



A MODEL FOR BETTER COMMUNITY HEALTHCARE

HOW ONE EMS SYSTEM ACHIEVED THE TRIPLE AIM FROM A FEDERAL
HEALTH CARE INNOVATION AWARD GRANT





EMS and emergency communication systems are well positioned to play a major role in achieving the Triple Aim.

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Cover photo and photo on opposite page: Community paramedic Ryan Ramsdell assesses a patient. All photos courtesy of REMSA.

84% ROI

REMSA'S COMMUNITY HEALTH PROGRAMS EFFECTIVELY TARGETED PEOPLE LIVING IN UNDERSERVED COMMUNITIES, REPORTED HIGH LEVELS OF PATIENT SATISFACTION AND, BY YEAR FOUR, ACHIEVED AN 84% RETURN ON INVESTMENT.

EXECUTIVE SUMMARY

In 2012, REMSA launched a system of community health programs to improve access to the appropriate level of healthcare throughout Washoe County, Nevada. Funded through a \$9.1 million Health Care Innovation Award from the Center for Medicare & Medicaid Innovation, part of the U.S. Department of Health and Human Services, the program consisted of three interventions:

Nurse Health Line: a non-emergency phone number that provides 24/7 access to nurse navigators who could assess, triage and refer Northern Nevada residents to health care and community services.

Alternative Destination Transports: paramedics conduct advanced assessments of 911 patients with low-acuity medical conditions and provide alternative pathways of care other than transport to a hospital-based emergency department, including transport to urgent care centers and clinics, a detoxification center, or mental health hospitals.

Community Paramedicine: specially trained community paramedics perform in-home delegated tasks and point-of-care lab tests to improve the transition from hospital to home and improve care plan adherence.

The comprehensive, integrated system created by these three interventions offered new referral and treatment pathways to ensure the safest and most appropriate care for patients with low-acuity medical conditions. As a result, the innovative model successfully achieved the three goals of the Institute for Healthcare Improvement's Triple Aim: improving the quality and experience of care, improving the health of populations and reducing the per capita cost of healthcare.

REMSA's Community Health Programs effectively targeted people living in underserved communities, which had the highest utilization rates for the Nurse Health Line and Alternative Destination Transports. These alternative pathways were also very popular with the people who used them. Patients who called the Nurse Health Line and those enrolled in the Community Paramedicine Program consistently reported high levels of satisfaction in follow-up surveys. Over four years, REMSA's Community Health Programs saved \$9.66 million in healthcare payments, compared to \$9.06 million in program expenditures. By year four, the programs achieved an 84% return on investment—avoiding \$1.84 in payments for every \$1 in expenditures.

REMSA's innovative programs demonstrate the potential to improve the healthcare system by taking advantage of the existing EMS and emergency communications infrastructure. Health care providers, payers and policymakers must come together to make similar programs possible in other communities by reforming reimbursement rules and other policies that prevent EMS and 911 systems from providing effective and efficient care to communities.

INTRODUCTION

As the frontline of emergent and urgent healthcare in the United States, emergency medical services (EMS) systems serve as an entry point to care for many patients. Every year, EMS providers across the country are summoned to evaluate, treat and transport millions of people, usually via a 911 call, often for non-emergency conditions. Historically, EMS systems were developed as response to rising morbidity and mortality from traumatic accidents, cardiac events and other major emergencies. As population health needs have changed over the last several decades, the EMS system has also become a part of the healthcare safety net because it is easy to access, reliable and nearly universal.

The percentage of patients evaluated and transported to local emergency departments by EMS, whose conditions could have safely been assessed and treated in a non-emergent setting, is estimated to be as high as 61%.¹ The high number of people with low-acuity conditions seen in the field by EMS and in the emergency department (ED) stresses

the emergency healthcare system and leads to unnecessarily high costs to patients and other payers.²

EMS and emergency communication systems are well positioned to play a major role in achieving the Triple Aim: reducing costs, improving population health and creating a better patient

As a mobile healthcare service, EMS also can serve as an extension of physician and other hospital-based providers, visiting people in their homes and offering preventative care.

experience.³ During a typical EMS activation, a patient interacts with a trained emergency medical dispatcher and EMS providers in the field—two opportunities to evaluate patients' complaints and direct them to the most appropriate care setting, whether that's a hospital emergency department or an alternative, such as home care, a doctor's office or a detoxification center.

As a mobile healthcare service, EMS also can serve as an extension of physician and other hospital-based providers, visiting people in their homes and offering preventative care.

Yet, because the EMS system was created as an emergency response and transport system, it is governed by a number of laws and policies that can make it challenging for EMS agencies in the United States to innovate and provide services that meet current population health needs. For example, many EMS services will not transport patients to any destination other than an emergency department. Federal Medicare rules also define EMS as a supplier of medical transport, rather than a provider of healthcare, meaning EMS systems can only be reimbursed for responding to and treating 911 patients when they transport them to an emergency department. Since many state Medicaid agencies and private insurers have similar policies, reforms are needed to support EMS programs that can safely improve access to the appropriate level of healthcare.

¹ DOT, HHS. Innovation Opportunities for Emergency Medical Services. A Draft Whitepaper. https://www.ems.gov/pdf/2013/EMS_Innovation_White_Paper-draft.pdf

² Institute of Medicine of the National Academies: Future of Emergency Care in the US Health System, June 14, 2006.

