral health services for the populations served by community paramedicine and triage to alternate destination projects, which may reduce the number of persons who need these services. However, the effects of telehealth expansion are likely to be small for many of the projects because they serve low-income people who may not be able to afford smart phones and often do not have stable housing.

Findings for post-discharge projects may also be affected by contemporaneous changes in health care delivery. Since Medicare began imposing penalties on hospitals with "excessive" 30-day readmission rates in federal fiscal year 2013,[‡] hospitals have deployed multiple strategies to reduce readmissions, such as utilizing registered nurses to provide intensive discharge planning, patient education and telephone support to patients following hospital discharge.[3,4] To the extent that hospitals participating in the post-discharge projects utilize other strategies to reduce readmissions, it is possible that reductions in readmissions at partner hospitals are due to those strategies and not the post-discharge community paramedicine projects.

[‡]Medicare penalizes hospitals that have 30-day readmission rates that exceed the national average adjusted for characteristics of patients who were readmitted and characteristics of the entire population of patients that a hospital serves. Hospitals that exceed this benchmark receive a 3% penalty across all Medicare admissions regardless of whether they resulted in a readmission within 30 days. Boccuti, C., and G. Casillas. Aiming for Fewer Hospital U-Turns: The Medicare Hospital Readmission Reduction Program. Menlo Park, CA: Kaiser Family Foundation, March 2017. http://files.kff.org/attachment/Issue-Brief-Fewer-Hospital-U-turns-The-Medicare-Hospital-Readmission-Reduction-Program.

Results

The results section begins with a summary of major findings related to all six-community paramedicine and triage to alternate destination concepts authorized under AB 1544. The summary is followed by a discussion of major findings regarding key metrics relevant to individual community paramedicine concepts.

Highlights

- Collectively, the community paramedicine pilot projects enrolled 15,813 people from June 2015 through September 2022; 4,289 of these patients were enrolled since AB 1544 implementation on January 1, 2021.
- The Alternate Destination – Mental Health projects have enrolled the largest number of persons.
- Seven projects closed prior to the January 1, 2021. Four additional projects have closed since AB 1544 implementation.
- The majority of patients enrolled in the projects were Medicare or Medi-Cal beneficiaries.

Project Status and Enrollment

Table 1 lists the lead agency for each of the 20-community paramedicine and triage to alternate destination project in California, the concept tested, the date on which the project began enrolling patients, and the total number of patients enrolled from the time each project began through September 30, 2022. The longest-running projects began enrolling patients in June 2015.

Nine of these twenty projects remain in operation in 2023. Four of the Post-discharge projects and the three Alternate Destination – Urgent Care projects closed for various reasons prior to AB 1544 implementation(January 1, 2021). Four more projects have closed since AB 1544 was implemented.

Alameda's Frequent EMS User project closed because the program's community paramedic went on an extended medical leave. Stanislaus' Alternate Destination – Mental Health project closed due to Stanislaus County leaving the Mountain Valley EMS system. Gilroy's Alternate Destination – Mental Health and Alternate Destination – Sobering Center projects closed due to the lack of availability of mental health crisis and sobering center resources in the Gilroy area.

Collectively, the projects enrolled 15,813 people from June 2015 through September 2022. Projects testing the Alternate Destination – Mental Health concept enrolled the largest number of patients (8,332 patients). Fresno's Alternate Destination – Mental Health project enrolled the largest number of patients across all projects (7,510 patients).

Table 1. Pilot Sites, Community Paramedicine Concepts, and Enrollment

Community Paramedicine Concept	Lead Agency	Date Implemented	Total Patients Enrolled Since AB 1544 Implementation	Total Patients Enrolled Since the Project Began
Post-Discharge – Short-Term Follow-Up	Alameda City EMS	June 1, 2015 [a]	-	140
Post-Discharge – Short-Term Follow-Up	Butte County EMS	July 1, 2015 [b]	-	1,001
Post-Discharge – Short-Term Follow-Up	San Bernardino County and Rialto Fire Depts.	August 13, 2015 [c]	-	228
Post-Discharge – Short-Term Follow-Up	UCLA Center for Prehospital Care	September 1, 2015 [d]	-	154
Post-Discharge – Short-Term Follow-Up	Medic Ambulance Solano	September 15, 2015	17	310
All Post-Discharge – Short-Term Follow-Up Projects			**17**	**1,833**
Frequent EMS User	Alameda City EMS	July 1, 2015 [e]	-	85
Frequent EMS User	City of San Diego	October 12, 2015	7	72
Frequent EMS User	San Francisco Fire Dept.	September 12, 2018	257	621
All Frequent EMS User Projects			**264**	**778**
Directly Observed Therapy for Tuberculosis	Ventura County EMS	June 1, 2015	**6**	**58**
Hospice	Ventura County EMS	August 1, 2015	**398**	**858**
Alternate Destination – Mental Health	Mountain Valley – Stanislaus EMS	September 25, 2015 [f]	45	539
Alternate Destination – Mental Health	Santa Clara County EMS	June 6, 2018 [g]	35	143
Alternate Destination – Mental Health	Central California EMS	July 30, 2018	2,632	7,510
Alternate Destination – Mental Health	Los Angeles Fire Dept.	June 21, 2019	45	140
All Alternate Dest. – Mental Health Projects			**2,757**	**8,332**
Alternate Destination – Sobering Center	San Francisco Fire Dept.	February 1, 2017	847	3,810
Alternate Destination – Sobering Center	Santa Clara County EMS	June 6, 2018 [g]	-	0
Alternate Destination – Sobering Center	Los Angeles Fire Dept.	June 21, 2019 [h]	-	96
All Alternate Dest. – Sobering Center Projects			**847**	**3,906**
Alternate Destination – Urgent Care	UCLA Center for Pre-Hospital Care	September 8, 2015 [i]	-	12
Alternate Destination – Urgent Care	Orange County	September 15, 2015 [j]	-	34

Alternate Destination – Urgent Care	Carlsbad Fire Department	October 9, 2015 [k]	-	2
All Alternate Dest. – Urgent Care Projects			**-**	**48**
All Projects			**4,289**	**15,813**

[a]Ceased enrolling patients November 2020
[b]Ceased enrolling patients December 2018
[c]Suspended operations on September 30, 2019, due to lack of referrals from partner hospital.
[d]Ceased enrolling patients May 2017.
[e]Suspended operations on May 2022, due to CP on medical leave.
[f]Ceased enrolling patients July 2022.
[g]Ceased enrolling patients May 2022.
[h]Suspended operations March 2020.
[i]Ceased enrolling patients May 2022.
[j]Ceased enrolling patients May 2022.
[k]Ceased enrolling patients May 2022.

Patient Insurance Status

Data about insurance status provides important insights into the populations served by community paramedicine and triage to alternate destination projects because insurance status is correlated with income and age. Due to eligibility requirements, most people enrolled in Medicare are over 65 years of age and all people enrolled in Medicaid (Medi-Cal in California) have low incomes. People who are uninsured also tend to have low incomes.

Reports on HWPP #173 found that, the distribution of patients by health insurance status varied substantially across the 20 projects, in large part due to differences in the characteristics of the patients served. Amongst those patients for whom insurance status was known, Medicare beneficiaries accounted for the largest percentage of patients enrolled by four of the five post-discharge projects (Alameda, Butte, Solano, and UCLA – Glendale), one of the Frequent EMS User projects (Alameda), and the Hospice project.[±§] Medi-Cal beneficiaries comprised the largest share of patients enrolled in Ventura's Directly Observed Therapy for Tuberculosis project, San Diego's Frequent EMS Users project, Los Angeles' and Stanislaus' Alternate Destination – Mental Health projects, and San Francisco's and Los Angeles' Alternate Destination – Sobering Center projects. Uninsured or self-pay patients made up the largest share of patients in San Francisco's Frequent EMS Users project and Fresno and Gilroy's Alternate Destination – Mental Health Projects. Many of the people whom these projects serve have mental illness, substance use disorders or other conditions that limit their access to employer-sponsored health insurance. Findings for the 13 projects that were in operation at the time AB 1544 implemented on January 1, 2021, are largely consistent with findings from the pilot project era. The only noteworthy exceptions were Ventura's Tuberculosis and Hospice projects and Alameda's Frequent EMS User project, which were unable to report insurance status information for many of their enrollees.

§ Persons who are dually eligible for Medicare and Medi-Cal are classified as Medicare beneficiaries because Medicare is responsible for paying the majority of costs associated with their hospitalizations, ED visits and office visits.

Table 2. Health Insurance Status of Enrolled Patients Cumulative through September 2022

Community Paramedicine Concept	Lead Agency	% Private/ Commercial Insurance	% Medicare	% Medi-Cal	% Uninsured or Pay Out of Pocket	% Unknown	Total Persons Enrolled
Post-Discharge	Alameda City EMS	17%	52%	24%	7%	0%	140
Post-Discharge	Butte County EMS	13%	67%	20%	0%	0%	1,001
Post-Discharge	San Bernardino County and Rialto Fire Depts.	8%	39%	46%	7%	0%	228
Post-Discharge	UCLA Center for Prehospital Care	7%	81%	11%	1%	0%	154
Post-Discharge	Medic Ambulance Solano*	10%	51%	36%	2%	0%	310
Frequent EMS User	Alameda City EMS*±	11%	57%	26%	1%	5%	85
Frequent EMS User	City of San Diego*	17%	17%	39%	26%	1%	72
Frequent EMS User	San Francisco Fire Dept.	7%	2%	16%	75%	0%	621
Tuberculosis	Ventura County EMS*	25%	9%	38%	22%	5%	58
Hospice	Ventura County EMS*±	16%	34%	3%	14%	34%	858
Alternate Destination – Mental Health	Mountain Valley – Stanislaus EMS*	1%	0%	77%	22%	0%	539
Alternate Destination – Mental Health	Santa Clara County EMS*	16%	3%	5%	68%	8%	143
Alternate Destination – Mental Health	Central California EMS*	15%	3%	26%	46%	10%	7,510
Alternate Destination – Mental Health	Los Angeles Fire Department*	1%	9%	58%	17%	18%	140
Alternate Destination – Sobering Center	San Francisco Fire Dept.	2%	16%	61%	9%	13%	3,810
Alternate Destination – Sobering Center	Santa Clara County EMS	No patients enrolled					
Alternate Destination – Sobering Center	Los Angeles Fire Department*	0%	10%	59%	31%	0%	96

±Due to a change in protocol in June 2021, paramedics in the Ventura Hospice and Tuberculosis projects stopped consistently collecting insurance data. Hence, the majority of patients in both after AB 1544 implemented are "unknown". Likewise, the insurance status of four patients in Alameda's Frequent EMS Users project who stayed on the caseload for several months during this period was not documented and is hence unknown.

* For Hospice and the Triage to Alternate Destination projects, data on insurance status collected for those newly enrolled each month. For Post-Discharge, Frequent EMS Users, and Tuberculosis, insurance status was collected for the full caseload of patients.

Table 3. Health Insurance Status of Enrolled Patients from January 2021 through September 2022

Community Paramedicine Concept	Lead Agency	% Private/ Commercial Insurance	% Medicare	% Medi-Cal	% Uninsured or Pay Out of Pocket	% Unknown	Total Persons Enrolled
Post-Discharge	Medic Ambulance Solano*	14%	57%	29%	0%	0%	17
Frequent EMS User	Alameda City EMS*±	0%	0%	0%	0%	100%	0
Frequent EMS User	City of San Diego*	19%	20%	48%	8%	5%	7
Frequent EMS User	San Francisco Fire Dept.	10%	3%	20%	61%	0%	257
Tuberculosis	Ventura County EMS*	5%	5%	0%	5%	85%	6
Hospice	Ventura County EMS*±	15%	11%	4%	3%	67%	398
Alternate Destination – Mental Health	Mountain Valley – Stanislaus EMS*	0%	0%	69%	31%	0%	45
Alternate Destination – Mental Health	Santa Clara County EMS*	9%	0%	0%	57%	34%	35
Alternate Destination – Mental Health	Central California EMS*	21%	4%	28%	46%	1%	2632
Alternate Destination – Mental Health	Los Angeles Fire Department*	0%	9%	22%	9%	60%	67
Alternate Destination – Sobering Center	San Francisco Fire Dept.	1%	14%	47%	10%	28%	847
Alternate Destination – Sobering Center	Santa Clara County EMS	No patients enrolled					
Alternate Destination – Sobering Center	Los Angeles Fire Department*	No patients enrolled					

±Due to a change in protocol in June 2021, paramedics in the Ventura Hospice and Tuberculosis projects stopped consistently collecting insurance data. Hence, the majority of patients in both projects after AB 1544 implemented were "unknown". Likewise, the insurance status of four patients in Alameda's Frequent EMS Users project who stayed on the caseload for several months during this period was not documented and is hence unknown.

* For Hospice and the Triage to Alternate Destination projects, data on insurance status collected for those newly enrolled each month. For Post-Discharge, Frequent EMS Users, and Tuberculosis, insurance status was collected for the full caseload of patients.

Patient Safety

Multiple procedures to ensure patient safety are incorporated into all levels of the community paramedicine and triage to alternate destination projects. Every project has a project manager, a medical director (a physician who specializes in emergency medicine), and a quality assurance officer (usually a registered nurse specializing in emergency medicine) with whom community paramedics and triage to alternate destination paramedics can consult in real time as needed. Each project conducts a retrospective review of all patient encounters. In addition, each project has a local steering committee that approves protocols and reviews data on project outcomes. A statewide steering committee has oversight over all the projects and reviews reports from the independent evaluator. Sites are also required to report unusual occurrences to EMSA's project manager. The independent evaluator reviews data provided by sites for the evaluation and raises any concerns about patient safety that emerge from the data reported.

