Model Performance in Community Risk Reduction

SYMPOSIUM 2020

Patient Advocate Services (PAS) Program
Community Medicine Program

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Objectives-Mission
Objectives

The mission of Patient Advocate Services is to improve the life and health of Tempe residents by providing coordination of medical care and accessibility to social determinants of health.

In contrast to community care programs with dispatched units, PAS uses a community coordination of care model that focuses on connecting patients to a primary care provider and other social and medical services.

Additionally, the program uses an innovative use of predictive analytics on EMS data to identify patients in need.

The program’s focus on healthcare delivery helps prevent hospital readmissions, combats rising healthcare costs, reduces non-emergent 911 calls, increases ALS crew availability, reduces crew fatigue, and, above all, supports patient health.
History of PAS:

- PAS started as a pilot project over 5 years ago by our Medical Services Dept.: Deputy Chief and EMS Captain went out to see patients.
- Patients seen on NON-EMERGENT VISITS.
- Top 20 patients with multiple visits.
- Dept. hired 1-RN and a light duty Fire Fighter or St. Luke’s RN would see patients.
- Grant Funded by Tribal Gaming Grant-Awarded by City Council.
PROCESS EVALUATION
Risk Assessment

Tempe, Arizona: Population of about 180,000

Tempe Fire Medical Rescue: 22,000 EMS calls/year

Four individuals responsible for 1% in 2017

Increasing non-emergent 911 calls: impetus for creating Patient Advocate Services

Program has evolved since 2015
Current PAS Program

- 191 patients enrolled since 2016
- Enrolled 51 patients in 2019
- Documented efforts for 296 patients in 2019
- Seven referrals per week from crews
- 18 patients enrolled in first half of 2019:
  - 91 fewer EMS calls from patients six months post enrollment versus six months prior (61% reduction)
  - 108 total EMS hours with patients six months prior to enrollment versus 64 hours six months after
  - 44 hours of savings in crew availability over six months
Patient Focused Multidisciplinary Approach

- Closed Loop Referrals System
- Communication is key
- Coordination of Care to avoid duplication of services or gaps in care.
- Plan of care implementation and completion
- Assessment for lack of Social Determinants of Health
- Home safety assessment

Diagram:
- Primary Care Provider
- Community Based Non-Profits
- Mental Healthcare Provider
- HealthCare Insurance Plan
- Homeless Outreach Team
- State Agencies CM
- Transition Care Placement Specialist
- Hospital Case Managers
FORMATIVE EVALUATION
Model Development

- EMS and community health data pulled from ImageTrend
- Processed through R and H2O software, joined with Census data
- Model is trained on historical data, tested on unseen data
- Best performing models are used on future data
- Recent call volume and total call volume are most predictive, but many factors contribute to prediction
- Top 10% of model’s recommendations contain 44% of all 30-day repeat patients
PAS Process

- Building Relationships with families and communities
- Identifying PCP
- Identifying Insurance
- Assistance with hospital discharge transition home
- Finding affordable resources for seniors and non-insured
- Medical Needs
- Medication Reconciliation
- Barriers
- Care Gaps
- Safety
- Healthcare
- Food
- Shelter
- Safety
- Education
- Transportation
- Finances
IMPACT EVALUATION
Short Term Results

Model identifies likely repeat patients after 2 or 3 calls, instead of waiting for crews to notice a pattern.

Early consideration: Better for patients and crews.

Model referrals aren’t affected by crew judgement about who can be helped.

No one falls through the cracks: Calls from current and past PAS patients are flagged.
Cost Share Savings

Hospitals Systems
- Decrease in readmissions
- Decrease in overcrowding

Municipalities
- Decrease in non-emergent 911 calls
- Cost Savings to Tax Payers

Healthcare Insurance Plans
- Ability to identify high risk, high cost patients
- Increase Prevention efforts
OUTCOME EVALUATION
### Long Term Results

<table>
<thead>
<tr>
<th>Potential savings during 6 first months of PAS enrollment</th>
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<tbody>
<tr>
<td>Total enrollment</td>
<td>110</td>
</tr>
<tr>
<td>Number of Transports and ED Visits avoided</td>
<td>121</td>
</tr>
<tr>
<td>Average cost of ambulance transport</td>
<td>$600</td>
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<tr>
<td>Average cost of ED visit</td>
<td>$749</td>
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<tr>
<td>Potential savings from ambulance transports avoided</td>
<td>$72,600</td>
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<tr>
<td>Potential savings from ED visits avoided</td>
<td>$90,629</td>
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<tr>
<td>Total potential savings</td>
<td>$163,229</td>
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<tr>
<td>Potential savings per patient enrolled</td>
<td>$1,484</td>
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</tbody>
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1Based on comparison between EMS incidents for enrolled patients 6 months prior to enrollment and 6 months after enrollment. Excludes one month transition period after PAS enrollment. Assumes that every EMS incident results ambulance transport and ED visit.
2Based on Tempe area EMS data.
3Based on mean Medicare reimbursement for ED visits.
RECOMMENDATIONS
Recommendations

Innovative use of EMS data resulted in:
- Finding our future frequent patients faster
- Demonstrating the PAS’s impact
- Patient Quality of Life

Care coordination works in managing chronic conditions and preventing non-emergent 911 calls
- Helps hospitals systems
- Helps with Crew Fatigue
- Helps overall costs
- Patient Quality of Life

Sustainability still an issue: Billing codes needed
- Funding is needed to continue programs
Sustainability

- Working to gain billing codes for reimbursement.
- Standardizing Community Para-Medicine for all departments to have curriculum and training as we evolve.
- Community Partnerships with Health Care Plans, Local Universities, and Hospitals Systems for funding sources to help support efforts.