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Providence ED Guide Program - analysis of program impacts; The Center for Outcomes Research & Education (CORE); Providence Health & Services

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PROVIDENCE
ED GUIDE PROGRAM

ANALYSIS OF PROGRAM IMPACTS

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ED GUIDE PROGRAM

PURPOSE OF THE STUDY

This study, conducted at Providence's Center for Outcomes Research & Education (CORE), summarizes findings from a follow-up evaluation of the ED Guide program after it implemented a new patient targeting strategy in 2014.

The ED Guide program at Providence is an intervention aimed at providing patients in the ED with a path to the right kind of care. Based on data from CORE's previous report published in 2014, the program altered its targeting to focus on patients with high prior ED utilization and patients newer to Medicaid. Additionally, the program expanded its protocol to begin seeing patients regardless of acuity levels, rather than only focusing on low acuity visits. The impact of the program's new protocols on utilization and costs are described in this report.

DATA & METHODS

We used Health Share claims data to create a longitudinal study panel for assessing the impacts of the ED Guide program on outcomes. This panel represents Medicaid patients.

We used propensity score matching to pair each person seen by a Guide during their ED visit to a similar person who had a similar ED visit, but was not seen by the program. After creating these matched treatment and control groups, we compared utilization and cost outcomes across the subsequent six months, comparing trends to estimate program impacts.

We also replicated the above method on a set of data from Providence's EPIC system. Results from this supplemental analysis are contained in the *Appendix.*

KEY FINDINGS

PCP & ED VISITS

There was **no statistically significant program effect** on subsequent primary care or ED utilization after a visit. A small decline in subsequent ED use among ED Guides cases was not statistically meaningful.

SEE PAGE 4

INPATIENT VISITS

Patients who saw an ED Guide during their ED visit were **44% less likely** to have an inpatient event in the next six months than similar patients who did not see an ED Guide.

SEE PAGE 5

COSTS OF CARE

Patients who saw an ED Guide had average expenditures of **$129 PMPM less** over the following six months than similar patients who did not see an ED Guide. Most of this difference is attributable to reduced expenditures on inpatient care.

SEE PAGE 6

THE BOTTOM LINE

The ED Guide program, operating under a new set of case finding protocols, did not significantly impact primary care connection or ED utilization after the patients' index ED visit. However, we did find that ED patients who saw a Guide were significantly less likely to have a subsequent inpatient visit across the next six months. This reduction contributed to lower total costs of care for program patients compared to similar controls.

The ED Guide program sees over 10,000 patients per year; extrapolating our findings across the entire program suggests just over 200 avoided inpatient visits per year, for a price-adjusted savings estimate of $1.97 million. Our analysis controls for possible alternate explanations for these savings, but it is possible the results observed here are attributable to factors we did not account for. We recommend additional exploration to better understand the mechanism behind this observed program effect.

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ED GUIDE PROGRAM

ANALYSIS OF PROGRAM IMPACTS

INTRODUCTION

This report summarizes findings from an impact evaluation of the Providence ED Guide program, conducted in 2015 by the Providence Center for Outcomes Research & Education (CORE). We examine the impacts of the program's current intervention model on health care utilization and costs, and estimate potential savings attributable to the program's efforts.

BACKGROUND

The ED Guide program is an intervention embedded in three Providence EDs that works with patients to promote appropriate health service utilization. Guides work with patients in the ED to connect them to primary care, educate them on appropriate ED use, and explain insurance benefits. The program's intent is to optimize future care patterns and reduce the overall costs of care.

In a prior evaluation, CORE found that the ED Guide program modestly increased primary care connectivity among those patients, but did not impact subsequent ED use or total health care costs. CORE's report identified subsets of patients the program *had* done better with, and in response the program made the following changes to its targeting strategy:

- Focused more on those with high baseline ED utilization, defined as 3 or more visits in the prior year.
- Focused more on people who were newer to Medicaid.
- Lifted a prior restriction on seeing high-acuity patients, opening the program to any appropriate ED patient.

In this report, we replicate our previous design in order to assess the impacts of the program in its current operational state.

STUDY OBJECTIVES

We set out to rigorously assess the impact of the ED Guide program with three key objectives in mind:

1. EVALUATE PRIMARY CARE & ED USE

Are patients who see an ED Guide during their visit more likely to connect to primary care afterward? Are they less likely to return to the ED?

Answers on Page 4.

2. EVALUATE INPATIENT USE

Are patients who see an ED Guide during their visit less likely to be hospitalized in the subsequent months?

Answers on Page 5.