Training of Community Paramedics and Triage to Alternate Destination Paramedics

Under the Health Workforce Pilot Project, paramedics were eligible for community paramedic training if they had at least four years of experience, volunteered to participate in the pilot, and were sponsored by their local EMS agency. The State of California Community Paramedic Educational Taskforce developed a core curriculum that OSHPD reviewed and approved which was adapted from the Paramedic Foundation's National Community Paramedic Curriculum to align with the standards and requirements of practice in California. The curriculum included 48 hours of didactic, classroom-based instruction and 48 hours of clinical, hands-on training for a total of 96 hours of instruction. Community paramedic trainees were additionally required to complete 56 hours of study outside the classroom, which included required readings and other assignments.

All paramedics who initially participated in the Post-Discharge – Short-Term Follow-Up, Frequent EMS User, Directly Observed Therapy for Tuberculosis, and Hospice projects and Stanislaus' Alternate Destination – Mental Health project completed this core curriculum. The paramedics who coordinated the Alternate Destination – Sobering Center projects and Fresno, Gilroy and Los Angeles' Alternate Destination – Mental Health projects completed the core curriculum. At these sites, all other paramedics participating in the projects received training focused on (1) screening patients according to a protocol to determine if they would be eligible to enroll in the pilot and (2) the procedures for enrolling patients who agree to be transported to a mental health crisis center or a sobering center. This approach was pursued because these concepts focus on clinical decision-making in the field regarding where to transport a patient. This is routine practice for paramedics, who must identify which patients to take to specialty care centers, such as stroke and trauma centers, that may not be the nearest ED.

Table 1 presents details about the numbers of community paramedics and triage to alternate destination paramedics trained. The first cohort of community paramedics consisted of 79

paramedics who were enrolled in the core curriculum and site-specific coursework during the first quarter of 2015. Two of the 79 paramedics were unable to complete the training for nonacademic reasons. All the 77 paramedics who completed the core curriculum passed a written final examination, a simulated patient scenario examination and an oral examination by the pilot site's medical director. An additional 44 community paramedics were trained in 2018 and 2019 as new projects started in San Francisco, Gilroy, Fresno, and Los Angeles.

Projects have continued to train new community paramedics and paramedics on an as-needed basis after these initial trainings. After AB 1544 implementation on January 1, 2021, a total of 62 additional community paramedics have been trained, including 3 by Ventura's Directly Observed Therapy for Tuberculosis project, 14 by San Diego's Frequent EMS User project, 42 by San Francisco's Frequent EMS User project, and 3 by Stanislaus' Alternate Destination – Mental Health Project. Not all these community paramedics will work with clients enrolled in these projects. Some of San Diego's new community paramedics will work in administrative roles, and some of San Francisco's new community paramedics will work in other programs that utilize their training.

Since AB 1544 implementation on January 1, 2021, over 139 paramedics have been trained to administer protocols for screening patients for transport to an alternate destination or referral to a hospice. Los Angeles has trained 89 paramedics how to screen patients for eligibility for transport to a mental health crisis center or a sobering center. As part of onboarding processes for all newly hired paramedics, Fresno has trained additional paramedics to screen patients for eligibility for transport to its mental health crisis center and San Francisco has trained additional paramedics to screen patients for eligibility for transport to its sobering center. In addition, as part of its onboarding process Ventura has trained 50 paramedics how to respond to 911 calls involving hospice patients. This training was prompted by Ventura's decision to change the protocol for its hospice project such that all paramedics, not just community paramedics are authorized to respond to these calls and confer with the hospice provider about the appropriate course of action.

Table 4. Number of Community Paramedicine or Alternate Destination Trainees

Site	Prior to AB 1544 Implementation (January 1, 2021)	January 2021 to January 2023 (after AB 1544 implementation)
Solano Post-Discharge	11	0
Alameda Frequent EMS User*	5	0
Ventura Hospice	14	50*
Ventura TB		3
San Diego Frequent EMS	8	14
Fresno Alternate Destination – Mental Health	10	0
San Francisco Frequent EMS User	18	42**
San Francisco Alternate Destination – Sobering Center		
Stanislaus Alternate Destination – Mental Health	7	3
Gilroy Alternate Destination – Mental Health	10	0
Gilroy Alternate Destination – Sobering Center		
Los Angeles Alternate Destination – Sobering Center	14	89***
Los Angeles Alternate Destination – Mental Health		

* As of June 1, 2021, all paramedics, not just community paramedics, are authorized to respond to these calls and confer with the hospice provider about the appropriate course of action.

**San Francisco has trained all paramedics to transport patients to the Sobering Center.

***Los Angeles has trained all paramedics to transport patients to the Sobering Center and mental health crisis centers.

Accomplishments

In interviews, project managers were asked to identify their projects' accomplishments. Nearly all interviewees cited their ability to build a rapport with patients as a major accomplishment that facilitated success. Community paramedics in particular were often able to instill trust in individuals that other providers had a hard time reaching. One community paramedicine provider noted, "We provide longitudinal care and continuity of care where it has often been lacking."

For many projects, creating new connections and improving coordination among different agencies serving their clients was a major accomplishment that helped bridge gaps in care and enhance ability to provide patients with the right services at the right time. Community Paramedicine projects were deeply integrated in networks of providers in order to obtain resources for their patients and coordinate their care. Triage to Alternate Destination projects-built relationships between EMS providers (fire departments and/or contracted ambulance

services), law enforcement, and mental health crisis centers or sobering centers that were run by county government or non-profit agencies. Interviewees at two sites noted how their collaborations with other agencies had allowed them to contribute to state and local policy change that could help their patients.

Challenges

Interviewees also identified challenges. A major challenge for nearly all sites was the limited availability of community resources needed to facilitate patient success. Leaders of two projects noted that they were often called upon to serve patients with conditions that their programs were not designed to address, such as autism, or dementia, or extreme mental disability. Triage to Alternate Destination projects noted a lack of inpatient psychiatric beds and residential detoxification treatment; the latter can make it especially difficult to admit patients for detoxification when they are ready to receive treatment. The lack of affordable, supportive housing was also a challenge for many projects, especially community paramedicine projects.

Structural or organizational conflicts could also create challenges. While most collaborations cited were successful, some interviewees also noted occasional difficulties working across agencies with different organizational cultures. In addition, changes in leadership or staffing at an EMS agency or a partner site could temporarily derail a project if the new leadership or staff did not recognize the value of the project or understand the project's operational needs.

Post-Discharge – Short-Term Follow-Up

Highlights

- Overall, the Post-Discharge – Short-Term Follow-Up projects enrolled 1,833 persons from June 2015 through September 2022. For the period of January 2021-September 2022, 17 persons were enrolled.
- Four of the post-discharge projects (Butte, UCLA – Glendale, Alameda City, and San Bernardino) closed prior to AB 1544 implementation (January 1, 2021). The Solano project is the only project that remained active after AB 1544 implementation.
- All the post-discharge projects reduced the rate of 30-day readmission for any cause for at least one of the diagnoses targeted.
- Overall, community paramedics identified 318 patients who needed instruction on how to use their medications correctly. For the period of January 2021-September 2022, two patients needed such instruction.

Description

The Post-Discharge – Short-Term Follow-Up projects aim to reduce hospital readmissions for people discharged from a hospital for treatment of a chronic condition by giving patients the tools to manage their conditions more effectively so that they can avoid readmission. The Medicare Hospital Readmissions Reduction Program was a major impetus for these projects. Under this program Medicare reduces payments to hospitals if they have readmission rates that are deemed excessive.

In collaboration with its partner hospital, each project identified one or more chronic condition to address. Solano was the only post-discharge project active when AB 1544 implementation. This project enrolls people with heart failure or chronic obstructive pulmonary disease (COPD).

Services are provided by paramedics who work part-time as community paramedics and part-time as paramedic supervisors or members of 911 response crews.

Once a project enrolls a patient, a home visit with a community paramedic is scheduled. During the visit, the community paramedic assesses the patient and reviews the patient's discharge instructions per the site's protocols. Some projects also provide home safety inspections during home visits.

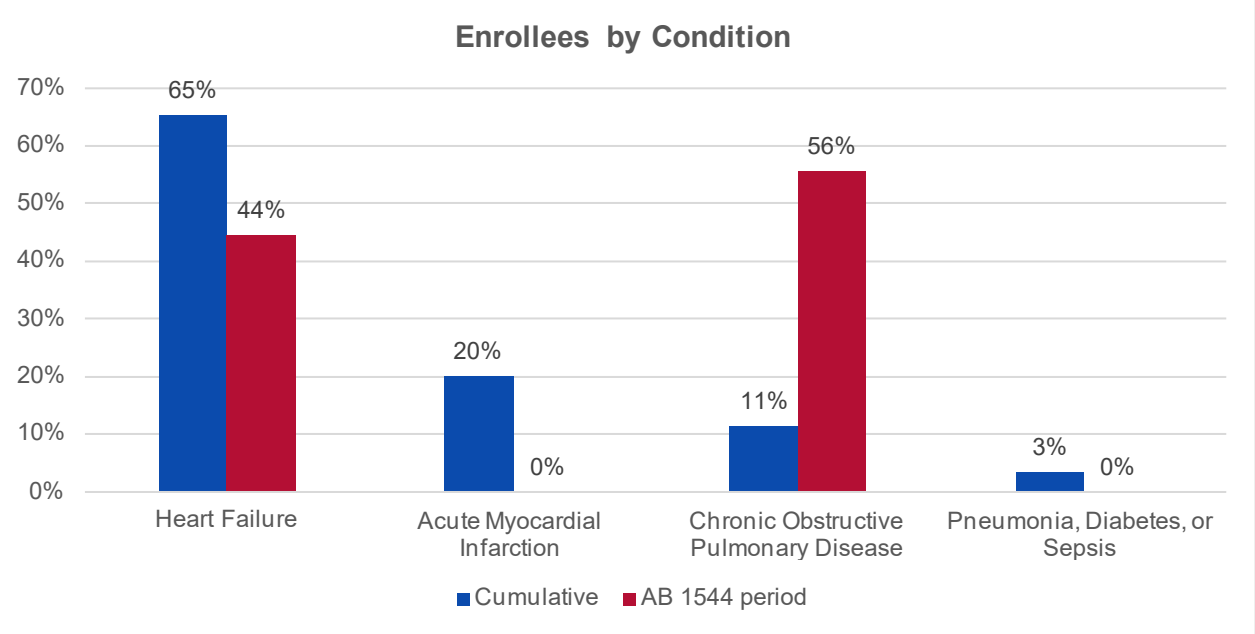
Since launching their projects, Solano, and formerly Alameda, San Bernardino-Rialto, and UCLA-Glendale, have provided at least one home visit to all patients. Initially, Butte's protocol called for paramedics to assess all patients by telephone and to use an algorithm to determine whether a patient would benefit from a home visit. Butte's protocol changed effective November 2017. Its community paramedics provided at least one home visit to all patients from that time until the project closed in November 2018.

The post-discharge projects provide patients short-term assistance during the immediate post-hospital period and do not replace home health care or any other services available to patients. The sites' protocols call for community paramedics to complete visits within the first few days of hospital discharge. Some partner hospitals have focused on enrolling uninsured persons and Medi-Cal beneficiaries who do not have insurance coverage for home health. In other cases, community paramedics serve a stopgap role by providing home visits while patients wait to obtain home health services, which interviewees indicated often do not occur until a week or more after a patient is discharged from a hospital. When community paramedics learn that a patient is receiving home health services, they coordinate with home health agency staff.

Findings

The post-discharge projects enrolled 1,833 patients between June 2015 and September 2022, and a total of 17 patients after AB 1544 implementation. Butte had the largest enrollment (1,001 patients) and Alameda had the smallest (140 patients). Across the five projects, 65% of patients enrolled had heart failure, 20% had acute myocardial infarction, 11% had chronic obstructive pulmonary disease and 3% had pneumonia, diabetes or sepsis (Figure 2). After AB 1544 implementation, 44% of patients enrolled in the remaining project (Solano) had heart failure and 56% had chronic obstructive pulmonary disease.

Figure 1. Post-Discharge – Short-Term Follow-Up Project Enrollees by Condition through Third Quarter 2020 (n = 1,833) and January 2021-September 2022 (AB 1544 implementation)



Safety

The evaluation team found substantial evidence that the post-discharge projects reduced the risk of patient harm. The most compelling evidence of reduced harm concerns prescription medications. Community paramedics performed medication reconciliation for all patients, which involved examining all prescription drugs in a patient's possession and reconciling them with the instructions given to the patient when they were discharged from the hospital. The community paramedics identified 318 instances in which a patient needed additional instructions about how to take their medications as directed (18% of patients enrolled); and a total of two after AB 1544 implementation (12%). Some patients had multiple prescriptions for the same medication and assumed they were supposed to take all of them. Other patients were discharged from the hospital with only a 30-day supply of medication and did not understand that they needed to obtain refills to control their condition. If a patient had a personal physician, the community paramedic works with the patient to contact the physician to obtain refills. If a patient did not have a physician, the community paramedic helps the patient find one.

