Community Paramedicine: State of the Evidence

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University of Washington

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Acknowledgments

- Gary Wingrove
  - Government Relations & Strategic Affairs at Gold Cross/ Mayo Clinic Medical Transport

- Matt Zavadsky
  - Director of Public Affairs, MedStar Mobile Healthcare
Overview

- The Problem
- Community paramedicine: A solution?
- What is community paramedicine?
- Who are community paramedicine professionals?
- Does it work? Building the evidence base
- Peer-reviewed research on patient outcomes
- Non-peer-reviewed/in-progress research
- Future directions for research
- Resources
- Discussion
The Problem
...favor transporting patients even if another type of response is wanted, needed, safer, and less expensive.

- 7% to 34% of Medicare patients transported by ambulance to the ED could have been treated elsewhere.
- 26% of EMS responses do not result in transport (usually not paid).
- Frequent users are often homeless, lack access to primary care, or have chronic/severe illness: 4.5%-8% of patients = 21%-28% of all ED visits.
The U.S. Affordable Care Act encourages realignment of incentives (toward bundled payment and shared savings) but does not address the role or reimbursement of EMS.

Many EMS transports as well as downstream costs might be avoided.
More problems (Munjal & Carr 2013)

- Patients do not receive the right care, in the right place, at the right time.
- EMS providers are not efficiently utilized.
- Financially fragile EMS agencies (e.g., rural) miss out on potential revenue for providing alternative responses.
Community paramedicine: A solution?
SASKATCHEWAN EMERGENCY MEDICAL SERVICES (EMS) REVIEW

- Transition from EMS to MHS (Mobile Health Services)

http://health.gov.sk.ca/ems-review
Improving Access to EMS and Health Care
In Rural Communities:
A Strategic Plan

By
The Joint Committee on Rural Emergency Care
Of and For
The National Association of State EMS Officials
And
The National Organization of State Offices of Rural Health

July, 2010
Innovative models of payment and care delivery are increasingly being used to expand access, improve quality, and reduce medical costs. Although traditional fee-for-service medicine favors doing more than is necessary, newer payment models aim to realign incentives to decrease utilization and increase efficiency. However, little consideration has been given to how fee-for-service reimbursement in out-of-hospital care limits the ability of
Innovation Opportunities for Emergency Medical Services:

A Draft White Paper from the

National Highway Traffic Safety Administration (DOT)

Office of the Assistant Secretary for Preparedness and Response (HHS)

Health Resources and Services Administration (HHS)

Published for Comment on July 15, 2013

http://ems.gov/innovation.htm
Potential solutions

- Bringing EMS, via community paramedicine, into a patient-centered, coordinated, high quality healthcare system could result in better care and outcomes for patients.

- These reforms are in line with policy shift to value-based purchasing (rather than fee-for-service), medical homes with coordinated care, and evidence-based practices.

- Additional benefit: improve EMS retention, enhancing skills and providing a career ladder.
What is “community paramedicine”?
Community paramedicine*

- Overarching goals are to achieve the “Triple Aim”:
  - Improve patient and population health
  - Improve quality and patient experience of care
  - Reduce per capita costs

* aka “mobile integrated healthcare”
Mobile Integrated Healthcare Practice (MIHP)

- MIHP represents an attempt to broaden discussion to include multiple provider types (EMS and beyond) and organizations involved in out-of-hospital care.

http://www.mobileintegratedhealthcare.com/what-is-mobile-integrated-healthcare
CP/MIHC programs use EMS practitioners and other healthcare providers in an expanded role to increase patient access to primary and preventative care, within the medical home model.

CP/MIHC programs work to decrease the use of emergency departments, decrease healthcare costs, and improve patient outcomes.

The introduction of CP/MIHC programs within EMS agencies is a top trend in emergency medical care.

National Association of EMTs (NAEMT)
3 R’s: Respond, Redirect, Reduce

- Many types of services:
  - acute, non-scheduled (e.g., treat and release, refer or transport to alternative destination)
  - non-acute, scheduled (e.g., post-discharge followup, health promotion)
- Varied settings—hospitals, clinics, community organizations, home
A wide variety of services

- Primary healthcare
  - Home assessments (e.g., safety).
  - Chronic disease management (diabetes, CHF).
  - Assisting patients to manage their own healthcare.
  - Acute care response to reduce hospitalizations.
  - Supportive care for assisted living populations.
  - Post-discharge follow-up to prevent readmissions.
  - Medication reconciliation and compliance.
  - Vaccinations.
A wide variety of services

- **Community coordination**
  - Patient resource need assessments (e.g., food).
  - Support for family caregivers.
  - Post-discharge follow-up to prevent readmissions.
  - Behavioral health follow-up to increase attendance at appointments.
  - Assessment with triage and referral.
A wide variety of services

- Substitution
  - In-hospital coverage for medical and nursing staff (e.g., Australia)
Funding

- Grant funds
- Hospitals that own ambulance services (expecting cost savings)
- Local jurisdictions (e.g., municipalities)
- Contracts, shared savings through cost avoidance (often more urban)
- Medicaid reimbursement (Minnesota)
Who are community paramedicine professionals?
What’s in a name?