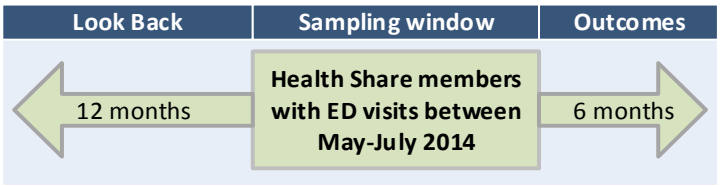
3. EVALUATE POTENTIAL SAVINGS

Do patients who see an ED Guide during their visit have lower total health care expenditures in the subsequent months?

Answers on Page 6.

STUDY TIMELINE

This study assesses what happened after ED events that occurred between May and July of 2014. We used program records to identify Health Share members who had ED visits during that date range and were seen by a Guide, then used administrative data to find similar members who had similar visits during the same dates, but were not seen by a Guide. The study panel included patients ages 18-65 years who were seen at the Portland, St. Vincent, and Milwaukie hospital sites.



Each study member's index event was defined as the date of the ED visit in question. For each person, we examined health care claims records for 12 months prior to the index event, allowing us to understand baseline utilization and cost patterns, then we tracked what happened over the six months after the index event. To ensure stable rates and cost estimates, we only included members in the study who had at least three months of coverage prior to the index event.

METHODOLOGY

OVERVIEW OF DESIGN

We employed a retrospective, pre-post, longitudinal panel design to assess program impacts. Our treatment group consisted of individuals with an ED visit who were seen by a Guide during that visit; we compared their outcomes over time to similar individuals with similar ED visits who were not seen by the program.

DATA SOURCES

PROGRAM DATA: Records maintained by the program capturing information on all individuals served.

CLAIMS DATA: Aggregated claims dataset containing comprehensive utilization and cost data on all Health Share members.

COMPARISON GROUP

To form a valid comparison group, we first selected all Health Share members with an ED visit at a participating facility during our sampling window and comparable presenting diagnoses. We then used *propensity score matching* to select from this pool of potential candidates the best matched comparison group for our ED Guide patients. We matched our final comparison group based on baseline (pre-ED visit) factors including member demographic profiles, mental and physical health profiles, Chronic Illness and Disability Payment System (CDPS) risk score representing overall medical complexity, presenting diagnosis for the ED visit in question, prior participation in other CMMI interventions, and baseline utilization and cost trends across the 12 previous months. Using a matching algorithm keyed on the propensity score model, each ED Guide patient was paired with a similar control patient. The final matched sample contains 741 cases and controls— a 96% match rate against all potential cases— who are similar in all key measured characteristics and observable trends (Exhibit 1).

Exhibit 1. ED Guide Cases and Controls Before & After Propensity Score Matching

Characteristics	ED Guide Patients (n=741)	Potential Controls (n= 3,661)	Matched Controls (n=741)
Age, mean	37.5 yrs	39.3 yrs	37.8 yrs
Female, %	57%	62%	58%
Non-Hispanic White	62%	64%	60%
Black/African-Amer.	15%	10%	16%
Hispanic	10%	13%	10%
Other/Unknown	13%	13%	14%
Baseline ED Visits PMPY	4.1	1.9	3.5
Baseline PCPC Visits PMPT	3.8	4.5	3.7
Baseline Inpatient PMPY	0.2	0.2	0.2
Baseline Total Costs PMPM	$542	$719	$526
Baseline ED Costs PMPM	$135	$81	$125
CDPS Risk Score[1]	1.46	1.65	1.45
PH Conditions[2], mean	0.93	1.11	0.95
MH Conditions[2], mean	0.56	0.63	0.62
Low Intensity CMMI patient[3]	3.6%	4.8%	3.1%
High Intensity CMMI patient	6.2%	4.7%	5.5%
Not in other CMMI programs	90.2%	90.5%	91.4%

Notes:

CDPS Risk Score estimates projected medical expenditures based on diagnoses present in recent claims.

PH conditions include: asthma, chronic heart failure, chronic bronchitis, chronic ischemic heart disease, COPD, diabetes, emphysema, hypertension, liver disease, and obesity. MH conditions include: chemical dependency, depression, and SPMI.

Low-intensity CMMI includes Standard Transitions and ED Guide.

High -intensity programs include all other CMMI programs.

STATISTICAL METHODS

ASSESSING AVERAGE CHANGES IN OUTCOMES: We used generalized estimating equations (GEE), a form of regression analysis appropriate for longitudinal data, to assess changes in average utilization and costs over time. We compared average utilization before and after the marker ED visit for each group using a *difference in differences (DiD)* framework, regressing the outcome of interest on treatment status, time (pre vs. post), and the treatment and time interaction term. This latter term captures the impact of being in the program on changes in outcomes over time, and is used to distinguish the impact of being engaged in the ED Guide program from natural changes in outcomes that might occur over time.

