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Policy Brief

EMSA Paramedicine Pilots
Estimating Statewide Medi-Cal Savings

May 11, 2018

This document presents the results of an analysis of California's Community Paramedicine Pilot program with the aim of estimating the potential for Medi-Cal program savings if the services provided under the pilots were expanded more broadly throughout the state. Combining all the pilot concepts analyzed here, we estimate a potential general fund savings ranging from $6.3 million to $22.4 million dollars per year, with the savings depending on the extent of adoption of the services throughout the state, the reimbursement rates for the services, and assumptions about the sources of coverage for services.[1]

The analysis relies on the initial cost and savings analysis provided in the program evaluation conducted by the Healthforce Center and Philip R. Lee Institute for Health Policy Studies at University of California San Francisco.[2] The analysis takes the findings from the pilots and extrapolates those results to an expanded population, making certain assumptions about the scale of expansion[3] throughout the state and the rates for reimbursement provided for the paramedicine service. For each pilot we provide a range of estimates based on ranges for these two key parameters.

Each pilot served individuals with Medicare, Medicaid, commercial coverage, or uninsured. For all pilots we calculate the savings that accrue for serving individuals covered by Medi-Cal only. The pilot site also reported the share of individuals on Medicare, and this number included those with both Medicaid and Medicare, known as duals.   We use the statewide proportion of duals in the California Medicare population to estimate the Medi-Cal savings attributable to the duals.

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[1] The results here do not include two concepts that were tested in the pilot:1) assisting in direct observed therapy for persons with tuberculosis, and 2) alternate destination for those needing urgent care. It would have been difficult to quantify the value for the benefits of more reliable observation of tuberculosis treatment, such as more effective tuberculosis control, and the pilot site testing the alternate destination – urgent care had limited data available due to low enrollment.

[2] http://healthforce.ucsf.edu/sites/healthforce.ucsf.edu/files/publication-pdf/Second%20update%20to%20public%20report%20on%20CA%20%20CP%20project%20020718.pdf

[3] The levels of participation are set at 25, 50 and 75% of the relevant provider group. It is difficult to predict the pace and ultimate extent of adoption of these concepts throughout the state and how soon the estimated savings would be realized. The analysis is designed to provide a basis for estimating savings for each concept depending on the reader's own assumptions about the pace of adoption.

Summary
Annual General Fund Savings Estimates

Pilot	Lowest Estimate	Highest Estimate
#1 Post-Discharge follow up	$2,701,000	$3,065,000
#2 Frequent EMS Users	$770,000	$4,815,000
#4 Hospice	$33,000	$130,000
#5 Alternate Destination - Behavioral Health	$2,653,000	$12,877,000
#7 Alternate Destination – Sobering Centers	$167,000	$1,493,000
TOTAL	**$6,324,000**	**$22,380,000**

A technical appendix is available to describe in more detail the methodology used for the estimates.

Concept #1: Post-Discharge short-term follow up

The goal of the five post-discharge pilot sites testing this concept is to reduce hospital readmissions for people with certain chronic conditions who were discharged from a hospital. Each of the five pilot sites partnered with a different hospital and served a population with a unique disease profile. The project in Butte County provided services using a different model than the other sites, so including the results from Butte would bias the estimated savings for the other hospitals. We have therefore not included the Butte site in our analysis.

To calculate the potential savings of statewide implementation of the pilot, we will begin with the Medicare eligible population. We estimated:

1) The net savings per participant expected at each hospital in California, i.e. the savings due to readmission less the cost of the post-discharge services provided under the program.

   For this we used the linear relationship between the estimated savings per participant at the pilot hospitals provided in the evaluation report, updated to reflect the most recent data, and their Medicare Readmission Ratios.[4] We adjusted the savings per participant reported in the evaluation to take into consideration that fact that some of the program participants who did not experience a readmission actually did have emergency room visits, were observed and treated, and released to go home. It is difficult to differentiate between the effects of these visits and the reductions in readmissions achieved by the services provided by community paramedics. Therefore, we reduced reported savings for each site by the share of avoided readmissions that received both kinds of services. This way we count savings only where the paramedic services were not supplemented by an emergency room visit. At two of the hospitals the number of estimated participants who

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[4] https://data.medicare.gov/Hospital-Compare/Hospital-Readmissions-Reduction-Program/9n3s-kdb3/data

avoided readmission was less that the number not readmitted after observation in the ER. For these hospitals the savings were set at zero in the linear estimating process.

Once we determined the relationship between the participant savings and the pilot hospitals' Medicare Readmission Ratio, we could predict other hospital savings potentials based on their individual Medicare Readmission Ratios. Net savings were calculated by reducing the gross savings per participant by the reimbursement costs of an estimated global payment for each post-hospital service participant. In fact, a range of payment levels were used to indicate the sensitivity of the savings to the reimbursement level.