Effectiveness

The post-discharge pilot projects achieved their primary goal of reducing inpatient readmissions within 30 days of discharge. Table 3 shows the cumulative historical 30-day readmission rates at the projects' partner hospitals from 2012 to 2015 and the 30-day readmission rates of patients enrolled in the post-discharge projects who had heart failure, AMI, COPD, or pneumonia. Table 5 shows these data for the period after AB 1544 implementation. Patients with diabetes or sepsis are not included because historical data on readmission rates for persons with these diseases were not available; hence 35 patients in Alameda's program are not reflected in the table below.

Patients enrolled by all sites had lower rates of 30-day readmission than historical rates for their partner hospitals except Butte's heart failure patients and Alameda's chronic obstructive pulmonary disease patients. Solano, the only post-discharge project in operation when AB 1544 was implemented had substantially lower 30-day readmission rates than the historical rates for its partner hospital (North Bay Medical Center).

Table 5. Readmissions within 30 Days for Post-Discharge – Short-Term Follow-Up Project Enrollees versus Partner Hospitals' 30-Day Readmission Rates, 2012-2015 (n = 1,833) - Cumulative

Diagnosis	Sponsoring Agency	Number of Patients Enrolled	Number Readmitted	Historical 30-Day Readmission Rate*	% Enrollees Readmitted*
Heart Failure	UCLA	154	10	24.4%	6.5%†
	Butte	645	191	22.5%	29.6%‡
	Alameda	38	4	23.1%	10.5%†
	San Bernardino and Rialto	228	19	23.1%	8.3%†
	Solano	132	14	22.1%	10.6%†
Acute Myocardial Infarction	Butte	356	37	17.20%	10.4%†
	Alameda	9	0	16.80%	0.0%†
Chronic Obstructive Pulmonary Disease	Alameda	31	6	19.4%	19.4%
	Solano	175	18	18.9%	10.2%†
Pneumonia	Alameda	27	4	20.1%	14.8%†

*Includes readmissions for any reason.
†30-day readmission rate for enrolled patients was *lower* than the historical 30-day readmission rate and the difference was statistically significant.
‡30-day readmission rate for enrolled patients was *higher* than the historical 30-day readmission rate and the difference was statistically significant.

Table 6 displays 30-day readmission rates for partner hospitals from 2018 to 2021 and 30-day readmission rates for patients enrolled in Solano's post-discharge project after AB 1544 implementation. These differences are consistent with differences between the cumulative 30-day readmission rates for this project and 30-readmission rates at the partner hospital from 2012 to 2015.

Table 6. Readmissions within 30 Days for Post-Discharge – Short-Term Follow-Up Project Enrollees versus Partner Hospitals' 30-Day Readmission Rates, 2018-2021 (n = 19) – Jan. 1, 2021 – Sept. 30, 2022

Diagnosis	Sponsoring Agency	Number of Patients Enrolled	Number Readmitted	Historical 30-Day Readmission Rate*	% Enrollees Readmitted*
Heart Failure	Solano	8	1	22.0%	12.5%†
Chronic Obstructive Pulmonary Disease	Solano	10	0	20.5%	0.0%†

*Includes readmissions for any reason.
†30-day readmission rate for enrolled patients was *lower* than the historical 30-day readmission.
Source: Centers for Medicare and Medical Services, Hospital Readmission Reduction Program dataset. https://data.cms.gov/provider-data/dataset/9n3s-kdb3

One of the community paramedics working on Solano's post-discharge project noted that one of the project's most important benefits is the rapport that community paramedics develop with patients. "It is just a dialogue between us and the patient, but that dialogue keeps them out of the hospital. There is a direct correlation on the patients' immediate health outcomes…it is not so much about the medical skills; it is all about the dialogue." As an example, the community paramedic described the project's impact on a patient who told him that he felt like he was alone on an island with his heart failure, that like he was the only person in California living with this condition. During the home visit, the community paramedic shared literature with the patient that cited the number of people in the United States who are living with heart failure, in addition to providing medication reconciliation and a safety check. It was news to the patient that many people across the country were living with heart failure. Once he learned this, the patient's attitude about his condition shifted from despondent to hopeful. The community paramedic observed, "I changed that guy's world in five minutes. That fact sheet—I would not be surprised if he put it on his fridge…I have never had that kind of impact or feeling like I did with that patient."

Another important indicator of the effectiveness of post-discharge projects is referral of patients to providers of other services to improve the patients' well-being. Through September 2022, community paramedics made at least 219 referrals to a wide range of service providers; one such referral was made. These services included primary care physicians, specialist physicians, pharmacists, mental health services, public health departments, home health

providers, drug and alcohol treatment programs, senior home safety programs, food assistance agencies, housing assistance providers, transportation assistance agencies, and domestic violence resources. At least one community paramedic helped a patient enroll in Covered California to obtain health insurance. If community paramedics perceived the need as urgent and were concerned that a patient might not follow through on their own, they assisted the patient in obtaining services to address the need.

Impact on the Workforce

The post-discharge projects have not displaced home health nurses or any other health care workers. If a patient is receiving home health services, community paramedics coordinate with their home health providers. Community paramedics also act as extensions of discharge planners at hospitals, who are usually registered nurses or social workers, by explaining discharge instructions to patients and helping them to follow these instructions.

Impact on the EMS System

The post-discharge projects have not negatively affected the ability of participating EMS agencies to respond to 911 calls. Three of the projects that have closed (Butte, UCLA – Glendale, Alameda City) employed community paramedics on a full-time basis and utilized other paramedics to staff 911 crews. Projects that utilized community paramedics on a part-time basis, assigned paramedics to perform community paramedic duties at times at which they were not assigned to 911 response crews. In Solano's case, this has not interfered with the EMS agency's ability to respond to 911 calls because only a small number of patients are enrolled at any time.

Conclusion

The post-discharge projects have demonstrated capability to reduce hospital readmissions within 30 days among persons with the chronic conditions they target. The projects also increased the likelihood that patients will take medications for these conditions as directed because community paramedics reconciled patients' prescriptions, reviewed the instructions for taking the medications and assisted patients with medication refills, if needed. Moreover, community paramedics have referred patients to providers of other services that can improve their ability to manage their conditions and their overall well-being.

Frequent EMS User

Highlights

- The three Frequent EMS User projects enrolled 778 people between July 2015 and September 2022; 264 of those individuals were enrolled after AB 1544 implementation on January 1, 2021.
- Alameda's Frequent EMS User project closed in May 2022 because the community paramedic working on the project went on an extended medical leave.
- The Frequent EMS User projects have linked clients to multiple types of providers of non-emergency services, including mental health providers, substance use treatment programs, food assistance programs, housing assistance programs, transportation assistance programs and domestic violence resources.

Description

Many people who call 911 frequently or visit EDs frequently have chronic physical, mental health and substance use conditions that can be treated more effectively in other settings. Many are also homeless and/or have experienced trauma.[7] The goal of the three Frequent EMS User projects is to reduce frequent EMS users' dependence on EMS agencies and EDs for care by connecting them with appropriate nonemergency services.

In the Frequent EMS User projects, community paramedics assess patients' physical, psychological, and social needs, and provide individualized case management to link them with providers of nonemergency services, such as mental health clinics, substance use treatment programs, and food and housing assistance programs. Community paramedics make these linkages by advocating for their clients and collaborating with staff of other agencies that serve them. Patients remain enrolled in the projects until community paramedics believe that the patients no longer need the project's services. Criteria for determining that a patient no longer needs services emphasize reaching important individual milestones, such as reduced frequency of 911 calls, obtaining housing or maintaining sobriety.

The City of Alameda's Frequent EMS User project enrolled patients from July 2015 it closed in May 2022 because the community paramedic working on the project went on an extended medical leave. San Diego's project enrolled patients from October 2015 to December 2016 but suspended operations in December 2017 due to lack of funding. The project began enrolling patients again in June 2019 but halted in-person visits in March 2020 because the community paramedics were diverted to Operation Shelter to Home, a partnership among multiple city agencies that provides homeless people with shelter at San Diego's convention center, monitored their health and provided medical and behavioral health services. San Diego began enrolling new patients again after Operation Shelter to Home ended. San

Francisco launched its Frequent EMS User pilot project in September 2018 and has continuously enrolled patients since then.

The Alameda and San Diego projects have provided the same intensity of service to all patients they enroll. The types of services and the frequency with which they have been delivered vary only due to differences in patients' needs. San Francisco's project prioritizes providing services to patients who have the largest numbers of ED visits at the time they are enrolled because the project's leaders believe focusing on these patients will maximize the project's ability to reduce 911 calls and improve patients' outcomes. Other patients enrolled in San Francisco's project receive fewer intensive services.

Case management and care planning are hallmarks of Frequent EMS User projects. San Diego's community paramedics meet regularly with their managers and the program's medical director to align goals and expectations. San Francisco holds weekly case conferences for the 11 highest utilizers of San Francisco's EMS system. During these case conferences, an interdisciplinary team composed of community paramedics, physicians, other clinicians, and public health workers from multiple agencies develop personalized Prehospital Care Plans for these patients to link them to appropriate alternatives to an ED (e.g., sobering center, urgent care clinic). Community paramedics implement these care plans when they encounter patients and consult with physicians in real-time as needed. For example, when a 911 call regarding one of the program's clients is placed, a community paramedic may go to the scene at the request of the paramedics on scene or may self-assign themselves to the call. Once on scene, the community paramedic assesses the client and determines whether the client needs to be transported to an ED can be treated safely at an alternative destination (e.g., sobering center, urgent care clinic) if the alternative destination has capacity to treat the client.

Findings

The three Frequent EMS User projects enrolled 778 people from July 2015 through September 2022; 263 of those individuals were enrolled after AB 1544 implementation. The three projects enroll different populations of frequent EMS users. San Diego's project primarily enrolls persons with 20 or more ED visits per year. San Francisco's project enrolls persons who have had more than four ED visits in a single month. Alameda's project, which served a city whose population is much smaller than San Diego's and San Francisco's populations,[6] was open to all persons referred by staff of the EMS agency or the partner hospital. San Diego's and San Francisco's enrollees are younger than Alameda's enrollees and more likely to be uninsured or enrolled in Medi-Cal.

Safety

The evaluation team found no evidence of any harm to patients enrolled in the Frequent EMS User projects. On the contrary, there is substantial evidence that patients benefitted from the projects. The community paramedics visited patients multiple times to assess their physical, psychological, and social needs and assist them in obtaining nonemergency services to meet their needs, as discussed below in the section on effectiveness.

Effectiveness

All three Frequent EMS User projects achieved large reductions in the number of 911 calls and ED visits among enrolled patients. Reductions in 911 calls were highly correlated with reductions in ED visits, because most 911 calls for frequent EMS users result in transport to an ED.

Analyses conducted for the evaluation of HWPP #173 compared the numbers of 911 calls made on behalf of persons enrolled in San Diego and Alameda's Frequent EMS User projects during the 12 months prior to enrollment and 12 months following enrollment. Among persons enrolled in San Diego's Frequent EMS User project during the time at which the community paramedics were initially on duty (November 2015 through December 2016) and for whom data are available for 12 months prior to enrollment and 12 months following enrollment (n = 37), the total number of 911 calls decreased from 955 to 625, a decrease of 35%. Among persons enrolled in Alameda's Frequent EMS User project through September 2019 for whom data are available for 12 months prior to enrollment and 12 months following enrollment (n = 74), the total number of 911 calls decreased from 242 to 171, a decrease of 29%.

For clients who have a personalized Prehospital Care Plans, San Francisco's Frequent EMS User Project has compared 911 calls and ED visits during the four months prior to implementation of a patient's care plan and the four months after implementation. The number of ED visits per patient decreased by 19% following implementation, from an average of 63 to 51 ED visits per patient over each four-month period.[8]

The Frequent EMS User projects also succeeded in linking patients to services that address the needs that led them to use the EMS system frequently. During their first visits with patients, community paramedics in Alameda, San Diego and San Francisco made 1,445 referrals to medical care providers, mental health providers, drug and alcohol treatment programs, food assistance programs, housing assistance programs, transportation assistance programs, domestic violence resources and other social services; 464 of these referrals were made since AB 1544 implementation on January 1, 2021. Community paramedics may have made additional referrals during subsequent visits because some patients were not interested in referrals initially.

In addition, community paramedics in San Diego transported Frequent EMS User patients to providers of medical, behavioral health and social services on 51 occasions to ensure that they obtained services; six of those transports were made since AB 1544 implementation. Community paramedics in San Francisco and Alameda also arrange transportation for patients to nonemergency service providers. Since San Francisco's project launched in September 2018, patients have been transported to non-ED service providers 944 times; 363 of those transports were made since AB 1544 into effect. In some cases, community paramedics have collaborated with staff of multiple service providers to go beyond routine care to meet patients' complex needs.[9]

Helping clients obtain housing is an important component of Frequent EMS User projects because many frequent EMS users are homeless. Community paramedics are uniquely positioned to assist homeless persons because they are often familiar with them prior to enrollment. They are also mobile and can be dispatched or consulted when one of their enrolled clients contacts 911, and they are familiar with the sites at which homeless persons congregate and can meet clients at any location.