PREDICTING THE PROBABILITY OF HAVING A POST-ENGAGEMENT VISIT

In addition to examining changes in average utilization, we used multivariate logistic regression to assess the *probability* of having a given type of event after the marker ED visit. This method allowed us to determine if the ED Guide program changed the odds of a post-intervention event (such as an ED or inpatient visit) occurring, while taking into account the influence of other factors (such as risk score, participation in other CMMI interventions, or baseline utilization patterns) that might also impact those odds.

OUTLIER CASES: For each outcome, we examined the distribution of cases and trimmed outliers with values above the 99th percentile of distribution. This eliminates the possibility that a handful of "million dollar cases" might skew overall comparisons, allowing us to assess average or typical program effects.

PROGRAM SUMMARY

PROGRAM OVERVIEW

Initially launched at Providence Milwaukie hospital, the ED Guide program was expanded in 2012 to Providence Portland and to St. Vincent Medical Center in 2013. During this three month study period, the program saw a total of 2,825 patients, of which 38% were at Providence Portland, 31% at St. Vincent, and 31% at Milwaukie. Each patient averaged 1.1 visits with an ED Guide.

May-July 2014	ABOUT THE PROGRAM
2,825	Number of unique patients served during our study
1.1	Average number of visits per unique person served by the program
38%	Percent seen at Providence Portland
31%	Percent seen at Providence St. Vincent's
31%	Percent seen at Providence Milwaukie

PROGRAM TARGETING

Following CORE's 2013 assessment, the ED Guide program revised its patient targeting strategy to focus on patients with frequent ED visits (3 or more in the prior year) or who were newly enrolled in Medicaid. After an early focus on low-acuity visits, the program also broadened its focus to include higher acuity patients with more complex medical needs.

Examination of program data reveal that the ED Guide program did increase the proportion of cases with 3 or more ED visits (48% of patients in 2014, compared to 41% in 2013). ED Guide cases also had fewer months of coverage, on average, than the patients seen in 2013, indicating a greater focus on newer members. Finally, the program saw nearly twice as many high acuity cases in 2014 compared to 2013, (39% vs 21%, respectively) (Exhibit 2).

These results represent Health Share patients and demonstrate a change in patient mix that aligns more closely with the goals of the re-targeting strategy. However, there may still be room for improvement: one-third of the patients seen in 2014 had no prior ED visits at all, and CORE's prior analysis suggested that the program has only minimal impact on these "occasional" utilizers.

Exhibit 2. ED Guide Patient Targeting for the 2013 and 2014 Studies

PROGRAM RE-TARGETING STRATEGY: ED GUIDES CASES

CORE RECOMMENDATIONS: High utilizers & new Medicaid patients

	2013	2014
≥ 3 Visits	41%	48%
Member Months	10.2	7.2

ACUITY

	2013	2014
High: 1-3	21%	39%
Low: 4-5	79%	61%

TYPES OF PATIENTS SEEN

Exhibit 3 describes the most common presenting diagnoses for Health Share patients seen by the ED Guide program. Overall, the program sees a wide variety of patients, with sprains, dental pain, and skin infections as the top three diagnoses.

It is important to note that the one of the original goals of the ED Guide program was to specifically targets dental patients to re-direct them away from the ED. This data suggests that in 2014 the ED Guide program continued this effort and successfully sought out dental patients.

Exhibit 3. Top Presenting Diagnoses

Top Presenting Diagnoses	%
Sprain	9.9
Dental Pain	9.6
Skin Infection	6.7
Abdominal Pain	5.9
Back Problems	5.0
Injury/contusion	4.7
Arthropathies & Related	3.4
Fractured arm	2.6
Open wound (excl. head)	2.6
Connective tissue dis.	2.3

BOTTOM LINE

Based on the recommendation from the previous CORE report, the ED Guide Program increased the percentage of cases with high ED usage (≥3 ED visits in 12 months) and the share of cases that were new to Medicaid. It also increased the percentage of high acuity cases compared to the 2013 study. This data suggests that the re-targeting strategy for the ED Guide program was successfully implemented.

RESULTS:

PCP & ED UTILIZATION

WHAT WE WANTED TO KNOW

We wanted to know if patients who saw an ED Guide during their visit subsequently had better connections to primary care and less ED use. We took two approaches to measuring these objectives. First, we assessed the average number of visits per member per year (PMPY) to see if total mean utilization changed after seeing an ED Guide. Second, we examined whether each patient had at least one of a given type of visit after their index ED event.

OUTCOMES MEASURES

AVERAGE NUMBER OF VISITS: The average number of ED or primary care visits per member per year (PMPY).

ANY VISIT: Whether the individual had at least one visit (yes/no) in the six months after their qualifying ED event.

