

# Frequent ED utilizers: A case management program to address patient needs

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**R**eduction in avoidable or unnecessary ED visits has become a priority for many healthcare agencies. EDs are an expensive place to receive care and ED staff members recognize that many of the patients they serve are more appropriately treated in a primary care setting, resulting in better quality of care and more efficient use of resources.<sup>1</sup> Case management, care coordination, and discharge planning enhancements are becoming commonly implemented programs to reduce avoidable ED visits.<sup>2-4</sup>

## Unearthing the problem

Providence Regional Medical Center Everett (PRMCE), located in Snohomish County, Wash., was one of the busiest EDs in the state for several years, seeing over 110,000 patients in 2010 in a county with a population of 713,335 people.<sup>5</sup> PRMCE's ED was faced with serious overcrowding. Snohomish County reported having high ED

utilization due to a lower than average number of primary care providers (PCPs) available to care for the community.<sup>6</sup> The Snohomish Health District reported that 79% of county residents had a PCP in 2010, down from 86% in 1994; 24% of adults hadn't had a routine checkup within 2 years.<sup>7</sup>

In addition to overcrowding, ED satisfaction scores for both patients and employees were suboptimal. To address these concerns, a project was designed to manage frequent utilizers—a small percentage of patients with a significant number of visits. This subset of individuals generally isn't best served by the episodic, acute-focused care provided in the ED. These patients also contribute to staff burnout and overcrowding.

In 2008, PRMCE's ED began developing a case management program (EDCMP) aimed at aligning high ED utilizers more closely with a PCP to improve care and reduce unnecessary ED visits. Two RN case manager/discharge planners were hired in April 2009

to implement the program, which was supported by the director of emergency/trauma, the ED medical director, and a few interested ED physicians. In the initial stages of program development, stakeholders met and established relationships with local community health clinics, public and private providers of outpatient care, and other community health resources.

### Laying the groundwork

In 2009, program case managers began inviting patients to enroll in the program. The initial patients considered were identified in the ED clinical software as having had 25+ visits per year. Program case managers also elicited referrals from ED staff members of patients who they commonly saw and felt would benefit from case management. All patients who were considered for

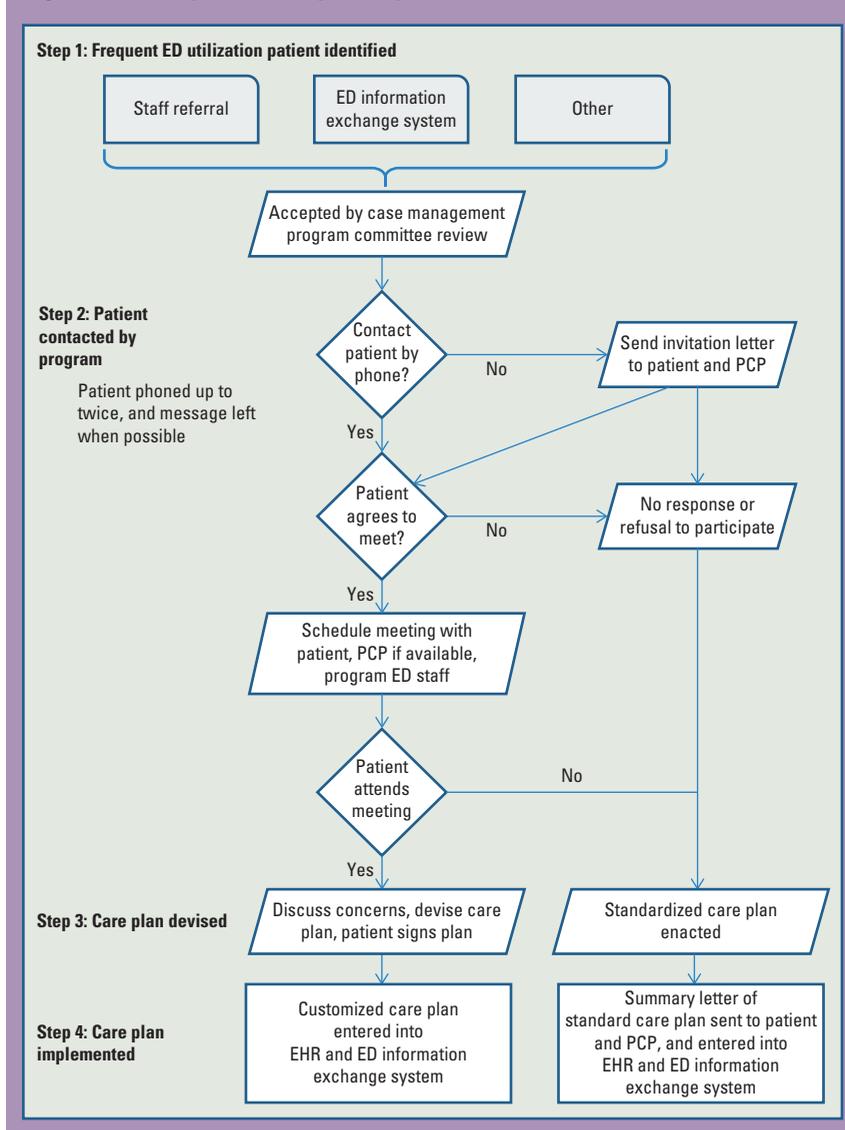
the EDCMP were vetted through a review committee consisting of at least one ED physician, the director of emergency services, and the RN case managers before invitation.