The effectiveness of Frequent EMS User projects is constrained by the availability of nonemergency resources in the community and the willingness of other agencies to collaborate with community paramedics to address clients' needs. Leaders of Frequent EMS User projects have reported that their projects sometimes struggle to obtain appropriate services for clients, especially supportive housing for those with mental health conditions or substance use disorders. Engaging staff of other agencies can be challenging at times because they face competing demands and because their agencies may not have a history of working closely with EMS agencies. Leaders of San Francisco's Frequent EMS User project believe that one of the keys to its success is the willingness of representatives of other agencies to participate in the weekly case conferences the community paramedics run and work with them to develop personalized plans for clients.

Impact on the Workforce

The Frequent EMS User projects have not displaced personnel who work for other agencies that serve their clients.

Working with frequent EMS users is challenging for community paramedics due to the complexity of clients' conditions, limits on the availability of nonemergency resources in the community, and the need to advocate for staff of other agencies to help them address clients' needs. As one interviewee said, "The nature of our work can have more moral injury than standard paramedic work. Paramedics get to know clients more. The work is physically less challenging, but mentally more demanding." Leaders of Frequent EMS User projects are aware of these challenges and meet with their community paramedics regularly to provide mutual support and help them set realistic expectations for what they can achieve for their

clients. The leader of one project regularly reminds community paramedics that "we don't do easy" and cannot expect to quickly address all their clients' complex needs.

Impact on the EMS System

As described in the *Effectiveness* subsection, the Frequent EMS User projects have reduced the numbers of 911 calls made on their clients' behalf. When 911 calls are made on their behalf, community paramedics are sometimes able to intervene to prevent an unnecessary ambulance transport or to direct the ambulance to an alternate destination at which the ambulance offload time may be shorter than at an ED, which enables the ambulance crew to return to service more quickly.

Conclusion

The Frequent EMS User projects have achieved substantial reductions in 911 calls, transports, and ED visits among the patients they have enrolled, often by advocating for clients and linking them with medical care, behavioral health, housing and social services.

Directly Observed Therapy (DOT) for Tuberculosis

Highlights

- The Directly Observed Therapy for Tuberculosis project enrolled 58 persons between June 2015 and September 2022; six of those individuals were enrolled after AB 1544 implementation on January 1, 2021.
- One patient was hospitalized twice for intravenous treatment of TB meningitis that was diagnosed prior to enrollment in the pilot project. Eleven other patients were hospitalized for reasons unrelated to their TB.
- The community paramedics play vital roles in dispensing DOT on nights and weekends and are able to engage some people in treatment who resist engaging with TB clinic staff.

Description

Tuberculosis (TB) is a highly contagious disease treated with multiple, special antibiotic medications that are prescribed by a physician with expertise in TB treatment. People with TB must take their medication as directed, because stopping treatment too soon or missing doses of medication increases the risk that they will develop a drug-resistant strain of TB that is much harder to treat and to control.[10] To ensure that people with TB take their medication as directed, TB treatment clinics often provide directly observed therapy (DOT). Under DOT, a health care worker gives a patient medication, observes the patient taking the medication and monitors the patient for side effects.

Ventura County's EMS provider partnered with the county's TB clinic to provide DOT at the request of county public health officials who sought to expand the county's ability to maximize the number of people with TB receiving DOT. Ventura County covers a large geographic area, and it is not feasible for some patients to travel to the TB clinic in Oxnard for DOT. The TB clinic utilizes community health workers (CHWs) to administer DOT at remote locations, but the CHWs work only Mondays through Fridays and thus do not provide DOT on weekends. The CHWs are also based in Oxnard, where the TB clinic is located, and have to drive as long as 60 minutes to reach some patients. In contrast, the community paramedics are available 24 hours per day, 7 days per week and are stationed throughout the county, so they usually can reach patients within 15 minutes.

From approximately January 2020 to June 2021, all TB cases were handled by the Public Health Department Tuberculosis Clinic via telemedicine to minimize exposure to COVID-19. In July of 2021, the community paramedics started seeing TB patients again, but in a more limited capacity. Since that time, the community paramedics are working with the more difficult to manage patients, including those with drug addiction issues, justice-involved patients who are in and out of jail, patients with complex chronic diseases, and hard-to-locate patients including those that are homeless. The community paramedics are also assigned to

"one-off" cases where a CHW could not reach a patient to whom they would otherwise provide DOT.

All TB medications that community paramedics dispense are prescribed by the physician who directs Ventura County's TB clinic. Any adjustments in medication regimens are made in collaboration with the TB physician and the TB clinic's public health nurses.

Findings

Ventura's Directly Observed Therapy for Tuberculosis project enrolled 58 patients through September 2022; six of those patients were enrolled since AB 1544 implementation. Because the management of tuberculosis often spans six to nine months,[10] the community paramedics usually carry a caseload of patients whom they treat for multiple months. Over the course of the pilot project, the community paramedics' caseload averaged five patients per month.

Safety

The evaluation team found no evidence that the TB project harmed patients. Community paramedics dispensed appropriate doses of TB medications, and their TB patients did not experience any greater frequency of side effects or symptoms beyond those typically associated with taking TB medications.

Twelve patients enrolled in the pilot project have been hospitalized. One patient was hospitalized twice for TB meningitis, which had been diagnosed prior to enrollment in the program. The other eleven patients were hospitalized one time for a reason other than their TB diagnosis; one hospitalization was for a scheduled surgical procedure. Four of these hospitalizations took place after AB 1544 implementation. Clinic staff indicated that the caseload at this time includes more patients whose medical conditions are more fragile due to co-morbidities, such as diabetes or a substance use disorder.

Effectiveness

From June 2015 through September 2022, the community paramedics were unable to dispense only 0.06% (n=2) of DOT treatments prescribed by the TB clinic physician (see Table 7). In contrast, the CHWs were unable to dispense 7.9% of prescribed DOT treatments. This difference is due primarily to the availability of community paramedics to dispense DOT on nights and weekends when the CHWs are not on duty.

After AB 1544 implementation, the percentage of DOTs that the community paramedics were unable to dispense increased to 14.8% of 203 doses and exceeded the percentage of doses the CHWs were not able to dispense (7.2%). Reasons for missed doses were that a) patient was hospitalized or in jail, b) the patient refused, and TB clinic staff took over the case, c) the

patient left town, and d) in one instance, the CP was overloaded due to a heavy caseload. Community paramedics and TB clinic staff observed that the patients for whom the community paramedics are caring now have more severe and complicated conditions than many of the patients who they cared for prior to the COVID-19 pandemic.

Table 7. Instances of Non-Completion of Directly Observed Therapy among Patients Treated by Community Paramedics (Cumulative through September 2022)

	Community Paramedic Patients	TB Clinic Patients
Percentage of Times a Scheduled DOT was Not Completed	Cumulative: 0.06% of doses; After AB 1544 was implemented 14.8% of doses	Cumulative: 7.9% of doses After AB 1544 was implemented: 7.2% of doses
Reasons Why Patient Did Not Complete Treatment	Patient out of town without making prior arrangements for DOT (3 cases) Patient in the hospital for (3 cases) Patient refused treatment (2 cases) Patient not at home at scheduled time and did not respond to phone requests to reschedule (1 cases) Community paramedic overloaded due to high 911 call volume (1 case)	Most missed doses occur on holidays and weekends when the TB clinic was closed and CHWs were not available to treat patients outside the clinic.

Community paramedics build a special rapport with many patients who do not, for various reasons, work well with the public health nurses and CHW. TB clinic staff noted that people in their community respect paramedics and may be more willing to cooperate with them because they wear uniforms. For example, one patient would not open the door for the public health nurses and threatened to leave the country rather than take his medications. He was able to communicate better with the community paramedics. They were able to build trust with the patient, who eventually accepted treatment.

For example, there was a patient who was in and out of the hospital and refusing to take his TB medication. He said he felt isolated and harassed. The community paramedicine supervisor had a hard conversation with him in which he stated, "I know you don't want to do this, but we could get the police involved and make an issue out of it. Let's not do that and get on the same page." The patient ultimately completed treatment successfully and sent the

community paramedics a thank-you note that read, "I appreciate you giving me the 'dad" talk'."

Community paramedics also helped patients address health care needs other than TB. One TB patient treated by community paramedics early in the project's history had severely impaired vision and had difficulty filling syringes with the prescribed dose of insulin. The community paramedics found a local pharmacy that would prefill syringes for the patient to ensure that he would receive the correct dose.

Impact on the Workforce

Ventura's TB project has not displaced any staff at Ventura's TB clinic. The TB clinic nurse managers assign patients to their CHWs, or community paramedics based on availability and ability to persuade patients to engage in treatment. Some patients are co-managed by the CHWs and community paramedics to ensure that they receive all doses prescribed by the TB clinic's physicians.

Impact on the EMS System

Ventura's TB project has not affected the ability of the county's EMS providers to respond to 911 calls. All of the community paramedics are supervisors who dispense DOTs when they are not overseeing responses to 911 calls. If their presence is required at the scene of an emergency, the emergency responses take priority over dispensing DOT.

Conclusion

Community paramedics can safely administer DOT for TB and monitor patients for side effects, under the direction of a physician who specializes in treatment of TB and in collaboration with public health nurses and CHWs. Due to their unique schedule and mobility, they can achieve a very high rate of adherence to TB treatment, augmenting the resources of the TB clinic and reducing the risk that patients will develop a drug-resistant strain of TB and transmit it to other persons. They can also assist with patients' other social and medical needs that might create barriers to TB treatment. The project has not displaced any workers or reduced EMS agencies' ability to respond to 911 calls.

Hospice

Highlights

- The Hospice project enrolled 858 persons between August 2015 and September 2022; 398 of these patients were enrolled after AB 1544 implementation on January 1, 2021.
- Community paramedics have collaborated successfully with nurses on the staffs of hospice agencies to provide care consistent with patients' wishes.
- The project's staffing model has changed substantially since June 2021. Hospice calls are no longer managed by community paramedics and are instead managed by all paramedics on 911 response crews.
- The percentage of hospice patients transported to an ED after a 911 call decreased from 80% prior to the pilot project to 38% during the pilot project era (2015 to 2020); 43% since AB 1544 implementation.

Description

The goal of hospice care is to provide medical, psychological, and spiritual support to persons dying from a terminal illness in a patient's home, a residential care facility, a nursing home or an inpatient hospice facility. Hospice staff members tell hospice patients, their family members, and other caregivers to contact the hospice instead of 911 if they believe there is a medical need or if they become concerned about the patient's comfort. Despite this instruction, some hospice patients and their families call 911 instead of the hospice.

The standard response to a 911 call made on behalf of a hospice patient is to transport the patient to an ED, which may be upsetting and uncomfortable for hospice patients. Clinicians in EDs may perform medical interventions that the hospice patient would prefer not to receive and may admit the hospice patient for inpatient care. In addition, insurers may revoke hospice benefits if the patient receives treatment for their terminal illness that is incompatible with the hospice approach of comfort care.

Ventura County's Hospice project aims to prevent transports that are not consistent with hospice patients' wishes. The project is especially important for hospice patients who reside in a residential care or skilled nursing facility. In those facilities, staff may call 911 without discussing the decision with the patient or family members. ***No hospice patient who requests transport to an ED is denied transportation.***

Prior to June 1, 2021, Ventura County's EMS providers partnered with a select group of hospices based in Ventura County. If a 911 dispatcher or a first responder on scene determined that a person was under the care of a participating hospice agency, the dispatcher or first responder would request that a community paramedic come to the private

residence, residential care facility or skilled nursing facility in which the patient resided. All of the community paramedics were supervisors who could respond to hospice calls while other paramedics responded to other 911 calls.

Once on scene, the paramedic assessed the patient, talked with family members and caregivers and contacted a registered nurse employed by the patient's hospice agency. The hospice nurse directed the community paramedic regarding what care to provide. Depending on the circumstances, the hospice nurse might have asked the community paramedic to wait with the patient, family members and/or caregivers until the nurse could arrive on scene. The hospice nurse also could have asked the community paramedic to administer pain medications to the patient that the hospice has provided in a "comfort care" pack, although the "comfort care" pack was used only once in the field.

As of June 1, 2021, *all* paramedics in Ventura County are authorized to respond to hospice calls and confer with the hospice provider about the appropriate course of action. (See Policy # 629). Paramedics now respond to patients from all hospice providers not just patients of partner agencies. Paramedics are no longer required to wait with the patient until the hospice nurse arrives on scene because some of the hospice agencies chosen by the patients' families are more than an hour and a half away from their homes.

Findings

Ventura's community paramedics responded to 858 calls made on behalf of patients of participating hospice agencies since the pilot project began in August 2015, including 398 after AB 1544 implementation. Hospice patients, family members, or staff of residential or skilled nursing facilities in which hospice patients resided initiated most 911 calls, but hospice nurses made some 911 calls during visits with some patients. The reasons for 911 calls to which Ventura's community paramedics responded varied and included altered level of consciousness, cardiac arrest, choking, constipation, fall, seizure, shortness of breath, syncope, and family concern about hospice care.

Safety

The evaluation found no evidence that the Hospice project harmed patients. Paramedics consult with nurses working for hospices and follow their direction. After determining in consultation with a hospice nurse that a patient could remain at home under hospice care, the community paramedics' work consisted primarily of providing emotional support to the hospice patient and family members until the hospice nurse could arrive and further evaluate the patient.