RESULTS

We found no significant changes in the average number of ED or primary care visits for ED Guide cases compared to the matched controls (Exhibit 4, top). ED Guide patients did see a small decline in ED visits after seeing a Guide, but the difference was not statistically meaningful.

We also found no evidence that the ED Guide program impacted the likelihood of having at least one ED or primary care visit after the index ED event (Exhibit 4, bottom).

Exhibit 4. Changes in PCP & ED Utilization

Average Number of Visits (PMPY)[4]						
	Cases		Controls		DiD	
	Before	After[1]	Before	After[1]	Net Program Effect[2]	p-value[3]
ED (PMPY)	3.6	3.4	2.9	3.0	-0.19	0.196
Primary Care (PMPY)	3.4	3.7	3.3	3.5	0.16	0.550
Percent with At Least One Visit Following Engagement						
	Cases		Controls			
	Before	After[1]	Before	After[1]		p-value[3]
% had ED visit	-	54%	-	52%	+2%	0.869
% had Primary Care visit	-	53%	-	53%	0%	0.898

WHO DID IT WORK FOR?

Although the average effect of the ED Guide program on ED visits was negligible, there were people in the study for whom ED utilization did decline. Comparing these "successful" cases to those whose ED utilization was not impacted suggests that those with higher baseline ED utilization and prior contact with other CMMI programs tended to see some declines in their ED utilization over time (Exhibit 5).

Among the 330 cases that *did* see reduced ED visits, the average reduction was 5.3 visits per year. This may suggest that there are persons for whom the ED Guide program does work well in terms of reducing ED utilization—the key may be successfully finding and targeting those people.

Exhibit 5. ED Guide Patients Separated by ED utilization Trends

	CASES WHO HAD REDUCED ED VISITS, N=330	CASES WHO DID NOT HAVE REDUCED ED VISITS, N=445	p-value[3]
Overall prevalence	43%	57%	
Average change in ED	-5.3 PMPY	3.4 PMPY	
% High Utilizer	46.1%	28.9%	**<0.0001**
% Had 4+ ED visits in past year	62.7%	21.8%	**<0.0001**
Risk Score, average	1.8	1.3	**<0.0001**
Avg. physical health conds.	1.2	0.8	**<0.0001**
Avg. mental health conds.	0.7	0.5	**0.004**
Other prior CMMI programs	14.0%	8.3%	**0.002**
Acuity at Index Date			0.313
High (1-3)	37.3	40.9	
Low (4-5)	62.7	59.1	
Avg. baseline member-months	8.9	7.9	**0.000**
Avg. baseline ED (PMPY)	8.1	2.6	**<0.0001**

NOTES

"Before" and "After" are demarked by the index date - the date of the qualifying ED visit.
Net Program Effect = (change observed in Cases) - (change observed in Controls).
P-values of ≤0.10 are statistically significant; over 0.10 is not significant.
Number of visits data excludes outliers above the 99th percentile

BOTTOM LINE

The ED Guide had no significant impact on patients' subsequent ED or primary care utilization. Despite this lack of an overall effect, however, ED utilization did go down for 43% of the cases, in some cases significantly, and these patients differed in several important ways from the cases that did not have reduced ED visits.

RESULTS:

INPATIENT UTILIZATION

WHAT WE WANTED TO KNOW

We wanted to know if patients who saw an ED Guide during their visit were less likely to have an inpatient event in the following six months. The program's expansion to higher acuity patients was the catalyst for this investigation — people coming to the ED with more serious conditions may be likely to have an inpatient event at some point thereafter, and the actions of an ED Guide may help moderate that probability. To investigate this, we examined the probability of having an inpatient visit within six months after the qualifying ED event.

OUTCOMES MEASURE

ANY VISIT: Whether the individual had at least one non-OB inpatient visit (yes/no) in the six months after their qualifying ED event.

RESULTS

We found that patients who saw an ED Guide during their visit were significantly less likely to have a non-OB inpatient event in the subsequent six months (Exhibit 6). Inpatient events were rare regardless — 4.5% of ED Guide cases had an inpatient event after their qualifying ED visit, compared to 6.5% for the controls. This represents a significant reduction in the odds of having an inpatient event — if 6.5% is the "natural" rate of inpatient events among similar patients, the ED Guide rate is 44 percent lower.