After the review committee approved a potential participant, the case managers contacted the patient to invite him or her into the program. The process of developing the care plan is described in *Figure 1*. Program managers were asked to complete a table modeled on that of Kumar and Klein to provide an estimate of services that they would facilitate for individuals in the care plans.<sup>4</sup> (See *Table 1*.) By January 2010, more than 100 patients had been referred by ED staff and providers.

A key feature of the program is that the patient is invited to participate in the review of his or her case history and the design of the care plan from the beginning. The goal of involving the patient is to identify the individual's motivation to seek care at the ED, his or her barriers to receiving care in a less acute setting, and in what way care can be provided successfully in a more effective (higher quality, lower cost) manner.<sup>4</sup> Whenever possible, the care plan is created with the patient, along with the patient's PCP and ED personnel.

Early in the program, PRMCE was using electronic health records (EHR) for clinical data, but the care plans were stored as a separate file with a notation in the medical record to look for a care plan when a patient was seen. In May 2011, PRMCE began migrating its EHR, and the institution's compliance officer and software experts were consulted to determine the best way to introduce care plans into the patient medical record so they would be easily accessible. In September 2012, in accordance with a

**Figure 1: Care plan development process**



statewide initiative to improve communication between EDs, PRMCE also began using an ED information exchange system, and notations of care plans were entered into this system so that all participating hospitals would be aware when care plans were in place.

During the same timeframe in late 2012, the research division of Snohomish County Human Services was conducting a project to characterize the most frequent utilizers of county health services (jail, mental health triage, emergency medical services [EMS], homeless services, and so on). The examination of the high utilization of EMS naturally resulted in inquiries into what happened to patients after they were delivered by EMS to the local EDs.

As part of the ongoing collaborative partnership that PRMCE has with the Snohomish County Human Services research division, researchers and ED leadership agreed that it would be interesting to both parties to examine the impact that the EDCMP had on return visits to the ED. Anecdotally, the program was successful in reducing frequent utilizers' return visits but since the program's inception, no data had been examined to substantiate that fact. To quantitatively examine whether the program reduced visits, the hospital shared data access with county researchers to examine PRMCE ED usage before and after an individual's care plan was instituted.