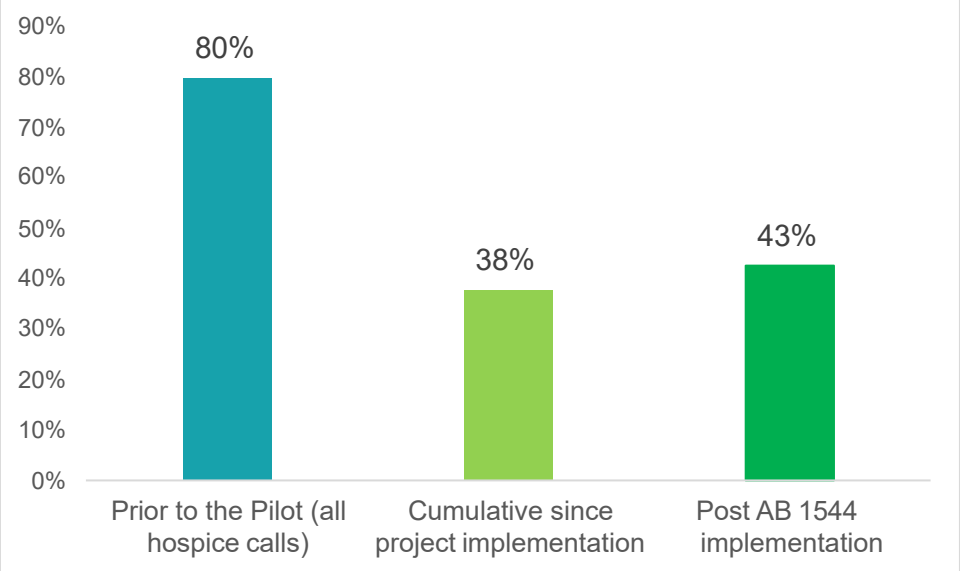
The Hospice project reduced harm by honoring patients' wishes and reducing the likelihood that they would experience an undesired and uncomfortable trip to the ED and potentially

lose hospice benefits. Community paramedics worked with patients, families, other caregivers and hospice nurses to avoid ED transport, unless a patient requested transport or had a medical need that could not be met in the patient's home, such as a fracture. **No patient was denied ED care when it was indicated and consistent with their wishes.**

Effectiveness

The project achieved its goal of honoring patients' wishes to remain in their homes by integrating EMS and hospice protocols. Figure 4 shows the impact of the pilot project on the percentage of 911 calls for hospice patients that resulted in transport of the patient to an ED. Prior to the launch of the pilot project, 80% of 911 calls for hospice patients resulted in the transport of a patient to an ED.** Among patients of partner hospices, the percentage of patients transported decreased to 38% during the course of the pilot project. These findings are consistent with the findings of a peer-reviewed publication exploring the first three years of the Ventura Hospice project.[11]

Figure 2. Percentage of 911 Calls for Hospice Patients That Result in Transport to an ED (Cumulative through Third Quarter 2022 and Post-AB 1544 implementation)



After AB 1544 implementation, 43% of all cases resulted in transport to the ED. The increase in transport rate after AB 1544 implementation may be related to the

**The 80% rate of transport to an ED prior to the launch of the pilot project differs from the rate that AMR Ventura reported in its proposal to participate in the pilot project (42%). The 42% rate was based on a manual search of electronic records for 911 calls on which a specific box had been checked. The 80% estimate is derived from an electronic search of AMR Ventura's records to identify all records in which the term "hospice transport" appeared. The evaluation uses the latter rate because it reflects the results of a more thorough search of AMR Ventura's records.

change in paramedic protocol, which took place in June 2021. Paramedics on 911 response crews have not had as much education about hospice care as the community paramedics received. Some of these paramedics are also less experienced and, thus, may be less familiar with the potential negative consequences of transporting hospice patients to an ED.

Twelve percent of patients enrolled in the hospice project prior to May 2020 had their hospice benefits revoked.[††] Although data on hospice revocation rates prior to the pilot project are not available, it is very likely that the reduction in ED transports also led to a reduction in the percentage of patients of partner hospices whose benefits were revoked.

Community paramedics also alerted hospices and family members to patients' unmet needs for additional assistance. For example, the project's very first hospice call involved a patient who had fallen during the night while walking to the bathroom. With the patient's permission, the community paramedic who responded to the call contacted a family member, who arranged for the patient to have a caregiver at night as well as during the day to assist her with toileting and other needs.[12]

Impact on the Workforce

Ventura's hospice project has not displaced any nurses or other personnel working for hospices. Paramedics consult with hospice nurses to determine the best course of action for a patient and defer to their direction. In some cases, they complement hospice nurses by providing patients and families with emotional support until a hospice nurse can arrive on scene.

Impact on the EMS System

Ventura's hospice project has not affected the ability of the county's EMS providers to respond to 911 calls. All of the care that paramedics provide to hospice patients is delivered within the context of a 911 call. The lifting of the requirement that paramedics remain in a patient's home until a hospice nurse arrives limits the amount of time devoted to hospice 911 calls, which shortens the length of time during which they are unavailable to respond to other 911 calls.

Conclusion

The Hospice project demonstrates that community paramedics can partner with hospice nurses to safely reduce the number of hospice patients unnecessarily transported to an ED. Reducing ED transport increases the health care system's ability to honor the wishes of hospice patients and reduces the risk that they will lose their hospice benefits.

[††] Data on revocation was not consistently tracked after April of 2020.

Alternate Destination – Mental Health

Highlights

- The Alternate Destination – Mental Health projects enrolled 8,332 persons between September 2015 and September 2022: 2,757 after AB 1544 implementation on January 1, 2021.
- The projects have enabled persons with mental health needs to obtain mental health services more quickly and at facilities that specialize in caring for people who are experiencing a mental health crisis.
- 98% of patients transported to a mental health crisis center were treated safely and effectively in a crisis center.
- Among the 2% of patients transported to an ED within six hours of admission to a mental health crisis center, most were treated in an ED and released or transferred to a mental health facility.
- 91 persons were transported to a mental health crisis center but redirected to an ED because they did not meet the crisis center's admission criteria (e.g., could not ambulate independently, needed medication for opioid use disorder).
- Ambulance patient offload times were considerably lower for transports to mental health crisis centers than at EDs, which enabled ambulance crews that transported patients to the crisis centers to return to the field more quickly to respond to other 911 calls.

Description

Many EDs in California are overcrowded. Some of the people they serve can be treated safely and effectively in other settings, including some who arrive at EDs via ambulance. Alternate destination pilot projects focus on transporting such patients to settings in which they can obtain appropriate care more efficiently. In California, the need for alternatives is particularly critical for people with mental health needs. Since 1995, the number of beds in inpatient psychiatric facilities in California has decreased by nearly 30%.[13] Patients with mental health needs routinely spend hours in an ED waiting for medical clearance. In some cases, they spend days in an ED waiting for a bed to become available in an inpatient psychiatric facility, without getting definitive mental health care.[14] Nationwide, the mean length of ED visits is longer for psychiatric patients than medical patients (194 minutes vs. 138 minutes), and psychiatric patients are more likely to have stays in an ED lasting greater than 24 hours.[15]

Alternate Destination – Mental Health projects provide an alternative to the ED for persons with mental health needs for whom 911 is called. Paramedics use standardized protocols to screen people with mental health needs to determine whether or not they also have emergent medical needs or are acutely intoxicated. Patients who only have mental health needs are transported to a mental health crisis center. After a patient arrives at the crisis center, mental

health professionals on the crisis center staff evaluate the patient further to determine what mental health services they need.

The Stanislaus County Alternate Destination – Mental Health project, the oldest of the four Alternate Destination – Mental Health projects, began enrolling patients in September 2015 and ceased operations in July 2022. Santa Clara County's Emergency Services Agency initiated a pilot project in June 2018 in partnership with the Gilroy Fire Department and ceased operations in May 2022. In late July 2018, the Central California Emergency Medical Services Agency launched a pilot project in Fresno County in partnership with American Ambulance. The City of Los Angeles Fire Department launched the fourth Alternate Destination – Mental Health pilot project in late June 2019. The latter two projects continue to enroll patients.

Stanislaus' project utilized community paramedics who had completed the full core community paramedic training and were also trained to use a protocol to screen people who are having a mental health crisis. Community paramedics traveled in a quick response vehicle (an SUV) and were dispatched in response to 911 calls that a dispatcher believed involved mental health needs, or when another paramedic or a law enforcement officer identified a patient as having mental health needs. The community paramedics responded to these calls as needed in addition to responding to traditional 911 calls. In early 2020, Stanislaus briefly changed its model such that community paramedics traveled in ambulances with other paramedics but reverted to the previous model of placing the community paramedics in a quick response vehicle because they found that to be a more effective means for responding to 911 calls for persons experiencing mental health crises.

Los Angeles' project is staffed similarly. Paramedics who have been trained to assess mental health needs respond to 911 calls in specific parts of the City of Los Angeles that concern a person who appears to be experiencing a mental health crisis, in addition to responding to traditional 911 calls.

The projects operated by the Santa Clara County Agency/Gilroy Fire Department and Central California EMS Agency/American Ambulance used a different staffing model. Both of these projects trained all paramedics to assess patients' medical, mental health and substance use status. This model enabled all paramedic crews that respond to 911 calls to assess patients for mental health needs and arrange transport for patients who met eligibility criteria to a mental health crisis center.

Eligibility criteria vary across the four Alternate Destination – Mental Health projects. Gilroy enrolled only people with mental health needs who had been placed on an involuntary psychiatric hold, known in California as a 5150, by a law enforcement officer. These persons are required by law to obtain treatment. In addition to persons placed on a 5150 hold, Stanislaus, Fresno and Los Angeles enroll (or enrolled) persons who voluntarily consent to receive mental health services. In Gilroy and Fresno, eligible patients on 5150 holds are/were transported to the mental health crisis center unless they need/needed to be transported to

an ED for medical care. In Stanislaus and Los Angeles, eligible patients on a 5150 hold are/were given the choice of transport to a mental health crisis center or an ED. In Stanislaus, Fresno and Los Angeles, other patients (i.e., patients not on a 5150 hold) who were/are eligible for transport to the mental health crisis center are/were offered the option to be transported there instead of to an ED.

In Stanislaus, eligibility was limited to adults who were uninsured or enrolled in Medi-Cal because the county inpatient psychiatric facility does not accept patients with other types of health insurance. A private psychiatric facility is available to persons in Stanislaus County who have Medicare or commercial health insurance. The projects in Gilroy, Fresno and Los Angeles accept/accepted all patients who meet criteria for transport to their counties' mental health crisis centers regardless of their health insurance status.

In addition to responding to 911 calls, community paramedics in Stanislaus were sometimes asked by mental health crisis center staff to provide medical screening to "walk-in" clients (i.e., persons not transported by ambulance). In the past, walk-in clients were sent to a nearby ED for medical clearance. Having community paramedics come to the crisis center to screen walk-in clients enabled these clients to obtain medical screening more quickly and begin mental health treatment more quickly, if they did not have any acute medical needs.

Findings

The four Alternate Destination – Mental Health projects enrolled a total of 8,332 persons through September 2022; 2,757 of these individuals were enrolled after AB 1544 implementation. Fresno's project enrolled 7,510 people, the largest number of enrollees among the four projects. Stanislaus' project enrolled 539 persons, Gilroy's project enrolled 143 people, and Los Angeles' project enrolled 140 people. After AB 1544 implementation, Fresno enrolled 2,632 patients, Stanislaus' enrolled 45 patients, Gilroy enrolled 35, and Los Angeles enrolled 45.

Safety

The evaluation team found no evidence that the Alternate Destination – Mental Health projects harmed patients. The community paramedics accurately screened patients to determine which of them could be safely transported directly to the mental health crisis center. Only 160 of the 8,332 patients enrolled in the project (2%) were transferred to an ED within six hours of arrival at the crisis center. Forty-nine of these 160 transfers took place after AB 1544 implementation. These findings are consistent with the findings of a peer-reviewed publication regarding the first 1,000 people served by Stanislaus' project.[16]

Table 8 lists the reasons why the 160 patients were transferred to an ED. None of the transfers to an ED within six hours of admission involved a life-threatening condition. Only twenty of the patients transferred were admitted for inpatient medical care. Forty were subsequently

transferred back to the mental health crisis center or to an inpatient psychiatric facility. Ninety-nine patients were discharged from an ED without admission for inpatient medical care or transfer to a mental health facility. Two patients left an ED without being assessed by a clinician.