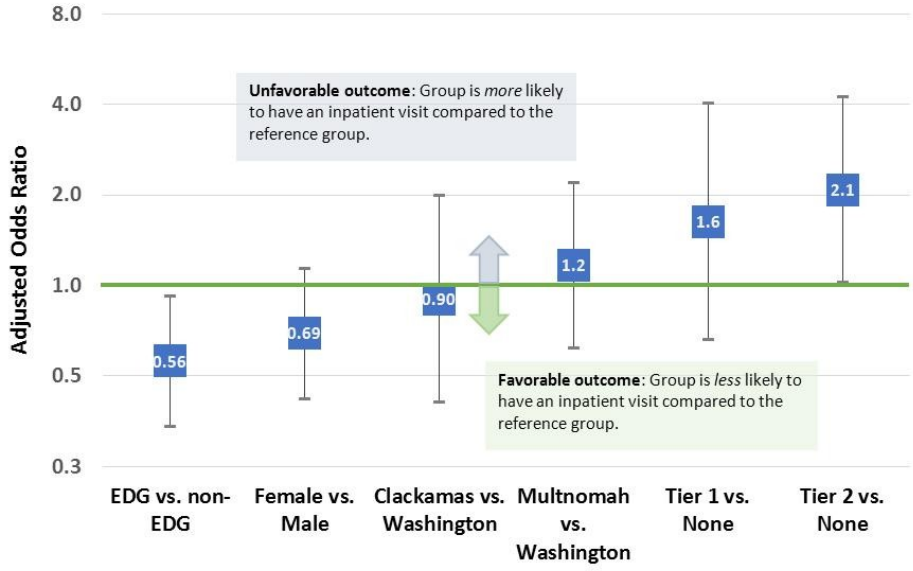
Exhibit 6. Impacts on non-OB Inpatient utilization , n= 741 matched pairs

Percent with Any Visit Following Engagement			
	Cases	**Controls**	**p-value**[1]
% had Inpatient Non-OB visit	4.5	6.5	**0.07**

P-values of ≤0.10 are statistically significant; over 0.10 is not significant.

To further explore this finding and ensure it was attributable to the ED Guide program, we used multivariate regression analysis to model the predictors of an inpatient visit after the qualifying ED event in our dataset (Exhibit 7). We controlled for other possible predictors of inpatient events, such as risk score, demographics, prior utilization, and engagement in other CMMI programs. Holding all those other factors constant, seeing an ED Guide reduced the odds of an inpatient visit by almost half (OR=0.56) compared to non-participants. It is possible this reduction is explained by factors we could not account for in our model, but the evidence at hand suggests a significant impact on inpatient utilization.

Exhibit 7. Adjusted odds of having an IP non-OB visit post-engagement



Adjusted for age, CDPS risk score, baseline inpatient visits, high utilizer status, and all of the variables listed above.

HOW TO READ THIS CHART: The blue square is an odds ratio (OR), which represents the relative likelihood of having an outcome of interest compared to the reference group. An OR smaller than 1.0 represents reduced chances of experiencing the outcome, while an OR greater than 1.0 represents increased chances. The bars extending from the OR is the 95% confidence interval (CI). When the CI does not cross 1.0, the OR is considered statistically significant and likely not due to chance.

BOTTOM LINE

ED Guide participants were significantly less likely to have an inpatient visit in the months following their qualifying ED event. We used multivariate analysis to control for other key factors that might also affect inpatient use, and found that, holding those other factors constant, ED Guide participation still reduced the chances of having an IP non-OB visit by 44% relative to controls.

RESULTS:

COST SAVINGS

WHAT WE WANTED TO KNOW

We wanted to know if ED Guide patients cost less, either in total or within specific domains of care, after encountering the program. To accomplish this, we used Health Share claims data to compare total health care costs between program patients and their matched comparison group before and after the qualifying ED event.

MEASURES

OUTCOMES MEASURE
EXPENDITURES: Allowed costs from Health-Share claims, in total and broken out by key domains of care.

RESULTS

We found that patients who saw an ED Guide during their qualifying ED visit cost less in the subsequent six months than similar patients who did not (Exhibit 8). This difference averaged $129 per member per month (PMPM), or about $774 per person over six months. It is important to note that costs actually went up for both groups after the qualifying event, but they *went up a lot more* among comparison cases. When we broke costs out by several key domains of care to determine where the reductions came from, we found that reduced inpatient expenditures accounted for almost half the difference—a finding consistent with reduced inpatient utilization.

Exhibit 8. Health Share Panel: Cost Estimates

MEDICAID COSTS [4]						
	Cases		Controls		DiD	
	Before	After[1]	Before	After[1]	Net Program Effect[2]	p-value[3]
Total Cost (PMPM)[4]	$463	$489	$443	$599	**-$129**	**0.005**
ED	$124	$138	$110	$137	-$13	
Primary Care	$27	$29	$25	$28	-$1	
Inpatient Non-OB	$50	$51	$42	$93	-$50	
Pharmacy	$66	$65	$88	$101	-$13	

NOTES

"Before" and "After" are demarked by the index date, representing the date the of the qualifying ED event.
Net Program Effect = (change observed in Cases) - (change observed in Controls).
P-values are for net program effect. P-values of ≤0.10 are statistically significant.
Costs data excludes outliers above the 99th percentile

PRICE-ADJUSTED SAVINGS

Claims payments are useful for assessing overall costs savings, but they also contain considerable noise — totals include both the number of services performed and the price of those services. The ED Guide program can impact the former, but the latter is subject to considerable variability in inpatient data. For this reason, using PMPM to estimate cost savings may not reflect program-specific effects, and we recommend imputing potential cost savings using price-fixed utilization data.

