Evaluation of California’s Community Paramedicine Pilot Program

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Outline

- Overview of evaluation plan and methods
- Findings
  - Safety
  - Effectiveness
  - Cost and savings
- Conclusion
Overview of Evaluation Plan and Methods
Community Paramedicine Concepts

- Post hospital discharge short-term follow-up
- Frequent EMS user case management
- Directly Observed Therapy for tuberculosis, public health department collaboration
- Hospice support
- Alternate destination to mental health crisis center
- Alternate destination to urgent care center
### Implementation Timeline

<table>
<thead>
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<tbody>
<tr>
<td><strong>Post-Discharge:</strong></td>
<td><strong>Frequent EMS User:</strong></td>
<td><strong>Hospice:</strong></td>
<td><strong>Alt Destination Behavioral:</strong></td>
<td><strong>Alt Destination Medical:</strong></td>
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<tr>
<td>Alameda</td>
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<td>Ventura</td>
<td>Stanislaus</td>
<td>Carlsbad</td>
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<td><strong>Tuberculosis:</strong></td>
<td><strong>Post-Discharge:</strong></td>
<td><strong>Post-Discharge:</strong></td>
<td><strong>Alt Destination Medical:</strong></td>
<td><strong>Frequent EMS User:</strong></td>
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<td>Ventura</td>
<td>Butte</td>
<td>San Bernardino</td>
<td>Orange</td>
<td>San Diego</td>
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<td>UCLA</td>
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<td>Solano</td>
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<td>UCLA</td>
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</tbody>
</table>
Methods

Assessed outcomes across three domains

- Safety
- Effectiveness
- Cost and savings
  - Costs incurred by EMS agencies
  - Savings accrued by other parts of the health care system
Methods

- Data reported by pilot sites on
  - Numbers of patients enrolled and their characteristics
  - Provision of CP services
  - Cost of providing CP services and ambulance transports

- Existing sources of data on cost of ED visits and hospital admissions and historical readmission rates

- Interviews and conference calls with EMSA project manager, pilot project leaders, CPs, and partners to provide context for quantitative data
Findings - General
# Cumulative Patients Enrolled by Concept Through September 2016

<table>
<thead>
<tr>
<th>Concept</th>
<th># Enrolled</th>
</tr>
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<tbody>
<tr>
<td>Post-Discharge Short-term Follow-Up</td>
<td>922</td>
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<tr>
<td>Frequent EMS Users</td>
<td>77</td>
</tr>
<tr>
<td>Directly Observed Therapy for Tuberculosis</td>
<td>29</td>
</tr>
<tr>
<td>Hospice</td>
<td>226</td>
</tr>
<tr>
<td>Alternate Destination - Mental Health</td>
<td>169</td>
</tr>
<tr>
<td>Alternate Destination - Urgent Care</td>
<td>39</td>
</tr>
<tr>
<td>All Projects</td>
<td>1,462</td>
</tr>
</tbody>
</table>
Enrolled Patients’ Demographics

- Across all CP concepts, the majority of patients were
  - White
  - Non-Hispanic
  - Male
Enrolled Patients’ Payer Types - Through September 2016

% of Patients Enrolled

- Medicare: 43%
- Medi-Cal: 28%
- Uninsured: 14%
- Private Insurance: 15%
Findings - Safety
No Adverse Outcomes

- None of the patients enrolled experienced adverse health outcomes
- Evidence that projects improved safety
  - Medication reconciliation improved understanding of medications and adherence to prescriptions
  - Referrals to housing, social services, and behavioral health care improved patients’ well-being
  - In the alternate destination – mental health project, having paramedics transport directly to mental health crisis center enabled law enforcement officers to focus on law enforcement duties
Some Rerouting and Secondary Transports

- 2 alternate destination – urgent care patients transported to an ED were transferred to an ED within six hours of admission to an urgent care center due to a non-life threatening condition
  - 1 patient’s X-ray revealed a fracture that was not diagnosed in the field
  - 1 patient’s condition changed after admission to an urgent care center
- 9 patients rerouted from an urgent care center to an ED because the urgent care center clinicians declined to accept the patient
  - 2 cases equipment needed to treat patient was broken or unavailable
  - 3 patients requested opioid pain medication
  - 4 patients who urgent care center physician believed needed an orthopedics consult
Some Rerouting and Secondary Transports (cont’d.)

- 9 patients enrolled in the alternate destination – mental health project were transported to an ED due to a non-life threatening condition
  - 2 patients were agitated
  - 3 patients had blood pressure above mental health crisis center threshold
  - 1 patient had urinary incontinence
  - 1 patient needed a continuous positive airway pressure machine
  - 1 patient not a county resident
  - 1 patient where a new crisis center staffer not familiar with pilot project
- By the seventh month of the project, the number of patients rerouted to EDs fell to zero.
Medication Reconciliation

- Most post-discharge patients had multiple prescriptions

- 14% of patients misunderstood how to take their medications or had duplicate prescriptions

- Some needed help obtaining refills
Effectiveness
Reduced Inpatient Readmissions within 30 Days

Post-discharge projects achieved statistically significant reductions in 30-day readmission rates except for one diagnosis at one site that provided less intensive services.