³ Institute for Healthcare Improvement. The IHI Triple Aim. Available at: <http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx>

THE REMSA EXPERIENCE

Recognizing the potential of EMS to play a major role in improving healthcare, the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services named REMSA a recipient of a Health Care Innovation Award in 2012.

As part of its efforts under this grant, REMSA proposed creating a program that would provide alternative pathways for residents and visitors of Washoe County who sought medical evaluation of urgent low-acuity medical conditions. REMSA also planned to create new

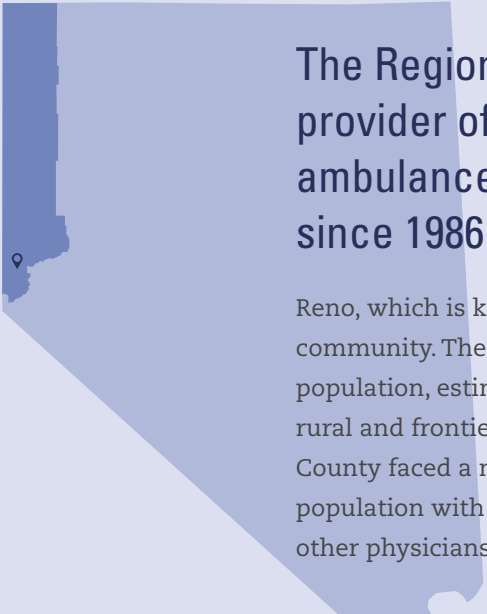
health information technology links between the emergency ambulance delivery system and the broader health care delivery system, as well as wider stakeholder and community engagement. Finally, the program would seek to achieve reforms in existing payment systems to allow for sustainable funding of patient care services.

With the four-year, \$9.1-million grant, REMSA set the overall goal of improving access to appropriate levels of quality care by 40% and reducing total patient care expenditures by

seven percent over four years. REMSA proposed achieving this goal with a three-pronged program that included:

- **Nurse Health Line**
- **Alternative Destination Transports**
- **Community Paramedicine**

REMSA, along with a team of experts from the University of Nevada, Reno, conducted rigorous analysis throughout the project, showing not only overall cost savings and reductions in utilization, but also other positive results related to healthcare quality and population



The Regional EMS Authority (REMSA) is a private non-profit provider of emergency and non-emergency paramedic ambulance services serving Reno and Northern Nevada since 1986.

Reno, which is known as “the biggest little city in the world,” is in many ways a typical American community. The Reno metro area, which includes the nearby city of Sparks, has a growing population, estimated to be just over 450,000. Much of surrounding Washoe County remains rural and frontier. A recent assessment of the community’s health needs found that Washoe County faced a number of issues similar to those throughout the country: an overweight population with high rates of obesity, inadequate nutrition and a shortage of primary care and other physicians, especially those who serve the 20% of the county’s population on Medicaid.⁴