Table 8. Reasons for Transfer to an ED within Six Hours of Admission to a Mental Health Crisis Center through Third Quarter 2022 (160 of 8,338 Patients)

	# of Patients – Stanislaus	# of Patients – Gilroy	# of Patients – Fresno	# of Patients – Los Angeles
Reason for Secondary Transfer to an ED				
Secondary Transfers to an ED within Six Hours of Admission				
Abdominal pain	0	0	5	0
Abdominal pain with blood in stool	0	0	1	0
Abdominal pain with nausea and/or vomiting	0	0	3	0
Abdominal pain with symptoms of prostate problem or urinary tract infection	0	0	1	0
Abrasion, laceration, and back pain associated with recent assault	0	0	1	0
Abscess on ankle, lesions	0	0	1	0
Abscess on arm	0	0	1	0
Agitation / Agitated delirium	2	0	1	0
Alcohol intoxication with possible risk of alcohol withdrawal	0	0	5	0
Altered mental state	0	0	2	0
Ankle pain / swollen ankle / wound	0	0	4	0
Arm wound	0	0	1	0
Assault, report of, with injury	0	0	2	0
Back pain	0	0	2	0
Bed bugs / bed bug bites	0	0	2	0
Bleeding scab on scalp	0	0	1	0
Blind, CSC cannot provide care	0	0	1	0
Blisters	0	0	1	0
Blood work needed due to use of Clozaril (Strong psychiatric medication)	0	0	1	0
Blood work needed secondary to mental health crisis center security guard getting a needle stick while going through patient's belongings	0	0	1	0

	# of Patients – Stanislaus	# of Patients – Gilroy	# of Patients – Fresno	# of Patients – Los Angeles
Bloody nose	0	0	1	0
Body pain	0	0	1	0
Change in patient condition	1	0	0	0
Chest pain	0	0	8	0
Chest pain with nausea and vomiting	0	0	1	0
Chest pain, diffuse abdominal pain and back pain	0	0	1	0
Conflict with a family member on the unit	0	0	1	0
Confusion and inability to provide medical history	0	0	1	0
Cough, asthma, and possibly COVID	0	0	1	0
Coughs and chills	0	0	2	0
Dog-bite	0	0	2	0
Elevated blood pressure	3	0	7	0
Elevated blood pressure and abscesses on feet	0	0	1	0
Elevated blood pressure and blood sugar	0	0	2	0
Elevated blood pressure and rib pain	0	0	1	0
Elevated blood pressure and tachycardia	0	0	2	0
Elevated blood pressure, infection, elbow pain	0	0	1	0
Elevated blood sugar	0	0	6	0
Eye infection / pain / irritation	0	0	1	0
Fainting, or near fainting	0	0	2	0
Fall in bathroom	0	0	1	0
Fever	0	0	1	0
Finger infection due to ring stuck on finger	0	0	1	0
Finger, deformity to left pinky	0	0	1	0
Foot pain	0	0	3	0
Foreign object in vagina	0	0	1	0
Generalized weakness and difficulty with ambulation / incontinence	0	0	1	0
Generalized weakness with history of chronic leg and back pain	0	0	1	0
Genital injury/ pain	0	0	2	0
Hand pain	0	0	1	0

	# of Patients – Stanislaus	# of Patients – Gilroy	# of Patients – Fresno	# of Patients – Los Angeles
Headache, bruising, and recent loss of consciousness	0	0	1	0
Heroin withdrawal	0	0	2	0
Inappropriate behavior, sexual or otherwise	0	0	2	0
Ingestion anti-psychotic medication in excess of recommended dosage	0	0	1	0
Ingestion of 5 aspirin and 5 to 10 laxatives, dizziness	0	0	1	0
Ingestion of 8 ibuprofen tablets	0	0	1	0
Ingestion of anti-psychotic medication with alcohol	0	0	1	0
Ingestion of heroin and methamphetamine	0	0	2	0
Ingestion of soap			1	
Knee pain / swelling	0	0	1	0
Law enforcement error – patient sent to mental health crisis center despite being on a 5150 hold for grave physical disability	0	1	0	0
Leg pain, with or without wound or infection	0	0	4	0
Lice	0	0	1	0
Low blood pressure and dizziness	0	0	1	0
Low oxygen levels (hypoxia)	0	0	1	0
Methadone withdrawal or need for methadone or Suboxone	0	0	3	0
Neck and back pain	0	0	1	0
Neck pain	0	0	1	0
No capacity at psychiatric hospital	1	0	0	0
Patient had sleep apnea, and facility did not have a continuous positive airway pressure (CPAP) machine	1	0	1	0
Patient taking blood thinner (Warfarin) that the mental health crisis center does not stock	0	0	1	0
Patient taking blood thinner, oxygen that the mental health crisis center does not stock, hernia	0	0	1	0
Possible seizures secondary to alcohol withdrawal	0	0	1	0
Problem with nephrostomy tube	0	0	1	0
Recent head injury	0	0	1	0

	# of Patients – Stanislaus	# of Patients – Gilroy	# of Patients – Fresno	# of Patients – Los Angeles
Rectal bleeding	0	0	1	0
Rib pain	0	0	2	0
Ringworm	0	0	1	0
Rule out allergic reaction to Haldol	0	0	1	0
Rule out dementia	0	0	1	0
Seizure	0	0	4	0
Sexual assault	0	0	2	0
Shortness of breath; shortness of breath with cough and green sputum	0	0	2	0
Shoulder pain	0	0	1	0
Skin rash/ itching	0	0	1	0
Tachycardia with vomiting	0	0	1	0
Tachycardia	0	0	1	0
Tachycardia and hypotension	0	0	1	0
Tachycardia and spider bite	0	0	1	0
Urinary incontinence	2	0	1	0
Urinary incontinence and tachycardia	0	0	1	0
Urinary incontinence and unable to stand for more than 5 minutes	0	0	1	0
Urination, frequent, complaints of	0	0	1	0
Urination, pain with (dysuria)	0	0	1	0
Vaginal and back pain	0	**0**	1	0
Total Number Transferred to an ED	**10**	**1**	**149**	**0**
Rerouted Transfers (aka Continuous Transfers)				
Patient needed medication not available at the crisis center	0	0	9	0
High blood sugar	0	0	8	0
Patient refused to follow COVID-19 screening protocol	0	0	4	0
Patient weighed too much to use recliner chairs	0	0	4	0
High blood pressure	0	0	3	0
Recent seizure	0	0	3	0

	# of Patients – Stanislaus	# of Patients – Gilroy	# of Patients – Fresno	# of Patients – Los Angeles
Patient could not ambulate or transfer without assistance	0	0	3	0
Alcohol consumption	0	0	2	0
Patient uncooperative	0	0	2	0
Crisis center policy that limits number of admissions to one per group home	0	0	2	0
Dementia	0	0	2	0
Abdominal pain and diarrhea	0	0	1	0
Fractured forearm in cast	0	0	1	0
High blood pressure and high blood sugar	0	0	1	0
Laceration potentially requiring sutures	0	0	1	0
Shoulder pain	0	0	1	0
Tachycardia	0	0	1	0
Tuberculosis	0	0	1	0
Patient had colostomy bag	0	0	1	0
Patient had temperature of 100.4 degrees	0	0	1	0
Patient had a pacemaker	0	0	1	0
Patient had visual impairment	0	0	1	0
Patient needed walker to ambulate	0	0	1	0
Patient on dialysis	0	0	1	0
Patient possibly ingested Xanax	0	0	1	0
Patient refused blood alcohol test	0	0	1	0
Patient refused to have vital signs taken	0	0	1	0
Patient had no mental health need	0	0	1	0
Patient filed legal complaint against crisis center	0	0	1	0
Patient had recent altercation with another patient admitted to the crisis center	0	0	1	0
Patient's girlfriend admitted to crisis center	0	0	1	0
Crisis center at capacity	0	0	1	0
Total Number Rerouted to an ED	**0**	**0**	**91**	**0**
Total Patients Transferred or Rerouted to an ED	**10**	**1**	**240**	**0**

As indicated in Table 8, 91 persons were rerouted from Fresno's mental health crisis center to an ED (prior to admission). Thirteen patients were rerouted to an ED due to the lack of specific resources at the crisis center. Nine patients were rerouted because the crisis center did not have medications they needed. Seven of these patients were taking methadone or suboxone to treat opioid use disorder. Four patients who met the eligibility criteria for admission to the crisis center weighed too much to safely use the recliner chairs that the crisis center provides to patients. Twelve patients had blood sugar or blood pressure above thresholds for admission to the crisis center. Other reasons patients were rerouted include recent alcohol consumption, recent seizure, dementia, inability to ambulate or transfer without assistance, uncooperative behavior (e.g., history of violent behavior while at the crisis center, refusal to cooperate with the center's COVID-19 screening protocol), and a crisis center policy under which only one client from a group home could be admitted at a time.

The Alternate Destination – Mental Health projects have also improved public safety. Law enforcement officers in Stanislaus County and Gilroy who were interviewed by the evaluation team stated that having community paramedics available enhanced their ability to respond effectively to persons with mental health needs because community paramedics are better prepared to address mental health needs and can arrange ambulance transports for mental health patients. This allows law enforcement officers to return to other law enforcement duties instead of transporting patients to an ED in their squad cars and waiting in an ED to transfer responsibility for the patient to a clinician.

Effectiveness

Leaders of Triage to Alternate Destination – Mental Health projects emphasized their ability to obtain timely mental health services, while freeing up space in EDs for patients with acute illnesses or injuries. One provider said, "I am a firm believer that we should always take patients to the right place the first time. This is what we are doing. For mental health patients experiencing a crisis that do not have a co-occurring medical condition, the ED is the wrong place." Another provider observed that many patients with mental health crises wait for hours, and sometimes days, for a psychiatric bed at the hospital. He stated that "we may not have been able to make a huge dent in the numbers but reducing it by any fraction was a huge benefit to that system."

Stanislaus' pilot project substantially reduced the rate at which 911 calls involving patients with mental health needs that resulted in a transport to an ED for medical screening. From the launch of Stanislaus' project in September 2015 through July 2022, 28% of mental health patients for whom 911 was called (555 of 1,997) were transported to the mental health crisis center instead of an ED. An additional 28% (n = 569) met the eligibility criteria and could have been transported to the crisis center if additional beds were available in the county's inpatient psychiatric facility or if the crisis center accepted patients who had a form of health insurance other than Medi-Cal. The community paramedics also determined that 38% of people

assessed (n = 757) were not eligible for transport to the mental health crisis center because they had a medical need, had vital signs outside parameters for admission to the crisis center, were intoxicated, violent, agitated or over age 65 years. Four percent (n = 81) met the medical criteria for admission to the mental health crisis center but were not admitted due to a history of disruptive behavior during previous admissions to the crisis center. Only two percent of eligible patients (n = 35) did not consent to being transported to the mental health crisis center.

Gilroy's and Fresno's pilot projects have also substantially reduced the rate at which patients with mental health needs are transported to an ED for medical screening. Through September 2022, Fresno paramedics have screened 23,152 people with symptoms of a mental health crisis for whom 911 was called and transported 33% (7,576 patients) to Fresno County's mental health crisis center. Since Gilroy's project began in June 2018 through September 2022, paramedics have screened a total of 287 persons on 5150 holds due to mental health concerns. Forty percent (115 patients) were transported to Santa Clara County's mental health crisis center or another mental health facility. Sixty percent (172 patients) were transported to an ED because they needed medical care or had vital signs outside parameters for admission to the crisis center. The crisis center did not turn away any eligible patients.

From June 2019 to June 2020, the Los Angeles project screened 302 people to determine whether they were eligible for transport to either a mental health crisis center or the city's sobering center. Twenty-seven percent were transported to a mental health crisis center.

Impact on the Workforce

The Alternative Destination – Mental Health projects have not displaced any nurses or other personnel working for mental health crisis centers. Staff at partner sites report that paramedics made their jobs easier by prescreening patients and providing mental health crisis center staff with additional information on patients' health and needs.

Impact on the EMS System

The Alternative Destination – Mental Health projects transported 27-40% of the patients they screened to mental health crisis centers, helping to decrease the burden on local emergency departments. Ambulance patient offload times were considerably lower for transports to alternate destination mental health sites compared to ERs, releasing the paramedics to respond to other 911 calls. As one partner site representative noted, "We pride ourselves in getting law enforcement and EMS out in 10 minutes." For example, the 90th percentile ambulance patient offload time for the Fresno project's transports to its mental health crisis center is 9 minutes, whereas the 90th percentile ambulance patient offload time for all patients transported to EDs in the ambulance company's service area is 33 minutes with a range from 14 minute to 38 minutes across EDs.

For one Alternate Destination – Mental Health site, geographic distance and the structure of the EMS system created challenges. In this jurisdiction, paramedics who work on the fire department's engine crews respond to 911 calls to assess and treat patients, but transport is provided by a private ambulance company with which the county contracts. The mental health crisis center was located in an urban area over 30 miles from the jurisdiction. Contract ambulance crews sometimes resisted transporting patients to the crisis center because length of the journey took the contracted ambulance out of services for substantially longer periods of time than transports to the local ED. Coordination among police officers, fire department paramedics, and paramedics who worked for the contract ambulance company at times prolonged the length of time that engine crews would spend on site. These difficulties were not experienced at other sites because in those jurisdictions all 911 response services are provided by either a contract ambulance company or the fire department.

Conclusion

The Alternate Destination – Mental Health projects demonstrate that community paramedics can perform medical screening examinations for persons with mental health needs and determine which of them can be transported directly to a mental health crisis center. Transporting these persons directly to a crisis center enables them to obtain mental health services more quickly, which is likely to improve their well-being.

Alternate Destination – Sobering Center

Description

Highlights

- The three Alternate Destination – Sobering Center projects enrolled 3,906 patients from February 2017 through September 2022; 847 of those patients were enrolled after AB 1544 implementation on January 1, 2021.
- 98.3% of San Francisco's patients (n = 3,810) were treated safely and effectively at the sobering center; and 98.7% (836) after AB 1544 implementation. Only 1.6% (n = 64) (11 or 1.3% after AB 1544 implementation) were transferred to an ED within six hours of admission to the sobering center. Only three patients (0.1%) were rerouted to an ED because the sobering center's registered nurses did not accept them.
- Los Angeles paused transports to its sobering center during the spring of 2020 because the sobering center was converted to an isolation center for homeless people with asymptomatic COVID-19. After the sobering center reopened in winter 20202, only patients who were assessed by crews consisting of a nurse practitioner and a paramedic were transported to the sobering center.
- The Gilroy Fire Department and the Santa Clara County Emergency Medical Services System launched an Alternate Destination – Sobering Center project in June 2018, but by the time the project ceased operations in May 2022, the project had not enrolled any patients.
- Ambulance patient offload times were considerably lower for transports to San Francisco's Sobering Center than for transports to EDs in San Francisco.