PRMCE's nursing governance research council, the CNO, and the clinical research manager reviewed and approved the proposal for this program evaluation. A business associate agreement was implemented between the organizations to ensure compliance with the Health Insurance Portability and

**Table 1: Service components provided in care planning**

Intervention	% of patients receiving component
Education about medical and social services available in the community	100%
Individualized care plans	95%
Care coordination outside the ED	95%
Goal creation and assistance	90%
Crisis intervention	40% to 60%
Transportation assistance	40%
PCP referral	40%
Assistance in housing	40%
Liaison with other community agencies	25%
Referral to social services	10% to 20%
Assistance with financial entitlements	10%
Referral to pain services	5%
Assertive community outreach	5%
Multidisciplinary case conferences	2% to 5%
Limitation of opioids and benzodiazepines	2% to 5%
Individual and group supportive therapy	2%
Referral to psychiatric services	1% to 2%
Providing food services	1%
Referral to substance abuse services	1%

Accountability Act and the Health Information Technology for Economic and Clinical Health Act.

### Conducting the research

Case managers provided the researchers with a list of 23 patients who received EDCMP care plans between January 2013 and April 2013. The date in the field "last modified by \_\_\_ on <date>" under the care guidelines section of the ED information exchange system was

used as a proxy for enacting the care plan in the PRMCE system. This 4-month participant selection window was selected for two reasons: 1) the previous 6 months had complete data to conduct the analysis and 2) the researchers' examination of the records began approximately 6 months after the end of this window, which was the duration of our follow-up.

Using PRMCE's EHR data, researchers counted the number of

ED visits (visit type “ED” or “ED to Hospital-Admission [Discharged]”) in the 6 months before the enactment date, from predate to start-date, including the start date. This was compared with the number of ED visits counted in the EHR in the 6 months after the enactment date from the day after the start date to the postdate. The final window from which data were examined was July 2, 2012 (6 months before the earliest care plan implementa-

tion from the January to April 2013 selection period) to October 18, 2013 (6 months after the latest care plan implementation during the selection period). One patient was omitted from the analysis because she died during the 6-month follow-up period and, thus, her postvisit count couldn’t be compared with those who lived the entire 6 months.

Summaries were prepared using spreadsheets and analyses were

conducted using statistical software. The distributions of visit data weren’t found to be normal by the Shapiro-Wilk test, so medians were reported in addition to means. Wilcoxon signed-rank tests were used to compare pre- and postvisit counts. Mann-Whitney U tests were used to make comparisons between groups (younger/older; Medicaid, yes/no; continuing care, yes/no).

The median age of the patients was 34.5 (range, age 23 to 57) and there were 5 males and 17 females. The range of preintervention visits was 1 to 22 visits in the 6 months before intervention. In the 6 months after intervention, there were 0 to 10 ED visits. The patient whose data were omitted was exceptional in that she had 107 ED visits before her care plan, and 21 ED visits before her death just over 1 month into the 6-month follow-up period. Comparisons of ED visitation are presented in *Table 2*.

ED visits were reduced by 75.7% for the group of 22 individuals. When grouped into younger (age 23 to 34) versus older (age 35 to 57) equally sized groups, there were significantly more ED visits in the preintervention older group than the preintervention younger group, but no statistical difference in the analysis between postintervention younger versus older groups. No significant differences in ED usage were found between males and females.

As with other groups, the difference between preintervention and postintervention visits in those with and those without Medicaid coverage was significant. However, there was also a significant difference ( $U = 25$ ,  $Z = -2.285$ ,  $p = 0.022$ ) between the mean number of visits according to Medicaid status in the preintervention comparison; those