450,000

POPULATION SERVED

200+

EMTs/PARAMEDICS

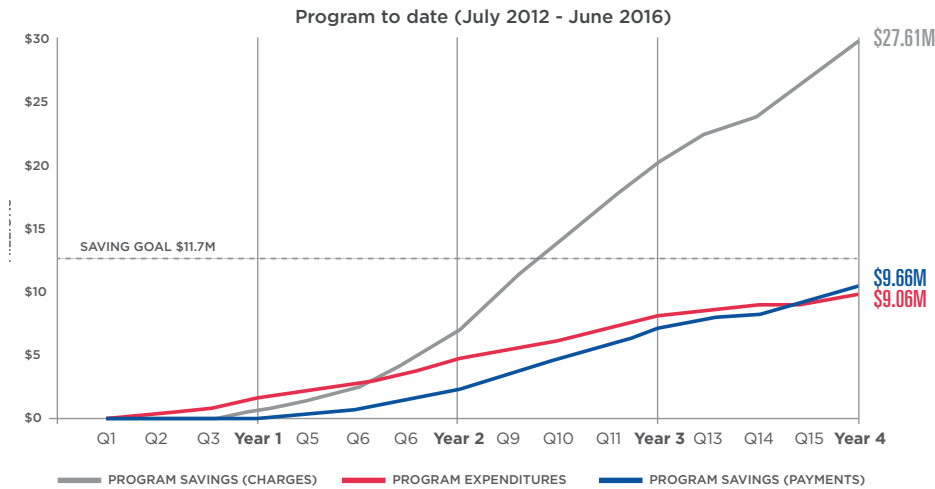
73,000+

CALLS IN 2016

6,542

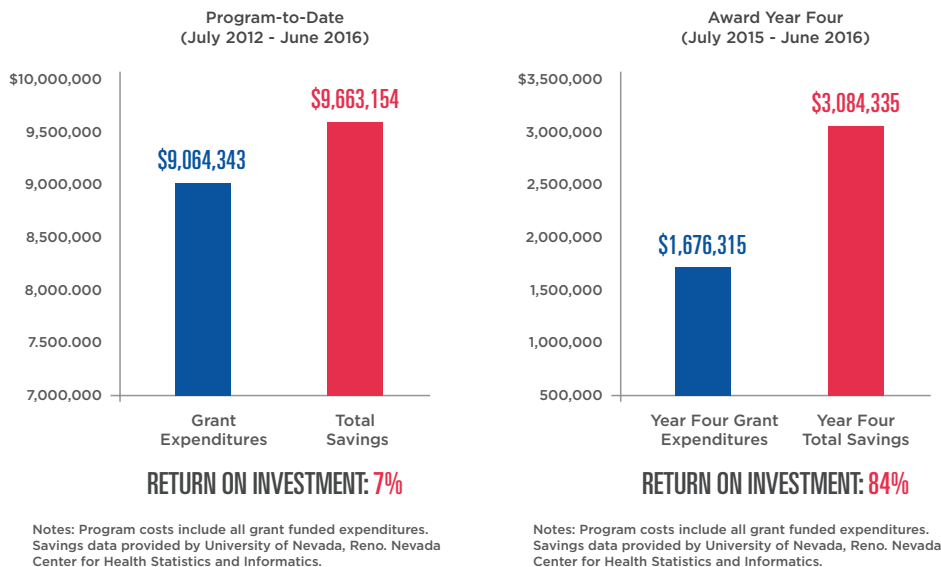
SQUARE MILES OF SERVICE AREA

⁴ Washoe County Community Needs Assessment, 2015-2017. Available at: https://www.renown.org/wp-content/uploads/CHNA_Final-1.pdf

FIGURE A. PROGRAM SAVINGS VS. PROGRAM EXPENDITURES

from improving care and referral options and reducing unnecessary utilization of emergency and hospital services, including a decrease in the percentage of emergency department transports that were classified as low priority (See Fig. C). In addition, the first four years of the program resulted in:

- **6,202 emergency department visits avoided**
- **1,024 ambulance transports avoided**
- **104 hospital readmissions avoided**

FIGURE B. RETURN ON INVESTMENT

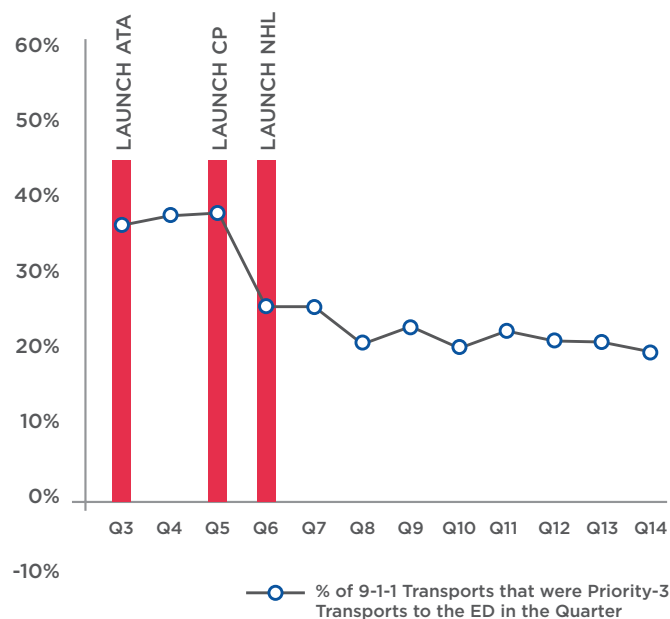
health. Savings were calculated as a count of avoided events (e.g., avoided ED visits, avoided ambulance transports, avoided hospital admissions or readmissions) multiplied by the average payments avoided per event using Washoe County specific data.

Together, these programs saved \$9.66 million in healthcare payments, compared to \$9.06 million in program expenditures, over four years (see Fig. A). And during the fourth year, \$1.84 in payments were avoided for every \$1 spent, an 84% return on investment (see Fig. B). These savings resulted

Underserved communities had highest utilization rates for the Nurse Health Line and Alternative Destination Transports, showing the programs were successful in reaching these communities. (See Fig. D). The success of REMSA's innovative efforts were only possible because of a rigorous clinical quality improvement (CQI) program, overseen by REMSA's Medical Director, Dr. Brad Lee, beginning with specialized training of clinical personnel and development of clinical protocols for all three community health programs. Management of the continuous quality improvement program is the shared responsibility of the medical director, program director and CQI coordinators. Medical record review, ongoing training and competency evaluation, patient feedback and occurrence reporting are additional tools used to ensure quality services.

FIGURE C. LOW ACUITY AMBULANCE 911 TRANSPORTS TO THE ED

Program-to-date (Jan 2013 - June 2016)



Reduced the ratio of priority-3 (non-emergency) transports to the ED from 36% to 19%. For the three years prior to the launch of the Community Health Programs, the percentage of priority-3 ambulance transports to the ED was static; however, for the two year period beginning October 2013 (the first month all three interventions were operational), the percentage of priority-3 ambulance transports to the ED has been becoming more successful at offering alternative care pathways for patients experiencing urgent low acuity medical conditions.

NURSE HEALTH LINE

As of 2012, every 911 call for a medical issue in Washoe County resulted in the dispatch of a REMSA ambulance and fire department first responders. Although REMSA's certified emergency medical dispatchers prioritized calls using an evidence-based, protocol-driven system, even low-acuity complaints received the same response—no matter how minor the nature of the problem. The system in Washoe County resembled that of most communities across the United States, where typically every 911 call receives a rapid response of highly trained emergency medical providers, even though many 911 calls originate because the callers either don't realize their symptoms are not emergent, or they are not aware of other ways to access medical advice or care.