- Community Paramedic (Nova Scotia, US)
- Advanced Practice Practitioner (US)
- Extended Care Paramedic (Halifax, NS)
- Emergency Care Practitioner (UK)
- Paramedic Practitioner (UK)
- Primary Care Technician (US)
What’s in a name?

- All levels of out-of-hospital EMS personnel can be called “community paramedicine providers.”
- “A community paramedic is a state licensed EMS professional that has completed a formal internationally standardized educational program through an accredited college or university and has demonstrated competence in the provision of health education, monitoring and services beyond the roles of traditional emergency care and transport and in conjunction with medical direction. The specific roles and services are determined by community health needs and in collaboration with public health and medical direction.” (Gary Wingrove)
Education (beyond EMS credential) varies from short custom trainings to more college and university courses (e.g., Community Healthcare and Emergency Cooperative curriculum – 100 hours didactic, variable clinical):

- Role of CP in healthcare system
- Social determinants of health
- Public health and the primary care role
- Cultural competency
- Role within the community
- Personal safety and wellness
- Clinical experience
Does it work?
Challenges and concerns

- Role confusion or overlap with other healthcare professionals
- Appropriate policies, procedures, protocols
- Legal and regulatory barriers (scope of practice, medical oversight)
- Complexity of community assessment
- Cost of implementation
- Patient outcomes
At the beginning of every evaluation

I know our project works

No, you don't
“Once you’ve seen one community paramedicine program, you’ve seen one community paramedicine program.”
Building the evidence base: A U.S. agenda for community paramedicine research
Building the evidence

- What are key questions about community paramedicine?
- What evidence do we need?
National Consensus Conference on Community Paramedicine

- Atlanta, GA: October, 2012
- Funding: Agency for Healthcare Research and Quality
- Convened by North Central EMS Institute and Joint Committee on Rural Emergency Care (JCREC: NOSORH and NASEMSO)
- Expert panels and discussion on 5 topic areas and creation of a research agenda, organized around current practices, gaps, and opportunities
- 90 participants (60 for research agenda)
National Consensus Conference on Community Paramedicine: Summary of an Expert Meeting

October 1-2, 2012
Atlanta Airport Hilton Hotel
Atlanta, Georgia, USA

prepared by
Davis G. Patterson, PhD
Susan M. Skillman, MS

North Central EMS Institute

UNIVERSITY OF WASHINGTON
SCHOOL OF MEDICINE
DEPARTMENT OF FAMILY MEDICINE
Participants

- Community Paramedics
- Local Agency Chiefs
- Local Program Directors
- Local Medical Directors
- State Offices of Rural Health
- State EMS Regulators
- State Program Directors
- State Departments of Health
- National EMS Regulators
- National Highway Traffic Safety Administration
- National Association of State EMS Officials
- National Nurses Associations
- Health Economists
- University Professors and Educators
- Curriculum Developer
- Public Health Nurse Consultants
- Hospital Administrators
## Research priorities (not in order)

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<thead>
<tr>
<th>Theme</th>
<th>Example</th>
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<tr>
<td>Program development</td>
<td>Determine appropriate models for varied geographies, organizations, staffing, etc.</td>
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<tr>
<td>Technology</td>
<td>What are appropriate technologies for mobile healthcare and information management?</td>
</tr>
<tr>
<td>Workforce: education and competencies</td>
<td>What competencies do providers need?</td>
</tr>
<tr>
<td>Workforce: supply</td>
<td>How do we identify/recruit appropriate staff?</td>
</tr>
<tr>
<td>Workforce: demand and utilization</td>
<td>What is the impact of CP services on 9-1-1 demand? (does it reduce overall demand?)</td>
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## Research priorities (cont.)