Acutely intoxicated persons are another population for whom alternatives to routine transport to an ED are needed. Nationwide, an estimated 9.7% of ED visits are due to inebriation.[17] In busy EDs, clinicians have little time to assist intoxicated patients unless they also have an acute medical need. They may not have time to counsel patients about their drinking or give them information about detoxification programs, case management or other resources.

Cities around the US have established sobering centers to care for these patients[18] because they are less expensive to operate than EDs and their staff are able to focus on the needs of intoxicated persons.[19] In February 2017, the City and County of San Francisco began a pilot project under which paramedics transport eligible persons directly to its sobering center, which serves people who are acutely intoxicated but do not have other urgent health care needs. The sobering center is open 24 hours per day, 7 days per week and is staffed by registered nurses who monitor patients throughout their stay. The registered nurses follow standardized procedures for treatment of a variety of medical and mental health conditions. The sobering center's staff also includes social workers who help patients obtain treatment for alcohol use disorders and mental health conditions, housing, Medi-Cal, Supplemental Social Security and General Assistance. Most patients stay for 4 to 12 hours. Historically, approximately 90% of patients have been homeless at the time they were admitted to the sobering center.[20]

The capacity of San Francisco's sobering center decreased during the COVID-19 pandemic because patients were housed in separate rooms to reduce the risk of COVID-19 transmission and because it was moved to a location with a smaller capacity that is co-located with a managed alcohol program. The managed alcohol program provides shelter, services, and dosed alcohol within a closed campus. Many of the clients were formerly among the highest users of the sobering center. As a result, many of these clients have had a substantial decrease in their EMS utilization for public intoxication, which may also affect the number of people who need the sobering center's services. As of March 2023, it is unclear when the sobering center will return to its former, larger location.

San Francisco has trained all paramedics on 911 response crews to screen intoxicated patients to determine if they are eligible for transport to the sobering center. Patients are deemed eligible for transport to the sobering center if they have acute alcohol intoxication but do not have any acute medical or mental health needs. If a patient meets all eligibility criteria, the paramedics offer the patient a choice of transport to the sobering center or an ED. Patients who do not meet all eligibility criteria are transported directly to an ED, as are patients who express a preference for transport to an ED. In addition, community paramedics coordinate closely with San Francisco's sobering center to support its clients, especially persons who are enrolled in San Francisco's Frequent EMS Utilizer program.

A second Alternate Destination – Sobering Center project began operating in June 2018. This project was a partnership between the Gilroy Fire Department and the Santa Clara County Emergency Medical Services System. All paramedics employed by the Gilroy Fire Department completed training similar to the training completed by paramedics in San Francisco and used a similar protocol to determine whether a patient was eligible for transport to Santa Clara County's sobering center. If paramedics determined that a patient is eligible, the patient was to be offered transport to the county's sobering center instead of an ED. This project ceased operations in May 2022.

The City of Los Angeles Fire Department's EMS Bureau launched the third Alternate Destination – Sobering Center in late June 2019. Eligible patients are transported directly to a sobering center operated by Exodus Recovery, Inc. The sobering center is a new facility that serves seriously inebriated adults who are not in need of the services of an ED. Prior to the COVID-19 pandemic, the project was staffed by teams of two paramedics who were trained to screen patients for transport to the sobering center or a mental health urgent care center using protocols similar to those used by other Alternate Destination – Sobering Center and Alternate Destination – Mental Health projects. These paramedics worked ten hours per day four days per week. As is the case with San Francisco's sobering center, many of the patients seen at the Los Angeles sobering center are homeless at the time services are provided.

Findings

San Francisco's Alternate Destination – Sobering Center project enrolled 3,810 patients from February 2017 through September 2022. As of September 2022, Gilroy's Alternate Destination – Sobering Center pilot project had not enrolled any patients. Los Angeles' Alternate Destination – Sobering Center project enrolled 96 patients from June 2019 through March 2020.

In April 2020, the Los Angeles Sobering Center was converted to a COVID-positive homeless isolation center and the project suspended operations. There have been no paramedic-driven transports to the Sobering Center since that time. After the sobering center re-opened, only patients assessed by 911 response crews comprised of a paramedic and a nurse practitioner were transported to it. Los Angeles plans to relaunch the paramedic-only teams in 2023.

Safety

The community paramedics in San Francisco and the staff of the San Francisco sobering center review the records of all patients transported to the sobering center by ambulance. Cases that involve a secondary transport of a patient to an ED are also reviewed by a committee comprising the sobering center's deputy director, the sobering center's nurse coordinator, the San Francisco Emergency Medical Services Agency's medical director and the San Francisco Fire Department's medical director. Los Angeles established similar procedures for reviewing records for all patients transported to its sobering center.

The most common risk to sobering center patients is an unforeseen need for medical detoxification, which is difficult to predict initially among people with chronic alcohol consumption. A patient may also have taken another drug that paramedics cannot detect when they examine the patient in the field. Clients are monitored via comprehensive nursing protocols that assess for potential effects of other drugs, including the impact of sedating medications on orientation and respiratory status and transported to an ED if necessary.

Among the 3,810 patients enrolled in San Francisco's Alternate Destination – Sobering Center project, 64 patients (1.6%) were transferred to an ED within six hours of admission to the sobering center. After AB 1544 implementation, 847 patients were enrolled and 1.3% (n=11) were transferred to the ED within six hours of admission to the sobering center. The main reasons for these secondary transfers were falls, alcohol withdrawal, altered mental state, suicidal ideation, agitation, chest pain, low levels of oxygen in the blood, and seizures. (See Table 9).

Table 9. Reasons for Transfer to an ED within Six Hours of Admission to a Sobering Center or Rerouting from the Sobering Center through Third Quarter 2022 (64 of 3,906 Patients)

Reason for Transfer to an ED	Number of Patients
Secondary Transfers to an ED within Six Hours of Admission	
Fall	15
Alcohol withdrawal	8
Altered mental state	5
Suspected suicide attempt/suicidal intentions	3
Agitation	2
Chest pain, radiating	2
Chest pain with history of heart problem	2
Seizures/history of seizures	2
Abdominal pain at site of pre-existing hernia	1
Agitation with chest pain	2
Anxiety	1
Arm pain	1
Auditory hallucination	1
Chest/abdominal pain	1
Chronic obstructive pulmonary disease exacerbation	1
Client requested oxygen despite lack of respiratory distress	1
Contact with a person who had COVID-19	1
Elevated temperature/suspected bacterial infection	1
Low blood pressure	1
Low level of oxygen in the blood	2
Overdose	1
Pleuritic chest pain	1
Pulmonary embolism	1
Severe deconditioning following extended hospital stay for COVID-19	1
Suspected urinary retention	1
Tachypnea/increasing temperature	1
Vomiting / Vomiting dark brown blood	2
Rerouted Transfers (aka Continuous Transfers)	
Hypothermia/bradycardia	1
Unable/ unwilling to stay within sobering center; unable to verbalize safe plan; unable to remember own address.	1
Small, raised mass above left eyebrow with enlarged left pupil	1
Total Patients Transferred or Rerouted to an ED	**64**

Three patients (0.1%) were rerouted from the sobering center to an ED per instructions issued by the registered nurse on duty at the sobering center, one of them after AB 1544 implementation. When one patient arrived at the sobering center, he had hypothermia and bradycardia, with a body temperature below the protocol threshold for admission to the sobering center. The registered nurse and paramedics attempted to rewarm the patient for 15 minutes. When their efforts were unsuccessful, the registered nurse directed the paramedics to reroute the patient to an ED. Another patient had a swelling above the left eyebrow and had one pupil larger than the other. The registered nurse on duty directed the paramedics to reroute the patient to an ED because the patient was unable to indicate whether this symptom had been evaluated in a medical facility. The third patient, who was moderately intoxicated, was rerouted to an ED because he was unwilling to stay at the sobering center and unable to remember his address or verbalize a safe plan of action.

Of the 64 patients who were either transferred or rerouted to an ED, 42 were treated in an ED and released. Two patients were medically cleared in the ED and transferred to a psychiatric ED. Twelve patients were admitted to a hospital for inpatient medical care. Six patients left an ED's waiting room without being seen. For two patients, dispositions were not available due to issues with the ED's documentation.

Of the patients admitted to the hospital, one inpatient admission was due to acute alcohol withdrawal symptoms that could not be controlled in the ED. Another patient was unable to care for themselves due to Korsakoff and hepatic encephalopathy. Others were due to a low level of oxygen in the blood, chest pain with history of a heart problem, exacerbation of chronic obstructive pulmonary disease and aspiration pneumonia.

None of the 96 patients that Los Angeles' Alternate Destination – Sobering Center project enrolled were transferred to an ED within six hours of admission to the sobering center or rerouted to an ED.

Effectiveness

San Francisco and Los Angeles' Alternate Destination – Sobering Center project has reduced the number of intoxicated persons transported to an ED. Interviews with project leaders indicate that one of the greatest benefits of treating these clients in the sobering center is that the sobering center social workers are better able to connect clients with medical detoxification, social services, case management services and permanent housing. EDs have social workers, but they are not able to focus exclusively on intoxicated patients. In addition, the sobering center is equipped to provide withdrawal management for patients if a bed is available in a medical detoxification center, which helps patients cope with withdrawal and increases their willingness to complete detoxification.

In addition, ambulance patient offload times for the San Francisco Sobering Center project transports (were lower than those for hospital destinations (17.0 for Sobering Center patients vs. 33.4 minutes for ER patients).

Another strength of San Francisco's Alternate Destination – Sobering Center project is the use of paramedics in two complementary roles. Paramedics on 911 response crews can contact community paramedics for guidance if they are uncertain whether a patient meets the criteria for transport to the sobering center. Community paramedics review transports of patients to the sobering center and give 911 crews feedback on their use of the protocol for screening patients.

In addition, the community paramedics' partnership with the SFHOT outreach workers extends the project beyond transport to the sobering center to encompass outreach to high utilizers, to encourage them to seek treatment for their alcohol use disorder. This outreach is important because San Francisco has substantial services for homeless people with alcohol use disorders, but people may not know how to access these services or will not seek help on their own. Pairing community paramedics with homeless outreach workers leverages the strengths of both groups. Community paramedics contribute medical knowledge, the ability to access medical records and relationships with ambulance crews. Homeless outreach workers, many of whom are formerly homeless and/or in recovery from substance use disorders, can form closer relationships with clients due to their shared experience.

Impact on the Workforce

The Alternative Destination – Sobering Center projects have not displaced any registered nurses or other personnel working for sobering centers. Staff at sobering centers report that paramedics made their jobs easier by prescreening patients and providing them with additional information on patients' health and needs.

Impact on the EMS System

The Alternative Destination – Sobering Center projects reported ambulance patient offload times that were considerably lower for transports to sobering centers compared to EDs, releasing the paramedics to respond to other 911 calls more quickly. The 90th percentile ambulance patient offload time at San Francisco's sobering center is 17 minutes, whereas the 90th percentile ambulance patient offload time for patients transported to all EDs in San Francisco is 34 minutes with a range from 20 to 42 minutes across EDs. In addition, sobering center transports free up space in EDs for patients most in need of emergency medical services while simultaneously enabling people who need sobering to obtain appropriate care more promptly.

Conclusion

Paramedics participating in the Alternate Destination – Sobering Center projects can accurately screen intoxicated patients to identify those who can be treated safely and effectively in a sobering center. To date San Francisco's and Los Angeles' projects have resulted in the transport of 3,842 fewer persons to an ED and enabled these persons to obtain appropriate care more promptly. Only three patients (0.1%) were rerouted to an ED because the sobering center's registered nurses did not accept them. Only 64 patients (1.6%) were transferred to an ED subsequent to admission to the sobering center. There were no adverse outcomes from secondary transfers to an ED.

Summary and Conclusion

The community paramedicine and triage to alternate destination projects have demonstrated that specially trained paramedics can provide services beyond their traditional and current statutory scope of practice in California. No adverse outcome is attributable to any of these pilot projects, and they have not negatively affected EMS agencies' ability to respond to 911 calls. These projects are enhancing patients' well-being, improving the integration and efficiency of health services in the community, and reducing ambulance transports, ED visits and hospital readmissions.

Specifically, the sites testing the seven concepts have demonstrated the following:

Post-Discharge – Short-Term Follow-Up

- The Post-Discharge – Short-Term Follow-Up projects have improved patients' ability to take medications as prescribed by their physicians, ensured that they understood discharge instructions and that they had scheduled follow-up visits.
- All five Post-Discharge – Short-Term Follow-Up projects have decreased hospital readmissions within 30 days of discharge, including the only project that has been in operation since AB 1544 implemented on January 1, 2021.

Frequent EMS User

- Community paramedics have advocated for patients and assisted them in obtaining mental health services, substance use disorder treatment, housing, and other nonemergency services that address the physical, psychological, and social needs that led to their frequent EMS use.
- The Frequent EMS User projects have achieved substantial reductions in the number of 911 calls, ambulance transports and ED visits among enrolled patients.