FIGURE D. TARGETED UTILIZATION BY ZIP CODE

		MEDICAID ED VISITS BASELINE		ED VISITS BASELINE		AMBULANCE TRANS BASELINE		NURSE HEALTH LINE BASELINE		ALT DESTINATION INTERVENTION	
PATIENT ZIP CODE		ED (n) MEDICAID	RATE/1000 PERSON/YEAR	ED (n)	RATE/1000 PERSON/YEAR	AMB. TRANS (n)	RATE/1000 PERSON/YEAR	NHL TRANS (n)	RATE/1000 PERSON/YEAR	ATA (n)	RATE/1000 PERSON/YEAR
89501	4252	789	187.68	3793	892	3712	873	300	70.6	124	729.2
89512	25574	4546	177.76	13205	516.4	3106	121	879	34.4	66	2.6
89502	43566	6419	147.34	19830	455.2	4291	98	1434	32.9	131	3
89431	1685	4490	2664.69	14128	390.4	3284	91	1190	32.9	27	0.7
89433	20188	2559	126.76	7678	380.3	1374	68	580	28.7	3	0.1
AVERAGE RATE FOR WASHOE COUNTY IS 320 VISITS / 1000 PERSONS / YEAR											
89506	38379	3126	81.45	11500	299.7	2258	59	969	25.2	13	0.3
89503	27891	1991	71.39	8263	296.3	2182	78	672	24.1	77	2.8
89434	25416	1366	53.75	6880	283.1	1964	81	549	22.6	15	0.6



96%

SATISFACTION

The Nurse Health Line achieved outstanding patient satisfaction scores, including 96% saying they would use the service in the future if necessary.

REMSA established its Nurse Health Line to assist people with non-emergent conditions in navigating the healthcare system and provide them with a recommended level of care and a recommended location of care. Callers can access the Nurse Health Line directly through a ten-digit number promoted by REMSA. The 911 call-takers also can transfer callers to the Nurse Health Line if they have low acuity complaints as determined by the Medical Priority Dispatch System protocols. These calls, classified by MPDS as “omega” calls, no longer result in an immediate dispatch of a

REMSA ambulance, and in nearly all cases, fire department first responders are not responding either. The nurses answering the health line use LowCode, software containing another set of validated protocols called the Emergency Communications Nurse System, or ECNS. These protocols allow the nurses in the communication center to follow protocols to determine the callers’ needs and connect them to the resources they needed—from an urgent care visit to mental health resources.

Key factors in the success of REMSA’s Nurse Health Line include:

- **Nurses are located in the emergency communication center and fully integrated into the 911 emergency medical dispatch system.**
- **Certified registered nurses use clinical triage protocols that allow for an effective and standardized clinical triage and assignment of recommended level of care.**
- **REMSA uses mapping to identify open locations for care that are closest to caller’s home and also accept the caller’s insurance.**

RESULTS: NURSE HEALTH LINE

The Nurse Health Line took its first call in October 2013. Within just three months, the line was receiving about 2,000 calls a month, plus another 150 or so referred by 911 call-takers who had determined the patient met the criteria for transfer to the nurse line. During the first 33 months of operations, the Nurse Health Line achieved outstanding patient satisfaction scores, including 96% saying they would use the service in the future if necessary (see Fig. E).

More important, the program also safely reduced costs while still providing appropriate care. Only 1.5% of callers required referral to the 911 communications center and dispatch of EMS resources, while 635 ambulance transports and 4,414 emergency departments were avoided. Based on average payments for ED visits and EMS transports, the Nurse Health Line saved more than \$5.75 million from October 2013 until June 2016 (see Fig. E). The Nurse Health Line represented over 60% of total Community Health Program savings.

ALTERNATIVE DESTINATION TRANSPORTS

In Washoe County prior to the grant award, patients that dialed 911 were transported by ambulance to the emergency department unless they refused transport by signing an “against medical advice” release. The county’s EMS system, based upon clinical protocols, payment policies,

FIGURE E. CALLER SATISFACTION SURVEY RESULTS

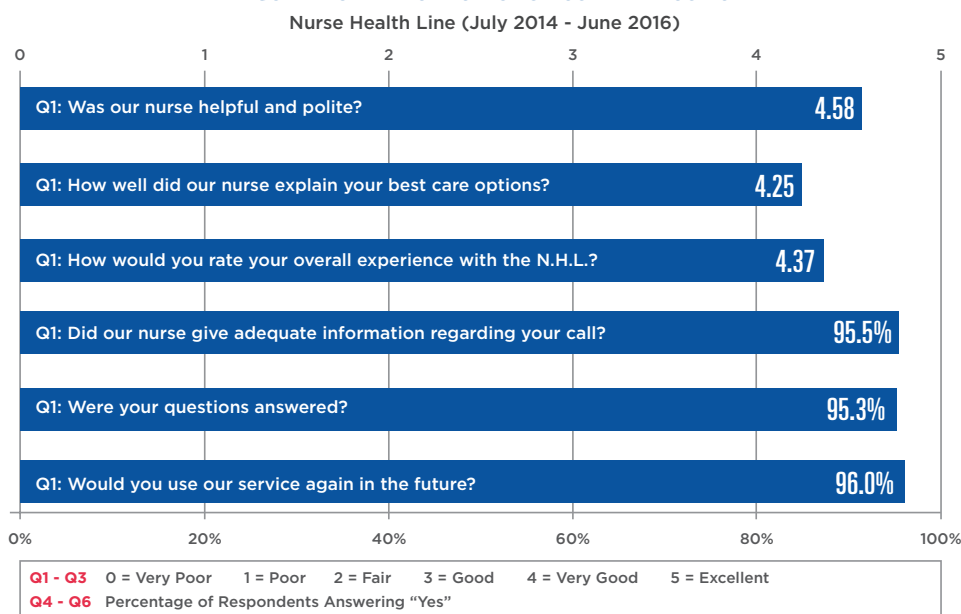


FIGURE F. COMMUNITY HEALTH PROGRAMS PRELIMINARY OUTCOMES

Program-to-Date (Jan 2013 - June 2016)