2) The number of participants possible at each hospital.

Total savings are the net savings per participant times the number of participants throughout the state. For this we used the average annual number of Medicare cases reported for each hospital with the relevant diagnoses using the Medicare data. We discounted this number of cases by the participation rate experienced in the pilot hospitals (weighted average of 24%).

To estimate the range of net Medicare savings, we established three levels of participation among California hospitals. The level of participation can also be thought of as the degree of the concept's penetration throughout the state.
1) Low, where only 25% of hospitals establish these programs. Here we select the 25% of hospitals with the highest readmission rates and therefore the highest estimated savings per participant. We assume that these are the hospitals with the greatest incentive to establish the post-discharge program.
2) Medium, where 50% of hospitals establish programs, and
3) High, where 75% of hospitals establish programs.

These three levels of participation among Medicare participant each determined a number of statewide participants and the resulting net general fund savings for the Medi-Cal Program's portion of paying for duals. In determining which hospitals will be included in each level of participation, we assumed that the most likely to participate would be those with the highest readmission rates. To the extent that participating hospitals are not the ones starting with higher readmission rates, the savings could be less.

Medi-Cal savings estimates came from two sources:
1) The savings due to reduction of Medicare copayments for the dual eligible population (those covered by both Medicare and Medi-Cal). Statewide duals constitute about 22% of the Medicare population. Twenty percent of the Medicare savings would accrue to Medi-Cal which pays copayments on behalf of the dual population. Half of these savings (10%) would be savings to the General Fund, given that Medicaid spending is split between the state and the federal government.

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2) Savings for reduced readmissions for participants enrolled in Medi-Cal only. Readmission rates for Medicaid and Medicare covered patients who are admitted for the major conditions that were used during the pilot do not differ significantly in national data.[5] A recent report from OSHPD shows the readmission rates for three of the diagnoses included in the pilot programs by source of payment.[6] That report shows that the ratio of Medi-Cal covered discharges to Medicare covered discharges is 16%. We used this ratio to extrapolate Medi-Cal savings from the estimated Medicare savings.

Table 1 below shows the net General Fund savings with different scenarios for 1) the share of hospitals participating in the project and 2) a range of reimbursement rates that Medi-Cal or Medicare might pay for paramedicine services.[7] The range here matches the range of rates paid by Medicare in 2017 for individual home health visits which varies according to the qualifications of the provider.[8] The reimbursement rates used in this analysis are not to be taken as a recommended level of payment for these services but only a benchmark for the purposes of the analysis to assist the reader in estimating savings under whatever reimbursement assumptions seem plausible.

Table 1
Estimated Medi-Cal General Fund Savings Based on Different Scales of Adoption and Different Payment Rates for Post-Hospital Services

Reimbursement Rate	Share of Hospitals Participating		
	25%	**50%**	**75%**
$85	$2,819,000	$3,059,000	$3,065,000
$150	$2,785,000	$2,998,000	$3,001,000
$300	$2,701,000	$2,835,000	$2,835,000

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[5] See www.hcup-us.ahrq.gov/reports/statbriefs/sb153.pdf
[6] See https://www.oshpd.ca.gov/documents/HID/HealthFacts/Readmissions-AMI-HF-PN.pdf
[7]The rates here reflect a global fee paid for each project participant, Actual rates could be structured as global fee for whatever needed services are provided or could be structured as a fee-for-service payment for each service, in which case this range shown here reflects the average reimbursement paid for each participant.
[8] https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/downloads/MM9820.pdf

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Concept #2: Frequent EMS Users

The goal of pilot sites implementing the Frequent EMS User concept was to reduce the number of 911 calls from members of the public with the highest number of calls in a prior year. Community paramedics were assigned to address their needs and reduce emergency department utilization.

Based on frequency distributions from the San Diego and Alameda County pilot sites and the results reported for the concept, the two counties used very different definitions of a frequent caller. The evaluation reported that the San Diego pilot site served frequent callers who had 20 or more calls in a year. Based on the reported average calls per program participant, the Alameda pilot site served participants with an average of 3 or more calls per year. The percentage reductions in calls achieved in the two counties are significantly different, with a higher reduction in calls being achieved by the San Diego pilot which targeted a group with much higher average calling rate. Because of this significant difference we structured our cost estimates to separately estimate savings achieved under these two different strategies.

To model statewide demand for this service, we used the frequency distributions of 911 callers from San Diego to develop an expected statewide estimated frequency distribution for the number of individuals with specified numbers of calls in a year, determining estimates based on a frequent caller being defined by those with 1) 20 or more calls per year or 2) those with 3 or more calls.