Below (in Exhibit 9), we calculate potential cost savings based on the change in inpatient rates observed in Exhibit 6. Seeing an ED Guide was associated with a 2 percentage point reduction in the likelihood in our study sample; if we scale that estimate across the approximately 11,000 patients the program will see this year, we can estimate that 224 inpatient visits will be avoided. An average inpatient event in our population costs $8,800, resulting in projected program savings of just under $2 million.

Exhibit 9. Calculation for Potential Cost Savings Due to Reduced ED Visits

% that had IP non-OB visit		Difference		Annualized number of people served by ED Guides		Number of IP non-OB events reduced		Average cost of an IP non-OB visit		Projected savings due to reduced IP non-OB visits
Controls: 6.5% Cases: 4.5%	→	6.5% - 4.5% = 2%	X	2800 people x 4 quarters	=	224	X	$8,800.00	=	**$1,971,200.00**

It is important to note that this computation is based on a statistical estimate with a margin of error, so actual savings may differ. Also, although we have tried to account for confounding factors in our models, it is always possible the savings we observe are attributable to factors other than the program for which our study could not account. We recommend additional exploration to better understand the mechanism behind this observed effect.

BOTTOM LINE

In the months after seeing an ED Guide, program cases had significantly lower total health cost expenditures than similar comparison patients. About half of these savings stemmed from a reduction in inpatient costs. Extrapolating our estimates across the entire program population suggest a potential savings of about $2million from avoided visits. We recommend additional exploration to understand the mechanism behind these observed program effects.

RESULTS:

PATIENT-REPORTED OUTCOMES

TYPES OF DATA

SURVEYS: Through the Health Commons grant, we sent Health Share patients who were seen by the ED Guide program a survey 1-2 weeks after their qualifying ED visit. Up to 2013, we had collected 242 surveys. Since the 2013 report, we collected 177 additional surveys. For the purpose of this report, we examined these responses separately to determine if the results differed between the cohort of patients seen in 2013 and 2014 (Exhibit 10).

KEY INSIGHTS FROM PATIENTS

PRIMARY CARE CONNECTION: In 2013, lack of connection to primary care did not seem to characterize most participants—most had a home clinic or provider. This is also true for the 2014 cohort, however they were somewhat less connected than the 2013 patients. Despite this, *timely access to providers* was still an important issue. In both groups, nearly three-quarters (71-72%) reported "sometimes" or "always" having trouble getting care they needed in the last 6 months.

REASON FOR ED VISIT: When asked why they went to the ED for their most recent visit, a third (31-35%) reported that they simply couldn't get an appointment at their regular doctor quickly enough. Interestingly, less people in the 2014 cohort said that they came to the ED because it was convenient and more people reported not having anywhere else to go. This may reflect the increase in the number of new Medicaid members in the 2014 cohort as these patients are likely not yet able to navigate their new health care system.

PROGRAM IMPRESSIONS: As reported in 2013, nearly a third of respondents (30%) did not remember working with the ED Guide during their visit at all, even though the survey was sent within two weeks of the visit. The ED Guide may not leave a big impression on these patients as they may seem like one more in a series of people they spoke to on a busy and difficult day for them. Reports of the events that occurred during the ED visit were comparable between patients in both 2013 and 2014.

FUTURE PLANS: We asked patients where they plan to go if they have a similar health care need in the future. Results were comparable between 2013 and 2014. Over half said they would come back to the same ED, while approximately a third said they would either go to the clinic they were linked to by the ED Guide or to a different doctor's office or clinic.