NURSE HEALTH LINE	COMMUNITY PARAMEDICINE	AMBULANCE TRANSPORT ALTERNATIVES	COMMUNITY HEALTH PROGRAMS TOTAL
10/1/13 - 6/30/16	6/1/13 - 6/30/16	1/1/13 - 6/30/16	
4,414 ED VISITS AVOIDED	350 ED VISITS AVOIDED	1,438 ED VISITS AVOIDED	6,202 ED VISITS AVOIDED
635 TRANSPORTS AVOIDED	258 TRANSPORTS AVOIDED	131 TRANSPORTS AVOIDED	1,024 TRANSPORTS AVOIDED
	104 READMISSIONS AVOIDED		104 READMISSIONS AVOIDED
1.5% 911 TRANSFER RATE		4.7% REPATRIATION RATE	
25,443 PROTOCOLS COMPLETED	1,524 ENROLLMENTS	1,509 ALTERNATIVE TRANSPORT	28,476 PATIENT CARE EVENTS
53,866 INCOMING CALLS	7,093 VISITS	89,884 ADVANCED ASSESSMENTS	160,843 TOTAL PATIENT CONTACTS
\$5,750,889 ESTIMATED PROGRAM SAVINGS	\$2,070,576 ESTIMATED PROGRAM SAVINGS	\$1,841,689 ESTIMATED PROGRAM SAVINGS	\$9,663,154 ESTIMATED PROGRAM SAVINGS

and local, state and national statutes, did not permit any other options, such as transport to a facility other than an ED. This is true in most communities across the country, due to several factors, including Medicare policies dating back several decades that only permit EMS agencies to bill for 911 responses when patients are transported to the ED.

The HCIA grant supported one of the largest and most successful demonstrations to date of the benefits of establishing clinical protocols that allow paramedics to transport patients to destinations other than the emergency department, such as an urgent care center, mental health hospital or detoxification center. To ensure the safety of patients, REMSA's medical director and clinical leadership developed protocols based on current evidence and a conservative approach to patient management. Prior to program launch,

REMSA paramedics then received four hours of training on performing an advanced assessment in the field to determine if patients met the criteria for alternative destination.

Alternative destinations in Washoe County include the local detoxification center, psychiatric hospitals, two federally qualified healthcare clinics, one primary care medical practice and approximately a dozen urgent care centers. For many patients, these options are not only more affordable but also faster and result in lower out-of-pocket costs. Patients are always given the option of choosing instead to be taken to a hospital emergency department even if they meet criteria to be transported elsewhere.

Keys to the success of the Alternative Destination Transports program include:

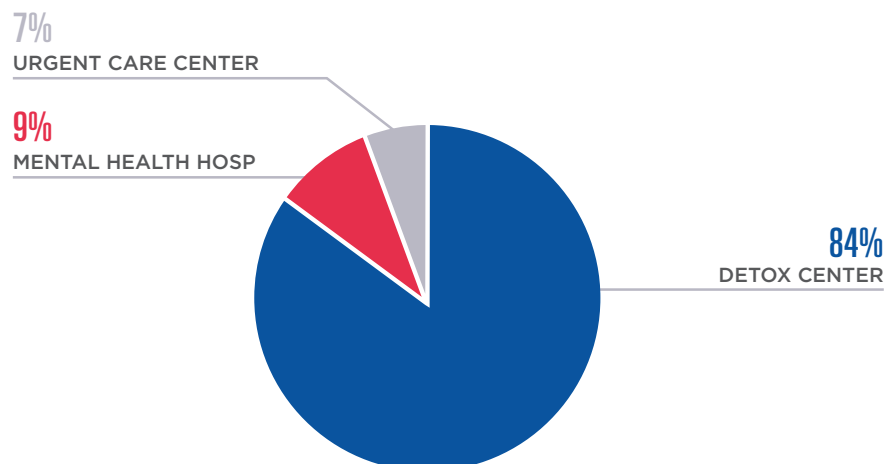
- **Continuous quality assurance and oversight by the medical director and clinical leadership**

- **Collaboration and coordination with the alternative destinations and their leadership**
- **Conservative protocols to minimize risk**

RESULTS: ALTERNATIVE DESTINATION TRANSPORTS

In three-and-a-half years, REMSA paramedics safely transported 1,509 patients to alternative destinations—saving more than \$1.8 million in payments through avoided emergency department visits. With more options for patients, the savings could have been much higher: The 1,509 people taken to alternative sites accounted for only about ten percent of those whom paramedics deemed clinically eligible after performing an advanced assessment, but due to patient choice or the unavailability of an appropriate alternative destination, many patients were still transported to the ED.

FIGURE G. AMBULANCE TRANSPORT ALTERNATIVES
TRANSPORTS BY FACILITY TYPE Program-to-date (Jan 2013 - June 2016)



The vast majority of patients taken to alternative destinations were transported to a detoxification center (Fig. F).