Actual gross savings from the program were estimated by the product of four numbers:
1) The percent reduction of 911 use as reported for the frequent users during the pilot;
2) The number of frequent users projected to be served in a statewide expansion. This depends on the participation rate and the level of statewide adoption of this program assumed, as described below;
3) The average number of 911 calls made by frequent users;
4) The average cost of a 911 call and the associated emergency transportation and emergency room visit.

Net savings were calculated by reducing gross savings by estimated costs, calculated by total participants times average encounters per participant times average reimbursement per participant. Here we use the same range of payments that we used for the post-hospital interventions.

We used the pilot experience in San Diego, the lower of the two sites regarding the share of participants with Medicare, as the source of payment and the average of the two sites for the share enrolled in Medi-Cal, with 22% of the Medicare participants assumed to be those persons with dual coverage. State Medi-Cal costs included both direct Medi-Cal costs and the 20 percent copayment for 22% of the Medicare costs. Since there is variation throughout the state among communities in the share of the population covered by Medi-Cal, we use the average rates at the

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pilot sites, but the actual rates could vary depending on which communities adopt the pilot concepts.

We used a series of take-up assumption to reflect how many EMS providers would be expected to participate in such a project. We made three assumptions about EMS agency participation: participation by agencies enough to encompass 25, 50, or 75% of the state's frequent user population. Actual numbers served was discounted based on the participation rate as in the pilot experience.

We conducted sensitivity analysis for assumptions about the reimbursement rate provided for the community paramedic services[9]

Table 2a
Estimated Medi-Cal General Fund Savings <u>Using 20 or More Calls</u> as the Definition of Frequent Callers, and Based on Different Scales of Adoption and Different Payment Rates for Post-Hospital Services

	Share of EMS Providers Participating		
Reimbursement Rate	25%	50%	75%
$85	$781,000	$1,562,000	$2,342,000
$150	$777,000	$1,555,000	$2,332,000
$300	$770,000	$1,539,000	$2,309,000

Table 2b
Estimated Medi-Cal General Fund Savings <u>Using 3 or More Calls</u> as the Definition of Frequent Callers, and Based on Different Scales of Adoption and Different Payment Rates for Post-Hospital Services

	Share of EMS Providers Participating		
Reimbursement Rate	25%	50%	75%
$85	$1,605,000	$3,210,000	$4,815,000
$150	$1,470,000	$2,941,000	$4,411,000
$300	$1,160,000	$2,319,000	$3,479,000

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[9] Note that San Diego most frequent users and achieved a greater percentage reduction in use among these participants. However, Alameda by targeting the majority of users, even those with relatively few (<3 visits achieved greater savings because the percentage reduction is applied to a much larger group. The results suggest that unnecessary visits can be prevented even among those with as few as 3 visits per year.

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Concept #4: Hospice

The site testing the hospice concept (Ventura) strived to prevent transports of hospice patients to the emergency department that were unnecessary or unwanted by hospice patients.

To estimate the demand for a statewide hospice pilot, we used actual pilot experience in Ventura County to estimate the savings that the pilot generated. The estimated gross savings was calculated by dividing the product of the following factors by the share of the state hospice capacity that participated in the pilot program in Ventura County:
1) The number of hospice clients at the participating hospices in Ventura County that enrolled in the pilot.
2) The share of pilot enrollees who avoided emergency transport because of the pilot intervention.
3) The actual cost of emergency transportation that would be borne by the Medi-Cal program.[10]

Net savings was calculated by reducing the gross savings above by the estimated cost for the community paramedic visit. These services provided under this pilot do not use rates established currently under Medicare or Medi-Cal. It may be that hospice agencies find it cost effective to pay for these services themselves to the extent they reduce their costs for emergency transport. The Medicare reimbursement rates for hospice services are intended to cover the cost of emergency transportation ordered by the Hospice provider. Medi-Cal might also find it cost effective to establish payment for these community paramedic hospice services. We analyze a range of potential reimbursement rates, including zero.

The extent of adoption of this new service option across the state will be measured by the share of the total estimated statewide population in community-based hospice care. We used the statewide inventory of community palliative care capacity to provide the estimate of the full statewide capacity,[11] and estimate participation rates that will cover 25%, 50% and 75% of all the potential providers in the state. The actual participation will depend on the interest in hospice agencies to engage with local EMS agencies to realize the potential savings to the agencies themselves of reducing the number of emergency transports. It may also be that if Medi-Cal and Medicare establish rates for payment for the community paramedic services, their use may be more common.

Sensitivity analysis was done around the size of the reimbursement rates for CP services (including zero), and the rate of participation of hospice agencies.