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<td>Medical oversight</td>
<td>What are appropriate models for medical direction that promote safety and quality?</td>
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<td>Team approaches/ integration with other providers</td>
<td>How can providers be integrated effectively into care teams?</td>
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<td>System impacts and value</td>
<td>How can CP add value to rural v. urban healthcare and public health systems?</td>
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<td>Patient access and satisfaction</td>
<td>How does patient access/satisfaction compare with other sources of care?</td>
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<td>Patient safety and health outcomes</td>
<td>Can providers properly triage patients to the appropriate level of care?</td>
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<tr>
<td>Data and methods for research and evaluation</td>
<td>What are appropriate definitions, measures, and methods for studying CP programs, activities, and outcomes?</td>
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A National Agenda for Community Paramedicine Research

October 1-2, 2012
Atlanta Airport Hilton Hotel
Atlanta, Georgia, USA

prepared by
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Susan M. Skillman, MS

North Central EMS Institute

UNIVERSITY OF WASHINGTON
SCHOOL OF MEDICINE
DEPARTMENT OF FAMILY MEDICINE
Reports available: ircp.info/Downloads/
http://depts.washington.edu/uwrhrc/
Peer-reviewed research on outcomes
What’s in research databases?

11 peer-reviewed articles identified in a systematic review
“Expanding paramedic scope of practice in the community” (Bigham et al. 2013)

- Articles from UK (9), Canada (1), Australia (1)
- Year 2000 on
- Rural and urban areas
- New services provided:
  - Assessment of minor acute/chronic illness/injury
  - Treatment of minor illness/injury
  - Health promotion education and illness surveillance
  - Referrals to clinics, public health, social services
Community paramedicine research to date is lacking, but programs in the United Kingdom, Australia, and Canada are perceived to be promising, and one RCT shows that paramedics can safely practice with an expanded scope and improve system performance and patient outcomes. Further research is required to fully understand how expanding paramedic roles affect patients, communities, and health systems.”
Which extended paramedic skills are making an impact in emergency care and can be related to the UK paramedic system? A systematic review of the literature

Rachel Evans,¹ Ruth McGovern,² Jennifer Birch,² Dorothy Newbury-Birch²

**Conclusions**  This review identifies many viable extra skills for paramedics but the evidence is not strong enough to guide policy. The findings should be used to guide future research, particularly into paramedic care for elderly people.
“Paramedics can be successfully trained to autonomously assess and manage these patients [especially over 60] with acute minor conditions, benefitting patients, carers and (probably) resource use more widely. Evidence of cost–benefit is however lacking.”

Paramedics may be able to reduce ED burden as long as other referral services have capacity for additional patients.
Reduce 9-1-1 use in High Utilizer Group (HUG) patients using specially trained paramedics who surveille the 9-1-1 system and intervene to provide care coordination.

- Use data mining technology to surveille, predict, identify and alert on patients of interest in near real-time.

- Respond to first responder electronic referrals and predictive data algorithms that classify vulnerabilities (e.g., fall risks, upcoming substance abusers, mental illness), and electronic ranking of patient in a weekly top 10 position for 9-1-1 use.
EMS transports declined 37.6%, charges 32.1%.
EMS task time decreased 39.8%, mileage 47.5%.
ED encounters declined 28.1%, charges 12.7%.
Inpatient admissions declined 9.1%, charges 5.9%.
Hospital length of stay declined 27.9%.
Across all services, total charges declined by $314,306.
“If Medicare had the flexibility to reimburse EMS for managing selected 911 calls in ways other than transport to an ED, we estimate that the federal government could save $283–$560 million or more per year, while improving the continuity of patient care. If private insurance companies followed suit, overall societal savings could be twice as large.”

Abby Alpert is an assistant professor of economics and public policy at the Paul Merage School of Business, University of California, Irvine.

ABSTRACT Some Medicare beneficiaries who place 911 calls to request an ambulance might safely be cared for in settings other than the emergency department (ED) at lower cost. Using 2005–09 Medicare claims data and
Non-peer-reviewed/in-progress research: Descriptive studies
The U.S. state legislative environment (NASEMSO survey, October 2013)

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<td>Need Rules on Education &amp; Endorsements</td>
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State legislation/regulatory status as of October 2013

EMS statute allows CP
EMS statute prohibits CP

5 states had amended laws/regulations:
Maine
Minnesota
Missouri
Nevada
Pennsylvania
Overview of U.S. Community Paramedicine Programs
Community Paramedicine/Mobile Integrated Healthcare Survey

- NAEMT and 16 national EMS organizations partnered to conduct the survey
- Results shared October 2013
- Addressed a multitude of program characteristics

232 unique programs identified (2013)
States identified with CP/MIHC programs in 2013*

Respondents from 44 states, DC, Puerto Rico, reported programs.