Less than 5% of those patients then received treatment in an emergency department, and REMSA's quality improvement process reviewed each of those cases, finding that nearly each one was the result of logistical barriers or patient choice, and none resulted in an adverse outcome.

COMMUNITY PARAMEDICINE

In the last several years, the EMS profession in the United States and around the world has increasingly

supported the idea of giving a small number of paramedics additional education and training so they can perform expanded roles outside the typical respond-and-transport EMS model. Often termed "community paramedics," these providers can assess and treat patients in their homes with the goal of avoiding unnecessary transports to emergency department or admission to the hospital.

REMSA developed a community paramedicine program that offered three types of services:

- **Post-hospital discharge patient follow-up** – In-home visits or follow-up calls assist patients in avoiding

hospital readmission after they have been discharged from the hospital. Community paramedics work with patients to help them adhere to a physician treatment plan by providing information, education and guidance. Patients are enrolled and monitored for up to 30 days after discharge.

- **Episodic evaluation visit** – In-home visits within four hours of a request from primary care or other physicians to provide in-home patient care service when there are limited resources available and an emergency department visit may not be optimal. Community paramedics work with the referring physician to develop the most

THE HEALTH CARE INNOVATION AWARDS

Congress created the Innovation Center in 2010, with the passage of the Patient Protection and Affordable Care Act, to fund programs that pilot new ways to provide better quality, patient-centered care for lower costs. The Innovation Center, part of the Centers for Medicare & Medicaid Services at the U.S. Department of Health & Human Services, has supported a broad portfolio of models for healthcare delivery, including efforts to develop accountable care organizations, transform primary care and launch new payment and delivery models. As a part of this work, the Innovation Center offered a series of grants called the Health Care Innovation Awards.

The Health Care Innovation Awards funded up to \$1 billion in awards to organizations that implemented the most compelling new ideas to deliver better health, improved care and lower costs to people enrolled in Medicare, Medicaid and Children's Health Insurance Program (CHIP), particularly those with the highest health care needs. REMSA was one of only 107 grantees that received a Health Care Innovation Award from the Center for Medicare & Medicaid Innovation during its first round of awards in 2012.

The objectives of the Health Care Innovation Awards Round One were to:

- Engage a broad set of innovation partners to identify and test new care delivery and payment models
- Identify new models of workforce development and deployment
- Support innovators who can rapidly deploy care improvement models through new ventures or expansion of existing efforts to new populations of patients

For more information about the programs of the Centers for Medicare and Medicaid Innovation (CMMI), go to:

www.innovation.cms.gov

appropriate care plan.

- **Frequent user intervention** – Following identification and assessment of patients that make frequent visits to the emergency department or frequent calls to 911, community paramedics assist patients in accessing the right care or service. Often this is achieved by developing a resource plan to resolve each patient's unmet healthcare, mental health and social service needs.

Like paramedics responding to emergency incidents, REMSA community paramedics follow evidence-based protocols developed by the medical director in consultation with REMSA's primary care and hospital physician partners. These include specific protocols for patients

discharged after cardiac surgery or myocardial infarction or with diagnoses of congestive heart failure or chronic obstructive respiratory disease (COPD).

Key factors in the success of REMSA's community paramedicine program include:

- **An intensive 150-hour curriculum for experienced paramedics performing within the existing paramedic scope of practice in an expanded role**
- **Evidence-based, diagnosis-specific protocols developed by the medical director in consultation with health system leaders and referring physicians**
- **Close collaboration between the community paramedics and referring primary care physician or**

other referring healthcare provider including electronic exchange of patient care information

RESULTS: COMMUNITY PARAMEDICINE

Launched in June 2013, the community paramedicine program enrolled 1,524 patients in its first 37 months. Most of the enrolled patients were part of the post-discharge program, with the vast majority of those being congestive heart failure patients; 13.6% of patients enrolled in the program were referred by physicians for the evaluate and refer program, while 2.2% were frequent users.

During those first three years, the community paramedicine program saved \$2,070,576 by avoiding 350 visits to the emergency department, 258 ambulance trips and 104 hospital readmissions. In addition to the significant savings, patients and providers alike expressed high satisfaction. A survey of patients revealed an average satisfaction level of 4.9 out of 5 (Fig. G). Similarly, surveys of the community paramedics showed an increase in job satisfaction after spending time performing the role, thanks to being able to see the difference they made in the lives of their patients.

CONCLUSION

REMSA's program succeeded, in part, because each of the three interventions complemented and reinforced the others, with one goal:



getting the right resources to the right patients at the right time to optimize savings and achieve the best outcomes.

In building this highly successful program, the REMSA team also found that effective outreach efforts were critical to increasing community awareness and building support among community partners, including hospital leaders, physicians and local policymakers. Along with the early positive results of the program, these efforts helped pave the way for important policy changes that are helping the REMSA program achieve sustainability, such as Nevada's

community paramedic legislation and subsequent approval from CMS to allow the state's Medicaid program to reimburse community paramedic services.⁵ Outcome data from the first four years of the program have also resulted in REMSA achieving program sustainability through reimbursement contracts with partners who recognize the return on investment, both in costs and population health. Organizations taking advantage of REMSA's innovative community health program include commercial insurers, Medicaid and Medicare managed care insurers, hospitals, clinics and occupational health providers. Replicating the success of REMSA's

program in other cities and counties across the country is essential to demonstrating the value of nurse triage, community paramedicine and alternative ambulance destinations. Policymakers and payers must support these innovative efforts and realign incentives in order to allow EMS and 911 systems to achieve what REMSA showed they are capable of: reducing costs, enhancing the patient experience and improving the health of the community.