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[10] Hospices have the responsibility to pay for emergency transport in cases where the hospice nurse makes the call requesting emergency services. We exclude the costs from the savings analysis here.
[11] http://www.chcf.org/publications/2015/02/palliative-care-data

Table 3.
Estimated Medi-Cal General Fund Savings for Hospice Services Based on Different Scales of Adoption and Different Payment Rates for Hospice Service

Reimbursement Rate	Share of Hospices Participating		
	25%	**50%**	**75%**
$0	$43,000	$87,000	$130,000
$50	$40,000	$80,000	$120,000
$100	$37,000	$73,000	$110,000
$150	$33,000	$67,000	$100,000

Concept #5: Alternate Destination - Mental Health

The alternate destination – mental health concept strives to enable people with mental health needs to obtain appropriate care more efficiently by transporting them directly to a mental health crisis center.

To model the potential savings for this concept, we used the number of patients participating in the pilot who were diverted from an emergency room visit and remained at the mental health facility, as a share of all 911 calls responded to in Stanislaus County during the pilot period[12]. The total number of potential participants with saved ER visits and saved emergency transportation was calculated by taking that rate and applying it to the statewide estimate of all 911 calls responded to. Total gross savings would equal this number times the cost of the avoided visit. There would offsetting costs of transportation, but we assume the reimbursement to the mental health facility would be less costly that a trip to the emergency room.

We estimated savings based on low, medium, and high levels of adoption of the pilot approach to services. The three levels are 25, 50, and 75% adoption throughout the state.

We also conducted sensitivity analysis varying the share of the population on Medicare and Medi-Cal. A high share of the patients in the Stanislaus pilot (84%) were Medi-Cal eligible because the only facility participating in the pilot is a county facility that only accepts patients with Medi-Cal or who are uninsured. We provided savings estimates based on these shares of coverage sources, but also for shares that more closely match statewide population averages.

In general, the effectiveness of this concept depends on the availability of behavioral health beds in the community. Counties where these beds are available likely would be the first to undertake to establish this approach.

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[12] The number of calls in Stanislaus County was estimated from the data reported in the Annual EMS Plan for the Mountain Valley EMS Agency using the Stanislaus County population as a share of the overall service area population.

Table 4.
Estimated Medi-Cal General Fund Savings for Alternate Destination – Mental Health
Based on Differing Levels of Adoption and Different Sources of Payment

	Share of State Participating		
Share on Medi-Cal/Medicare	**25%**	**50%**	**75%**
84%/0%	$4,292,000	$8,585,000	$12,877,000
65%/20%	$3,371,000	$6,741,000	$10,112,000
50%/40%	$2,653,000	$5,306,000	$7,959,000

Concept #7: Alternate Destination – Sobering Centers

The goal of the alternate destination – sobering center concept is to provide appropriate care to acutely intoxicated persons in a more efficient manner. In response to 911 calls, community paramedics offered people who are acutely intoxicated but do not have an acute medical or mental health needs transport directly to a Sobering Center for monitoring instead of to an ED.

Because sobering centers have lengths of stay less than 24 hours, it is possible to measure the annual capacity of a center in bed-days derived by multiplying the number of available beds by 365 days per year. Savings due to this concept come from the fact that an emergency room visit is avoided. Estimates for savings due to sobering centers began with the annualized number of diverted ER visits experienced in the pilot as a percentage of the center's available bed-days. This percentage was multiplied by the total number of sobering centers beds-days estimated to be available statewide to arrive at the estimates of persons who could be diverted with program expansion. This was then multiplied by the cost of the avoided emergency transportation and emergency room visit to estimate total savings.

We assume that Medi-Cal will not reimburse the cost of the transportation to the sobering center. nor the services provided by the Sobering Center. We assume that EMS providers would be able to absorb the cost of providing these services to increase the availability of the paramedics that would otherwise be occupied with the emergency transportation and the related emergency room visit. We provide a range of estimates based on differing levels of Medi-Cal and Medicare coverage, assuming that these rates will vary throughout the state in localities that might adopt this concept.

We estimated low, medium and high levels of participation in the program, based on 25, 50, and 75% of the sobering centers throughout the state. Sensitivity analysis was done on the rate of participants on Medi-Cal.

Table 5
Estimated Medi-Cal General Fund Savings for Alternate Destination – Sobering Centers
Based on Differing Levels of Adoption and Shares of Medi-Cal Coverage

	Share of Sobering Centers Participating		
Share on Medi-Cal/Medicare	**25%**	**50%**	**75%**
60%/20%	$498,000	$995,000	$1,493,000
40%/15%	$332,000	$665,000	$997,000
20%/10%	$167,000	$334,000	$502,000

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About California Health Policy Strategies (CalHPS), L.L.C.

- CalHPS is a mission-driven health policy consulting group based in Sacramento. For more information, visit www.calhps.com

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