Directly Observed Therapy (DOT) for Tuberculosis

- Community paramedics have dispensed appropriate doses of TB medications and monitored side effects and symptoms that could necessitate a change in the treatment regimen.
- Persons with TB who received DOT from community paramedics were more likely to receive all doses of TB medication prescribed by the TB clinic physician than patients who received DOT from the TB clinic's community health workers, which increases the likelihood that a patient will be treated successfully and will not spread TB to others or develop a drug-resistant strain of TB that would be more difficult to treat and to control in the community.

Hospice

- Community paramedics have assessed hospice patients, provided psychosocial support, and administered medications, when necessary, in consultation with hospice nurses.
- The Hospice project has enhanced hospices' ability to honor patients' wishes to receive hospice services at home by markedly reducing rates of ambulance transports to an ED and ED visits.

Alternate Destination – Mental Health

- Across the four Alternate Destination – Mental Health projects, 27% to 40% of patients screened were transported to a mental health crisis center rather than an ED. In Stanislaus County, an additional 28% could have been transported to the crisis center if the county had more inpatient psychiatric beds or if the crisis center accepted people with private insurance or Medicare.
- 98% of patients who participated in the projects (8,178 out of 8,338 patients) were treated safely and effectively at the mental health crisis center without the delay of a preliminary emergency department visit for medical screening. Only 2% of patients (n = 160) required subsequent transfer to the ED. None of the patients transferred to an ED experienced adverse outcomes.
- The projects also enabled 911 crews to return to the field more quickly to respond to other 911 calls because ambulance patient offload times are mental health crisis centers are substantially shorter than ambulance patient offload times at EDs in the same communities.
- The projects also improved public safety because paramedics could take responsibility for a person with mental health needs, which allowed law enforcement officers to return to law enforcement duties instead of transporting the person to an ED and waiting to transfer responsibility for the person to clinicians in the ED.

Alternate Destination – Sobering Center

- 98.3% of patients enrolled in San Francisco's Alternate Destination – Sobering Center project (3,743 of 3,810 patients) were treated safely and effectively at the sobering center. Only 64 patients (1.6%) were transferred to an ED within six hours of admission to the sobering center, and only three (0.1%) were rerouted from the sobering center to an ED because the sobering center's registered nurses declined to accept them. Only twelve of the patients transferred to an ED was admitted to a hospital for inpatient medical care.
- Los Angeles' Alternate Destination – Sobering Center project enrolled 96 people from June 2019 through March 2020, none of whom were rerouted to an ED or transported to an ED within six hours of admission to a sobering center.

- The Alternate Destination–Sobering Center projects enabled 911 crews to return to the field more quickly to respond to other 911 calls because ambulance patient offload times are mental health crisis centers are substantially shorter than ambulance patient offload times at EDs in the same communities.

Conclusion

The community paramedicine projects and the triage to alternate destination projects were designed to integrate with existing health care resources and utilize the unique skills of paramedics and their round-the-clock availability. Findings from the evaluation indicate that Californians benefit from these innovative models of health care that leverage an existing workforce operating at all times under medical control – either directly or by protocols developed by physicians experienced in EMS and emergency care. No other health professionals were displaced. Instead, these pilot projects have demonstrated that community paramedics can partner with physicians, nurses, behavioral health professionals and social services workers to fill gaps in the health and social services safety net. These findings are consistent with findings from research conducted on community paramedicine and triage to alternate destination programs in other states and nations.[11,15, 21-38]

References

1. Kizer, K.W., K. Shore, and A. Moulin. *Community Paramedicine: A Promising Model for Integrating Emergency and Primary Care.* UC Davis Institute for Population Health Improvement. July 2013. https://www.ucdmc.ucdavis.edu/iphi/publications/reports/resources/IPHI_CommunityParamedicineReport_Final%20070913.pdf.

2. *Mobile Integrated Healthcare and Community Paramedicine (MIH-CP): 2nd National Survey*. National Association of Emergency Medical Technicians. 2018. http://www.naemt.org/docs/default-source/2017-publication-docs/mih-cp-survey-2018-04-12-2018-web-links-1.pdf?Status=Temp&sfvrsn=a741cb92_2.

3. Kripalani, S., C.N. Theobald, B. Anctil, and E.E. Vasilevskis. Reducing Hospital Readmission Rates: Current Strategies and Future Directions. *Annual Review of Medicine*. 2014; 65:471-485.

4. *Report to the Congress: Medicare and the Health Care Delivery System*. Medicare Payment Advisory Commission. June 2018. http://medpac.gov/docs/default-source/reports/jun18_medpacreporttocongress_sec.pdf?sfvrsn=0.

5. Barrett, M.L., K.R. Fingar, P.L. Owens, C. Stocks, C. Steiner, and M. Sheng. *Identifying Observation Services in the Healthcare Cost and Utilization Project (HCUP) State Databases*. 2015. HCUP Methods Series Report #2015-05. September 1, 2015. U.S. Agency for Healthcare Research and Quality. https://www.hcup-us.ahrq.gov/reports/methods/2015-05_public.pdf.

6. *E-1 Population Estimates for Cities, Counties, and the State – January 1, 2017, and 2018*. California Department of Finance, Demographic Research Unit. May 2018. http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/.

7. Kanzaria, H.K., M. Niedzwiecki, C.L. Cawley, et al. Frequent Emergency Department Users: Focusing Solely On Medical Utilization Misses The Whole Person. *Health Affairs (Millwood)*. 2019;38(11):1866-1875.

8. Mercer, M., E. Silverman, S. Pang, et al. Base Hospital Physician and Community Paramedicine Pilot Program to Reduce 9-1-1 and Emergency Department Utilization. *Prehospital Emergency Care*. 2020;24:152.

9. Jensen, A. *How Community Paramedics Rescue People from San Diego's Streets*. California Health Care Foundation. September 21, 2016. http://www.chcf.org/articles/2016/09/community-paramedics-rescue-people.

10. *Treatment for TB Disease*. Centers for Disease Control and Prevention. April 5, 2016. https://www.cdc.gov/tb/topic/treatment/tbdisease.htm.

11. Breyre, A., M. Taigman, A. Salvucci, K. Sporer. Effect of a Mobile Integrated Hospice Healthcare Program on Emergency Medical Services Transport to the Emergency Department. *Prehospital Emergency Care*. 2022;26(3):364-9.

12. Taigman, M. *Rescuing Hospice Patients*. California Health Care Foundation. December 20, 2016. http://www.chcf.org/articles/2016/12/rescuing-hospice-patients.

13. *California's Acute Psychiatric Bed Loss.* California Hospital Association. February 2019. https://www.calhospital.org/sites/main/files/file-attachments/psychbeddata2017.pdf.

14. Nutt, A.E. Psychiatric Patients Wait the Longest in Emergency Rooms, Survey Shows. *Washington Post*. October 18, 2016. https://www.washingtonpost.com/news/to-your-health/wp/2016/10/18/sickest-psychiatric-patients-wait-the-longest-in-emergency-rooms-survey-shows/.

15. Lippert, S.C., N. Jain, A. Nesper, J. Fahimi, E. Pirrotta, and N.E. Wang. Waiting for Care: Differences in Emergency Department Length of Stay and Disposition between Medical and Psychiatric Patients. *Annals of Emergency Medicine*. 2016;68(4S):S97.

16. Mackey, K.E., and C. Qiu. Can Mobile Integrated Health Care Paramedics Safely Conduct Medical Clearance of Behavioral Health Patients in a Pilot Project? A Report of the First 1000 Consecutive Encounters. *Prehospital Emergency Care*. 2019;23(1):22-31.

17. Cherpitel, C., and Y. Ye. Trends in Alcohol- and Drug-Related Emergency Department and Primary Care Visits: Data from Four U.S. National Surveys (1995-2010). *Journal of Studies on Alcohol and Drugs.* 2012;73(3):454-458.

18. Warren, O., S. Smith-Bernardin, K. Jamieson, N. Zaller, and A. Liferidge. Identification and Practice Patterns of Sobering Centers in the United States. *Journal of Health Care for the Poor and Underserved*. 2016;27(4):1843-1857.

19. Smith-Bernardin, S., and M. Schneidermann. Safe Sobering: San Francisco's Approach to Chronic Public Inebriation. *Journal of Health Care for the Poor and Underserved*. 2012;23(3 suppl):265-270.

20. Smith-Bernardin, S., A. Carrico, W. Max, and S. Chapman. Utilization of a Sobering Center for Acute Alcohol Intoxication. *Academic Emergency Medicine*. 2017;24(9):1060-1071.

21. Abrashkin, K.A., K. Poku, A, Ramjit, et al. Community Paramedics Treat High Acuity Conditions in the Home: A Prospective Observational Study. *BMJ Supportive and Palliative Care*. 2019;0:1–8. doi:10.1136/bmjspcare-2018-001746.

22. Bennett, K.J., M.W. Yuen, and M.A. Merrell. Community Paramedicine Applied in a Rural Community. *Journal of Rural Health*. 2018;34 Suppl 1:s39-s47.

23. Choi, B.Y., C. Blumberg, and K. Williams. Mobile Integrated Health Care and Community Paramedicine: An Emerging Emergency Medical Services Concept. *Annals of Emergency Medicine*. 2016;67(3):361-366.

24. Constantine, S., S. Murphy, B. Shreve, and C. Wilson. Impact of Post-Hospital Discharge Visits by Community Paramedics on Outpatient Follow-up in a Transition Clinic. Abstracts for the 2021 NAEMSP Scientific Assembly, *Prehospital Emergency Care*. 25:1, 152, doi: 10.1080/10903127.2020.1837312.

25. Cozzi, N., C. Barnhart, P. Fennema, et al. Using Home-Based Community Paramedics to Reduce Emergency Department Utilization by High-Risk Elder Patients. *Annals of Emergency Medicine*. 76(4): S4.

26. Creed, J.O., J.M. Cyr, H. Owino, et al. Acute Crisis Care for Patients with Mental Health Crises: Initial Assessment of an Innovative Prehospital Alternative Destination Program in North Carolina. *Prehospital Emergency Care*. 2018;22(5):555-564.

27. McTernan, J.L., G. Muench, R. Matossian, et al. Trinitas Mobile Integrated Health System Heart Failure Approach: A Model for Chronic Disease Management. *Health Science Journal*. 2016;10(5).

28. *A Model for Better Community Healthcare*. Regional Emergency Medical Services Authority. 2017. https://www.remsahealth.com/wp-content/uploads/2017/10/REMSA_A-Model-for-Better-Community-Health_eFINAL.pdf.

29. Myers, L.A., P.N. Carlson, P.W. Krantz. Development and Implementation of a Community Paramedicine Program in Rural United States. *Western Journal of Emergency Medicine*. 2020;21(5):1227-1233,

30. Nejtek, V.A., S. Aryal, D. Talari, H. Wang, and L. O'Neill. A Pilot Mobile Integrated Healthcare Program for Frequent Utilizers of Emergency Department Services. *American Journal of Emergency Medicine*. 2017;35(11):1702-1705.

31. Seidl, K.,L., D.B. Gingold, B. Strychman, et al. Development of a Logic Model to Guide Implementation and Evaluation of Mobile Integrated Health Transitional Care Program. *Population Health Management*. 2020;23; doi: 10.1089/pop.2020.0038. Epub ahead of print.

32. Vartanian, K., K. Jones, K. McMenamin, and K. Sanchez. *Community Paramedics: Health Share of Oregon Evaluation Report*. Center for Outcomes Research and Education. March 2018.

http://aimhi.mobi/resources/Documents/Research%20External/2018/2018.03%20CORE-Oregon-Community-Paramedics-Report.pdf.

33. Abrashkin, K.A., Washko J, Zhang J, Poku A, Kim H, Smith KL. Providing Acute Care at Home: Community Paramedics Enhance an Advanced Illness Management Program—Preliminary Data. *Journal of the American Geriatrics Society*. 2016;64(12):2572-6.

34. Adibhatla, S., Lurie, T., Betz, G., Palmer, J., Raffman, A., Andhavarapu, S., et al. A Systematic Review of Methodologies and Outcome Measures of Mobile Integrated Health-Community Paramedicine Programs. *Prehospital Emergency Care*. 2022:1-11.

35. Lurie, T., S. Adibhatla, G. Betz, J. Palmer, A. Raffman, S. Andhavarapu, A. Harris, Q. K. Tran, and D. B. Gingold. Mobile Integrated Health-Community Paramedicine Programs' Effect on Emergency Department Visits: An Exploratory Meta-Analysis. *American Journal of Emergency Medicine* 66 (Dec 29 2022): 1-10. doi: 10.1016/j.ajem.2022.12.041.

36. Sokan, O., B. Stryckman, Y. Liang, S. Osotimehin, D. B. Gingold, W. W. Blakeslee, M. J. Moore, et al. Impact of a Mobile Integrated Healthcare and Community Paramedicine Program on Improving Medication Adherence in Patients with Heart Failure and Chronic Obstructive Pulmonary Disease after Hospital Discharge: A Pilot Study. *Exploratory Research in Clinical and Social Pharmacy 8* (Dec 2022): 100201. https://doi.org/10.1016/j.rcsop.2022.100201.

37. Adio OA, I. L., Wiley S. (2020). Management of frequent ED users by community paramedics improves patient experiences and reduces EMS utilization. *Patient Experience Journal, 7*(3) (2020), 174-188. doi: 10.35680/2372-0247.1397

38. Ashton, C., Duffie, D., & Millar, J. Conserving Quality of Life through Community Paramedics. *Healthcare Quarterly, 20*(2) (2017)., 48-53. Retrieved from https://www.longwoods.com/product/25228