5 Department of Health and Human Services. Nevada Receives Approval From Centers For Medicare And Medicaid To Reimburse For Paramedicine. August 22, 2016. Available at: http://dhhs.nv.gov/Reports/Press_Releases/2016/Nevada_Receives_Approval_from_Centers_for_Medicare_and_Medicaid_to_Reimburse_for_Paramedicine/

A SUSTAINABLE FUTURE REMSA's Programs Reduce Healthcare Spending & Improve Care

CMS engaged RTI International to conduct an independent evaluation of the 24 Health Care Innovation Awardee projects categorized as "community resource planning, prevention, and monitoring." REMSA was one of only eight described as having a "high likelihood of sustainability." The independent evaluation also found:

Community Paramedicine (30-Day Enrollment)

- Significant year one savings of \$2,520 per participant per quarter; average quarterly decline in spending of -\$1,070 (90% CI: -\$2,707, \$566)
- Significantly reduced inpatient admissions among Medicare beneficiaries

Nurse Health Line

- The average quarterly impact on spending per person was not statistically significant
- An increase in inpatient admissions may be attributed to the fact that the NHL encouraged individuals who needed care to get it

Alternative Destination Transports

- Significant year one savings of \$2,139 per participant per quarter; average quarterly decline in spending -\$1,430 (90% CI: -\$2,990, \$131)
- Successfully diverted over 1,500 911 callers to a more appropriate facility

Additional Findings

- The percentage of Priority-3/low-priority transports to the ED (as a percentage of all emergency ambulance transports) decreased over time

For more information on RTI International's methodology and results, read the report, "Evaluation of Health Care Innovation Awards: Community Resource Planning, Prevention, and Monitoring Third Annual Report," at <https://downloads.cms.gov/files/cmmt/hcia-crppm-thirdannrptaddendum.pdf>. To learn more about measuring mobile integrated healthcare and community paramedic programs, visit <http://www.naemt.org/initiatives/mih-cp/mih-cp-program-toolkit>.

PERFORMANCE MEASUREMENT & PROGRAM OUTCOMES

FIRST WATCH™

REMSA project leadership, along with a team of

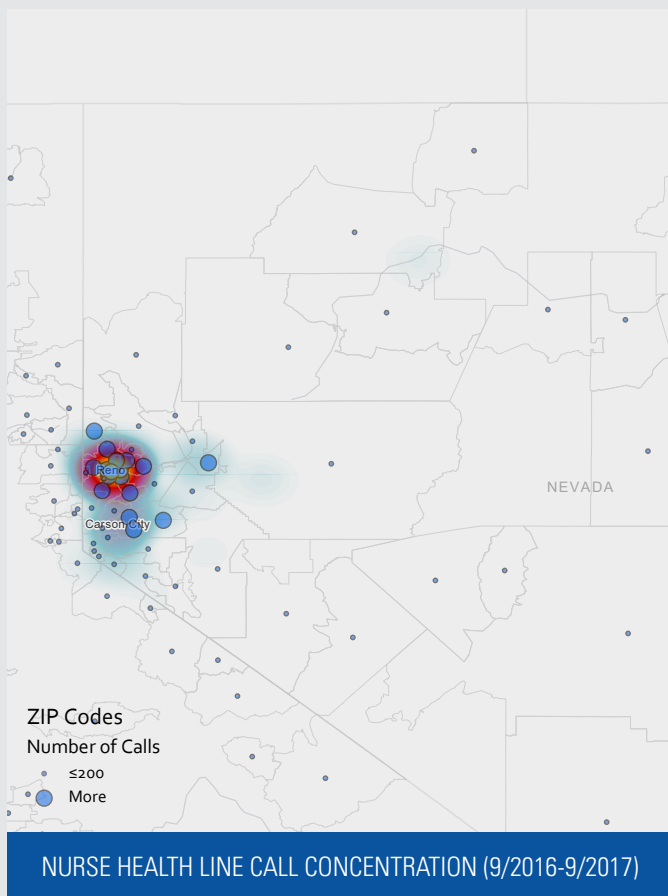
experts from the University of Nevada, Reno, conducted rigorous analysis throughout the project to achieve several key objectives: CMMI quarterly reporting requirements, real-time self-monitoring of clinical and operational performance metrics, and analysis of outcome data critical for sustainability efforts. CMMI required REMSA to submit quarterly reports throughout the four-year grant-funded period, with a final report submitted in September 2016. These reports included over 100 data elements and 28

unique measures across the three interventions and four outcome domains: quality, patient safety, patient experience of care and total savings due to reduced utilization.

Pulling all of this data together and converting it into meaningful information for program management, evaluation, and sustainability is an enormous and important task. Working closely with FirstWatch, the data solutions firm that monitors and improves performance for many EMS agencies, 911 communication centers and other public safety organizations, REMSA developed a health information technology infrastructure that linked the emergency ambulance delivery system and the community-wide health care delivery system.