- 4 projects reduced readmissions for heart failure
- 2 reduced readmissions for acute myocardial infarction (i.e., heart attack)
- 2 reduced readmissions for chronic obstructive pulmonary disease
- 1 reduced readmissions for pneumonia
# Reduced Inpatient Readmissions within 30 Days

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Sponsoring Agency</th>
<th>Historical 30-day Readmission Rate</th>
<th>% of Enrollees Admitted (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Failure</td>
<td>UCLA</td>
<td>24.4%</td>
<td>6.5% (10)*</td>
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<tr>
<td></td>
<td>Butte</td>
<td>22.5%</td>
<td>25.8% (71)</td>
</tr>
<tr>
<td></td>
<td>Alameda</td>
<td>23.1%</td>
<td>14.3% (3)*</td>
</tr>
<tr>
<td></td>
<td>San Bernardino</td>
<td>23.1%</td>
<td>9.0% (12)*</td>
</tr>
<tr>
<td></td>
<td>Solano</td>
<td>22.1%</td>
<td>12.8% (5)*</td>
</tr>
<tr>
<td>AMI (Heart Attack)</td>
<td>Butte</td>
<td>17.2%</td>
<td>10.7% (24)*</td>
</tr>
<tr>
<td></td>
<td>Alameda</td>
<td>16.8%</td>
<td>0% (0)*</td>
</tr>
<tr>
<td>COPD</td>
<td>Alameda</td>
<td>19.4%</td>
<td>0% (0)*</td>
</tr>
<tr>
<td></td>
<td>Solano</td>
<td>18.9%</td>
<td>9.4% (3)*</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>Alameda</td>
<td>20.1%</td>
<td>10.0% (1)*</td>
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</table>

* Difference is statistically significant at p<0.05
Reduced Ambulance Transports and ED Visits

Projects reduced ambulance transports and ED visits for

- Frequent EMS users
- Hospice patients
- Persons with mental health needs
Honored Hospice Patients Wishes by Reducing Unwanted Transports to an ED

Prior to the pilot (all hospice calls): 80%
During the pilot (911 calls for patients of partner hospices): 36%
Patients Obtained Needed Care More Quickly

- People with mental health needs who did not need medical care received mental health services more quickly because they did not need to go to an ED.

- More patients could be served if county inpatient psychiatric facility had more beds available.
Better Medication Adherence

- TB patients who received directly observed therapy from CPs missed fewer doses of TB medications than patients treated by community health workers.
- Leveraged 24/7 availability of CPs
- Increased the likelihood patients would not
  - Transmit TB to others
  - Develop a drug-resistant strain of TB
Referrals to Providers of a Wide Range of Services

- Domestic violence services
- Drug and alcohol treatment programs
- Food assistance
- Home health providers
- Housing
- Mental health services
- Pharmacists
- Physicians (PCPs & specialists)
- Public health departments
- Senior home safety programs
- Transportation assistance
Cost and Savings
Cost

- EMS agencies are reimbursed on a fee-for-service basis and only for ambulance transports.

- To operate CP programs, agencies had to make in-kind contributions to cover costs for labor and supplies.
Cost (cont’d.)

- Monthly expenses for operating CP programs ranged from $519 to $22,649
- Differences in cost were driven primarily by
  - Use of full-time CPs vs. part-time CPs
  - Differences in cost structure and salaries of public and private EMS providers
Savings

- Reductions in ambulance transports, ED visits, and inpatient admissions yielded savings for health plans
  - Savings ranged from $188 to $1,754 per patient per month
  - Medicare realized the largest savings because it had the largest enrollment
  - Projects also generated substantial savings for Medi-Cal
Projects also achieved savings for hospitals

- Post-discharge projects lowered the risk that partner hospitals will incur Medicare penalties for excess readmissions
- Frequent EMS user projects reduced the amount of uncompensated care provided to uninsured persons
Conclusion
Conclusion

- Specially trained paramedics can provide services beyond their traditional and current statutory scope of practice in California
- Projects have improved patients’ well-being
- No adverse outcomes for patients
- No other health professionals displaced
- In most cases, yielded savings for health plans and hospitals
Conclusion (cont’d.)

- Post-discharge, frequent EMS user, tuberculosis, hospice, and alternate destination – mental health projects are safe and effective.

- More data are needed to make conclusions about the alternate destination – urgent care projects despite paramedics’ ability to triage patients accurately due to
  - The limited number of patients enrolled
  - The number of patients rerouted or transferred to an ED.
Through its singular focus on health, UCSF is leading revolutions in health.

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