Exhibit 10. Key Survey Results: ED Guide Patients

How connected were patients to primary care at the time of their ED visit?	2013 N=242	2014 N=177
Already have a "usual place of care"	77%	69%
Already have a "personal provider"	78%	68%
Have had trouble getting needed care in the last six months	71%	72%
Why did they come to the ED for care?	**2013**	**2014**
Said their issue really was an emergency	64%	62%
Said they had another doctor but couldn't get in quickly enough	35%	31%
Said they came to the ED because it was close by and convenient	22%	10%
Said they had no place else to go	11%	19%
What happened during the visit?	**2013**	**2014**
Remembered working with the ED Guide	67%	72%
Of those who remembered received help with a follow-up appointment	57%	57%
Of those who remembered said the Guide followed up with them	39%	36%
Of those who remembered said they knew where to best get their future care	89%	90%
Next time they have a similar care need, where will they go?	**2013**	**2014**
Said they will come back to the same ED	51%	54%
Said they will go to a different ED	3%	5%
Said they will go to the clinic they were set up with or to a different clinic	28%	30%
Said they will go someplace else	11%	12%

BOTTOM LINE

Responses from patients surveyed up to and following the 2013 study were comparable in many of the self-reported survey results. Interestingly, there were a few key differences including a decrease in the number of patients that reported going to the ED due to convenience/proximity to home and more people reported going to the ED because they had nowhere else to go. These differences may originate for the greater proportion of new Medicaid patients who may not yet know how to appropriately navigate the system.

CONCLUSIONS

PROGRAM & STUDY GOALS

The ED Guide program at Providence embedded a new workforce in the ED to connect patients to the right kind of care to meet their medical needs. This report summarizes results from a second evaluation of this program, after an earlier report resulted in key changes to its targeting strategy. We assessed the impacts of the program's new operational model on its goals of promoting more appropriate health service utilization and reducing medical costs.

PROGRAM IMPACTS

RESULTS OF RETARGETING: The ED Guide program successfully implemented its new protocols, with an increased focus on high ED users, newer Medicaid members, and an expansion to include higher acuity patients. As a result, the cohort of patients evaluated in this 2014 study differs from those in the 2013 study, which may account for differences in our assessment of program impacts.

RESULTS OF PCP & ED USE: The ED Guide Program aimed to increase patient connection with primary care and decrease visits to the ED; however, results did not show evidence of a meaningful program impact.

INPATIENT USE: We did find evidence that seeing an ED Guide was associated with a reduction in the likelihood of having an inpatient event across the subsequent six months. To better understand the relationship between participation in the program and reduced inpatient events, we used multivariate regression analysis to control for the influence of other possible factors that might also have impacted inpatient utilization. We found that, even while holding these other factors constant, participation in the ED Guide program reduced the odds of an subsequent inpatient event by nearly half. This evidence supports the notion that the observed difference in inpatient events is attributable to something the program is doing.

RESULTS OF SAVINGS ANALYSIS: We found that ED Guide patients cost an average of $129 PMPM less, in terms of total cost of care, than their comparable control patients over the six months following their qualifying event. Examination of costs by domain of care found that reduced inpatient expenditures accounted for nearly half of this difference, paralleling the changes seen in utilization.

Because of price variance built into claims data, we imputed estimated cost savings based on the observed utilization changes. Extrapolating the reduced inpatient utilization across the program's annual patient count suggests a total of just over 200 avoided visits per year; average cost savings in that instance would total just under $2 million. It is important to note that this figure is based on a statistical estimate with a margin of error. Also, while we took every effort to account for alternative variables in modeling these program effects, it is always possible the observed cost differences are attributable to some factor we did not account for in our study.

MECHANISM

The impact of the ED Guide Program on subsequent inpatient use is the key finding of this report. While we are confident the data demonstrate this difference and have taken every effort to control for other explanations, the mechanisms that orchestrates this reduction in inpatient utilization remains unexplored. It may be that the retargeting strategy — which increased the high utilizer, high acuity, and new to Medicaid population—is an important factor in driving this outcome; for instance, high acuity patients coming to the ED may be at risk for an upcoming admission that the ED Guide encounter helps to moderate. But in the absence of evidence, we don't really know. The data suggest a difference, but we recommend further exploration into the mechanism that may be driving that observed difference.

BOTTOM LINE

The ED Guide program effectively implemented a patient retargeting strategy that increased enrollment of high utilizer, new Medicaid members, and high acuity patients. Results from this 2014 cohort of patients suggest no program impacts on ED and PCP use, but do show evidence that the program reduces the odds of a subsequent inpatient event, resulting in avoided admissions and potentially significant cost savings. While further investigation into the mechanism behind this finding is certainly warranted, the data on hand suggest a positive impact on patient outcomes and total health care expenditures.

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APPENDIX:

THE EPIC PANEL

We also performed a comparable analysis using Providence EPIC data. Unlike the Health Share analysis, this data is not limited to just Medicaid and therefore encompasses all insurance types (Medicaid, private insurance, and uninsured). However, the Providence EPIC data only includes visits to the Providence hospital system and is limited to ED events. Thus, the data described here will only include utilization and costs for the ED.