To access and analyze the information needed for REMSA's reporting requirements and performance monitoring, FirstWatch pulls data from several disparate sources. The reports and triggers established using FirstWatch combined information from five different systems: the Tritech Computer-aided dispatch (CAD), the ProQA software used by 911 call-takers, the LOWCODE software used by nurses answering health line calls, the Zoll RescueNet ePCR used by paramedics responding to 911 calls in the field and the Zoll EMS Mobile Health records utilized by community paramedics.

REMSA also uses FirstWatch to create reports that can be run at any time to evaluate different performance areas, such as adherence to LowCode protocols for calls to the Nurse Health Line



The map above illustrates the location of calls to the REMSA Nurse Health Line covering the entire northern Nevada region including both urban, rural and frontier communities.

A PATIENT-CENTERED COMMUNITY PARAMEDIC ELECTRONIC MEDICAL RECORD

ZOLL®

Finding an electronic record system to meet the needs of REMSA's community paramedics

presented a challenge. Although its EMS electronic patient care reporting system served the agency's 911 operations well, EMS reporting has traditionally been incident-based, rather than patient-focused. Each time REMSA paramedics see a patient as a result of a 911 call, they complete a discrete record that remains separate from records associated with that patient from previous transports.

For its community paramedics, who required a more patient-centric method of data collection, REMSA first piloted a system used in physician practices. REMSA's community paramedics quickly realized that was not the right fit for its unique program.

Since REMSA already used both ZOLL RescueNet ePCR and RescueNet Billing, its leaders turned to their partners at ZOLL to develop a medical record tailored to the needs of REMSA's community paramedics and their patients. A

team of ZOLL developers and REMSA clinicians designed EMS Mobile Health, an electronic medical record system specifically designed for this unique EMS application and now being used by several community paramedicine programs across the country.

The EMS Mobile Health electronic medical record allows REMSA community paramedics to enter information during each patient visit and view a dashboard for each patient that displays historical information from previous encounters. Because the platform is web-based, users can login from any tablet or computer. REMSA community paramedics are also able to create access for referring physicians to view information from community paramedic visits with their patients.

The software contains modules tailored to specific conditions and patient populations targeted by community paramedic programs, such as congestive heart failure, diabetes, frequent customers and referrals from primary care providers. Having a health record designed for

community paramedicine programs not only makes it possible for REMSA to collect, share and analyze patient information, it also improves efficiency—allowing its community paramedics to increase the number of patients they can visit each day.



Community Paramedic Katrina Travis-Solaro stands along side one of three community paramedic SUVs.

EVIDENCE-BASED PROTOCOLS FOR NURSE TRIAGE OF LOW-ACUITY CALLS



Nurse advice lines are not a new concept—insurers and hospitals in the United States have employed them for many years. With liability concerns often raised as the number one disadvantage⁶ of directing care over the phone, use of nurse call centers in emergency medical systems in the United States is extremely rare.

When REMSA's leaders began planning the Nurse Health Line, finding an evidence-based system for questioning callers and triaging them to appropriate care was critical. They chose to use Priority Solutions' LowCode, software that integrates the International Academies of Emergency Dispatch's Emergency Communication Nurse System (ECNS) protocols into REMSA's computer-aided dispatch system. The ECNS protocols were first developed in 1998 in California and in the two decades since more than 80 million calls worldwide have been triaged using the system.

When REMSA nurses answer the line, they follow a series of questions using the LowCode software. Once

life-threatening emergencies have been ruled out and a complaint is determined to be low acuity, the ECNS protocol directs the nurse to the recommended level of care—such as providing self-care instructions or referring the caller to an urgent care clinic. REMSA has also tailored the software to meet local needs; nurses in the communication center can view a cloud-based Directory of Services, which automatically opens and makes suggestions based on the caller's location. The nurse can recommend specific resources based not only on the caller's medical needs but also insurance status and logistical factors, like which clinics are open.

As part of the accreditation process, REMSA's communication center must demonstrate that it conducts regular quality assurance audits of 911 calls. Only through that process can a communication center ensure that the 911 calls being routed to the nurses are for people with low-acuity symptoms. REMSA's established quality management program, along with the external validation of the ECNS protocols, helped alleviate any concerns about

the potential for a negative outcome when trying to assess a caller's complaints over the phone. In fact, several of the health care systems that utilize REMSA's Nurse Health Line for their members have reported that the nurse triage system outperforms traditional nurse advice lines by making fewer unnecessary referrals to 911 or an emergency department.



Nurses triage patient calls in REMSA's call center.

⁶ American College of Physicians, American Society of Internal Medicine. Telephone Triage, a whitepaper. Available at: https://www.acponline.org/acp_policy/policies/telephone_triage_diagnostic_techniques_procedures_2000.pdf

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As a private non-profit provider of emergency and non-emergency paramedic ambulance services, the Regional EMS Authority (REMSA) has been serving Northern Nevada since 1986. REMSA has a proven track record of providing the highest quality emergency medical services and is nationally acclaimed for high performance, clinical excellence, innovation and community service. REMSA is accredited by the Commission on Accreditation of Ambulance Services and the Commission on Accreditation of Air Medical Service and is recognized as an Accredited Center of Excellence (ACE) by the International Academies of Emergency Dispatch (IAED). The REMSA Nurse Health Line was the first nurse triage line in the world to receive the IAED accreditation. The REMSA Prehospital Center for Education—the largest EMS education center in the state of Nevada—is accredited by the Commission on Accreditation of Allied Health Education Programs.

For more information - please contact CHP@remsa-cf.com or go to
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