* Matt Zavadsky, National Association of EMTs
Goals and services

- Frequent EMS User: 66%
- Readmission avoidance: 46%
- Primary care/physician extender model: 28%
- See and refer to alternate destination after assessment: 24%
- 911 Nurse Triage: 8%
Funding

- Self-funded: 53%
- Fee for service: 42%
- Grant: 33%
- Fee for referral: 5%
- Medicaid fee schedule/free during pilot: 1%
<table>
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<th>Organization</th>
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<td>Hospitals</td>
<td>83%</td>
</tr>
<tr>
<td>Physician organizations</td>
<td>47%</td>
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<tr>
<td>Other EMS agencies</td>
<td>45%</td>
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<tr>
<td>Public health agencies</td>
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<td>Home health organizations</td>
<td>42%</td>
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<td>Primary care facilities</td>
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<td>Law enforcement agencies</td>
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<td>Mental health care facilities</td>
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<tr>
<td>Nursing homes</td>
<td>25%</td>
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## Participants in patient care

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<th>Role</th>
<th>Percentage</th>
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<td>Paramedics</td>
<td>94%</td>
</tr>
<tr>
<td>EMTs</td>
<td>54%</td>
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<td>AEMTs</td>
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<tr>
<td>Nurses</td>
<td>24%</td>
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<tr>
<td>Physicians</td>
<td>21%</td>
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<td>Nurse Practitioners</td>
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<tr>
<td>Physician Assistants</td>
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</table>
Specific training provided to practitioners

- Clinical: 78%
- Patient relations: 57%
- Community relations: 51%
- No specific: 13%
Non-peer-reviewed/in-progress research: Evaluations of services and outcomes
Program evaluations

- MedStar Mobile Healthcare (Fort Worth, TX)
- Reno, NV Regional EMS Authority (REMSA)
- Wake County EMS (Wake County, NC)
- Center for Emergency Medicine – Western Pennsylvania (Pittsburgh, PA)
- Christian Hospital EMS (St. Louis, MO)
- Eagle County Paramedics (Eagle County, CO)
- North Memorial Medical Center (Minneapolis, MN)
- Toronto EMS: Community Referrals by EMS (CREMS)
- Nova Scotia Extended Care Paramedic Program
- UK emergency care practitioner pilots
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<tr>
<th>Goals/methods/populations</th>
<th>MedStar</th>
<th>REMSA</th>
<th>Wake County</th>
<th>Western PA</th>
<th>Christian Hospital</th>
<th>Eagle County</th>
<th>North Memorial</th>
<th>Toronto</th>
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<tr>
<td>Reduce costs</td>
<td>$3.7 million</td>
<td>●</td>
<td>$350K</td>
<td>$21K (one pt)</td>
<td>●</td>
<td>$1,279 per pt visit</td>
<td>●</td>
<td>●</td>
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<td>Reduce 9-1-1 responses, transports, ED use</td>
<td>54%-83%</td>
<td>●</td>
<td>120 hours saved</td>
<td>11%-22%</td>
<td>●</td>
<td>73.8%</td>
<td>23%</td>
<td>●</td>
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<td>Redirect to alternate destination, referrals</td>
<td>41%</td>
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<td>32%</td>
<td>●</td>
<td>1,100 pts</td>
<td>●</td>
<td>●</td>
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<td>Reduce preventable admissions</td>
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<td>50%</td>
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<td>Reduce readmissions</td>
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<td>●</td>
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<td>75%</td>
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<td>Post-acute followup, care plan</td>
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<td>Diagnostics and assessment</td>
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<td>Connect to medical home</td>
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<td>Wound care</td>
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<td>Infection prevention/control</td>
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<td>Reduce voluntary hospice disenrollment</td>
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<td>Reduce public safety responses</td>
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<td>Treat and release</td>
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<td>Heat surveillance</td>
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<td>Community health promotion</td>
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<td>Goals/methods/populations</td>
<td>MedStar County</td>
<td>Wake County</td>
<td>Western PA</td>
<td>Eagle County</td>
<td>UK</td>
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<tr>
<td>Reduce costs</td>
<td>$3.7 million</td>
<td>$350K</td>
<td>$21K (one pt)</td>
<td>$1,279 per pt visit</td>
<td>40%</td>
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<td>MedStar</td>
<td>Wake County</td>
<td>Christian Hospital</td>
<td>Toronto</td>
<td>Nova Scotia</td>
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<tr>
<td>Reduce 9-1-1 responses, transports, ED use</td>
<td>54%-83%</td>
<td>120 hours saved</td>
<td>11%-22%</td>
<td>73.8%</td>
<td>23%</td>
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<td>Redirect to alternate destination, referrals</td>
<td>41%</td>
<td>32%</td>
<td>1,100 pts</td>
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<td>Reduce preventable admissions</td>
<td>50%</td>
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<tr>
<td>Reduce readmissions</td>
<td>75%</td>
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Future directions for research
State pilots