METHODS

The experimental design for the Providence EPIC data was the same as described in the report. The panel includes everyone who had a qualifying ED visit during the 3-month sampling window from May to July 2014. For each member in the panel, we computed their ED utilization 12 months prior to the event, then tracked their ED use 6 months after the event. We performed the same propensity score matching, however, the EPIC data is missing key pieces of information, such as health status, to fully align the cases and controls (Exhibit 11). Please see the Methodology (page 2) for a complete review of the design, methods, and statistical analysis.

PROVIDENCE ED EPIC DATA

We used the Providence EPIC data system to track ED visits from all patients seen at one of the participating hospitals. To identify patients who were seen by the ED Guide, we linked the EPIC records with the program data using the Medical Record Number. We formed a comparison group by selecting similar patients with similar visits in the same time period who were not served by the ED Guide.

KEY ADVANTAGES: Contains all visits to a Providence ED, regardless of insurance; includes uninsured patients.

KEY CHALLENGES: Outcomes are limited to Providence ED visits only.

Exhibit 11. Propensity matching for EPIC panel

EPIC PANEL				
	Sample Variables	Cases (n=2,508)	Potential Controls (n=20,992)	Matched Controls (n=2,508)
GENERAL	Age, mean	35.7	40.2	35.2
	Female, %	52%	56%	57%
RACE	Non-Hispanic White	83%	86%	82%
	Hispanic	12%	9%	12%
	Other/Unknown	5%	5%	6%
INSURANCE	Medicaid/Medicare	73%	43%	75%
	Self-Pay	22%	9%	21%
	Commercial	4%	45%	3%
	Other/Unknown	1%	4%	1%
BASELINE USAGE /COSTS	ED Visits	1.6 / year	0.86/year	1.3 /year
	ED Costs	$576/year		$584/year

UTILIZATION & CHARGES

UTILIZATION: First, we compared the pre-post changes observed in the cases with the changes observed in the controls using a difference-in-differences analysis (see Methodology, page 3). This quantifies the average number of visits that is attributable to the ED Guide program. Second, we compared the percent of cases with a post-intervention visit compared to controls to determine if ED Guide engagement influenced the probability of engaging with care.

CHARGES: We analyzed the Providence ED EPIC Data to determine if total charges for ED visits was less for ED Guide patients. To accomplish this, we compared charges between program patients and their matched comparison group before and after the qualifying ED event.

MEASURES

UTILIZATION

AVERAGE NUMBER OF VISITS: The average number of ED visits per member per year (PMPY).

ANY VISIT: Whether the individual had at least one ED visit (yes/no) at post-intervention.

CHARGES

TOTAL ED CHARGES: The average total ED charges per month for the 12 month time period before or 6 months after the index ED event.

FINDINGS

UTILIZATION RESULTS: The average number of visits for the cases versus the controls shows an overall increase in 0.13 visits PMPY due to the ED Guide program (Exhibit 12, top). This results is statistically meaningful. This finding is consistent with the likelihood of having an ED visit, whereby the ED Guide cases were significantly more likely than controls to have a subsequent ED visit (Exhibit 12, bottom)

CHARGES RESULTS: The total ED charges for the ED Guide cases declined following the program, but this was similar to what was observed for the control cases. Thus, the ED Guide program did not affect ED charges for the patients in the EPIC panel (Exhibit 13).

Exhibit 12. EPIC PANEL: UTILIZATION n=2,508 matched pairs

Average Number of Visits [4]						
	Cases		Controls		DiD	
	Before	After[1]	Before	After[1]	Net Program Effect[2]	p-value[3]
ED (Average/Year)	1.4	1.8	1.1	1.4	**O.13**	**0.076**
Percent with Any Visit Following Engagement						
	Cases		Controls			
	Before	After[1]	Before	After[1]		p-value[3]
% had ED visit	-	44.4	-	41.3	-	**0.030**

Exhibit 13. PROVIDENCE ED EPIC PANEL: Cost Estimates[4]

EPIC PANEL Costs (n= 2,508 matched pairs)						
	Cases		Controls		DiD	
	Before	After[1]	Before	After[1]	Net Program Effect[2]	p-value[3]
ED Charges (Avg/Month)	$463	$404	$454	$373	$22	0.439

NOTES

"Before" and "After" are demarked by the index date, representing the qualifying ED event.
Net Program Effect = (change observed in Cases) - (change observed in Controls).
P-values of ≤0.10 are statistically significant.

BOTTOM LINE

The EPIC Panel, that represents all patients seen at Providence regardless of insurance type, showed a small but statistically significant increase in ED utilization following engagement with the ED Guide. This stands in contrast to the results from the HealthShare panel, where ED use was essentially unchanged. The total charges associated with ED use were unchanged between cases and controls. The different results in this panel compared to Health Share may represent the impact of looking at all patients compared to focusing on those with higher socioeconomic need.