- Maine – 12 pilots
- California – 12 pilots
- North Dakota
- others
Center for Medicare & Medicaid Innovation (CMMI) Health Care Innovation Awards

- Prosser, WA Community Paramedics Program - $1,470,017
- Southwest Colorado Cardiac and Stroke Care - $1,724,581
- REMSA (Reno, NV) Community Health Early Intervention Team - $9,872,988
- Mesa (AZ) Fire and Medical Department Community Care Response Initiative - $12,515,727
- Icahn School of Medicine at Mount Sinai (NY) Bundled Payment for Mobile Acute Care Team Services - $9,619,517
- Yale University (CT) Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly (PRIDE) - $7,159,977
Objective: to assess outcomes and value of mobile integrated healthcare programs

- Promote uniform measurement and reporting
- Build the evidence base

Ultimate goal: demonstrate value to CMS for reimbursement
What Is the Potential of Community Paramedicine to Fill Rural Healthcare Gaps?

Funded by Federal Office of Rural Health Policy, HRSA

Study collaborators: Paramedic Foundation

Identify and review goals, services, target populations, and available evidence for rural versus urban CP programs.
Resources
Joint Committee on Rural Emergency Care (NASEMSO/NOSORH)

- National Association of EMS Officials and National Organization of State Offices of Rural Health

- One goal is to “engage in education around mobile integrated health care and community paramedicine” by
  - developing a guide to state implementation
  - supporting efforts to learn about US programs
  - supporting the Community Paramedicine Insights Forum

- Holds monthly calls and annual/semi-annual in-person meetings/learning sessions

- NASEMSO CP-MIH committee survey members on state EMS office activities
NASEMSO and NOSORH want to hear from you!

- **NASEMSO**
  - [http://www.nasemso.org/Projects/MobileIntegratedHealth/](http://www.nasemso.org/Projects/MobileIntegratedHealth/)
  - Contact Kevin McGinnis, MPS, EMT-P
    - CP/MIH Program Manager
    - mcginnis@nasemso.org

- **NOSORH** [http://nosorh.org/](http://nosorh.org/)
  - See list of individual State Offices of Rural Health
Mission

The IRCP promotes the international exchange of information and experience related to the provision of flexible and reliable health care services to residents of rural and remote areas using novel health care delivery models and to be a resource to public policy makers, systems managers, and others. While its focus is on rural and remote medicine, the lessons learned may prove beneficial to the better provision of urban health care.

Vision

The IRCP facilitates discussions, meetings and research focused on designing systems which will ensure patients’ needs continue to be met in environments and circumstances where health services are less available and provision of care is increasingly challenging. Integral to this vision is the provision of services by paramedics with “expanded scope” and “expanded role”. These “Second Generation” Paramedics (G2P) will provide services through unique models of delivery and enhanced protocols through an integrated collaborative network with other health care providers.
Welcome to the Community Paramedic Program Web site. We hope you take time to learn more about an innovative program with the potential to improve the health of millions living in rural and remote regions of the United States and around the world.

It’s a simple concept: Connect underutilized resources to underserved populations. In this case, we’re expanding the roles of EMS workers to provide health services where access to physicians, clinics and/or hospitals is difficult or may not exist.

The Community Paramedic Program is organic. It exists for individuals who are interested in providing care to underserved populations. You do not need to be a first responder and you can be of any age or race. The program is designed for you to become part of the pathway that delivers care.

Filling the Gaps Together

The Community Paramedic Program—A New Way of Thinking

North Central EMS Institute
P.O. Box 2286
St. Cloud, Minnesota 56302
888.603.4426
320.251.8154 (fax)

Contact Us
Conclusions

- Community paramedicine is just past the dawn of its existence.
- Laws and regulations are catching up to practice innovations.
- Varied goals and configurations (staffing, services, etc.) make it difficult to link interventions with outcomes.
- Preliminary evidence suggests positive outcomes in terms of patient health, experience of care, and cost savings.
- More research and evaluation are needed to refine our understanding of what works and replicability in different settings and geographies.
Discussion
Thank you for this opportunity!

- Davis Patterson, PhD
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  Center for Health Workforce Studies
  University of Washington
  davisp@uw.edu
  206.543.1892