**Table 2: Changes in number of ED visits before and after care plan enactment**

	Pre	Post	Difference	P-value
<b>ALL (N = 22)</b>				
Mean	11.0 ± 5.6	2.7 ± 3.0	-8.4 ± 5.9	$p < 0.001^*$
Median	10.0	2.0	-7.5	
<b>Range</b>				
Min	1	0		
Max	22	10		
<b>YOUNGER/OLDER (N = 11 per group)</b>	Pre (mean, SD)	Post (mean, SD)	Difference (mean, SD)	P-value
Age 23 to 34	(mean, SD)	P-value	-6.6 ± 3.9	$p = 0.003^*$
Age 35+	13.2 ± 4.9	3.1 ± 3.0	-10.1 ± 7.0	$p = 0.005^*$
	$p = 0.038^\dagger$	$p = 0.433^\dagger$		
<b>MEDICAID</b>				
Yes (N = 10)	8.4 ± 5.6	2.1 ± 2.8	-6.3 ± 5.7	$p = 0.005^*$
No (N = 12)	13.3 ± 4.8	3.2 ± 3.2	-10.1 ± 5.5	$p = 0.003^*$
	$p = 0.022^\dagger$	$p = 0.373^\dagger$		
<b>CONTINUED CARE</b>				
Yes (N = 15)	11.8 ± 4.9	3.9 ± 2.9	-7.9 ± 5.5	$p = 0.001^*$
No (N = 7)	9.4 ± 7.0		-9.4 ± 6.5	
	$p = 0.339^\dagger$			

\*Wilcoxon signed-rank test  
 †Mann-Whitney U test

without Medicaid coverage had a mean 13.3 visits versus 8.4 visits for those with Medicaid. Those who continued to receive care in the ED after the intervention (“continued care”) didn’t significantly differ from those without continued care in the number of visits before the intervention.

Results from an examination of frequent utilization of EMS in the county served by this medical center suggested that behavioral/psychiatric and substance abuse are common drivers of calling 911.<sup>8,9</sup> To assess if this was true of the ED frequent utilizers, patients with either a psychiatric diagnosis or a behavioral/mental health notation on the “problem list” in the ED information exchange system patient snapshot were coded as affirmative for mental health concerns. Eighteen of 22 patients (82%) met these criteria. The same criteria for chemical dependency concerns were applied, with 5 of 22 patients (23%) coded as affirmative for substance abuse (alcohol dependence, opioid dependence, polysubstance abuse, marijuana plus methamphetamine use, and heroin use).

However, county researchers also found that many frequent utilizers had serious and often chronic medical conditions. For the EDCMP participants, the most frequent diagnoses extracted from the ED information exchange system were pain (31.4%), gastrointestinal complaints (12.1%), and symptoms related to infection (9.24%), all of which may require emergency assessment.

### Evaluating the program

An individualized case management program administered by nurse case managers in the ED significantly decreased the number of

subsequent ED visits by individuals selected for the program. The longer reaching consequences of a reduction in visits by frequent utilizers may include a decrease in the overall cost of operating the ED and a reduction in patient census and waiting times, which increases access to the ED for community members and allows for better quality, standardized care for the frequent utilizers themselves.<sup>2,4,10,11</sup>

Assuming a steady rate of visits and an average ED visit cost of \$1,200, the payer potentially saved an average of \$9,000 per individual

is demoralizing to staff members’ sense of efficacy. Having the ability to refer these patients to the EDCMP gave staff a place to go with these frustrations and, as this analysis found, results in a reduction of ED visits by these patients. Total internal ED engagement scores from 2011 to 2013 improved by an average 0.47 points on a scale of 1 to 5.

A possible confounding factor of our findings is a statewide initiative that began earlier in the year of our study. The Washington State Health Care Authority, in cooperation with the Washington Chapter of the

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or \$198,000 total in costs for these patients in the 6 months after the intervention.<sup>12</sup> At the time of analysis, this group held 68% publicly funded insurance, 14% private insurance, 14% no insurance, and 5% labor and industry claims.

An unexpected positive outcome of this program was improved staff morale.<sup>3</sup> Patients who frequent EDs for care are often discontent with the care provided and can contribute to burnout among ED professionals. Caring for complicated, chronic medical, social, and psychological problems can be challenging for staff members and lead to feelings of frustration. The way these patients return, sometimes multiple times in one day,

American College of Emergency Physicians, the Washington State Hospital Association, and the Washington State Medical Association, developed the “ER is for Emergencies” program in response to legislative threats to limit reimbursement for Medicaid-paid visits that were deemed not medically necessary.<sup>13</sup> The program is guided by seven best practices, including patient education on ED use, opioid prescribing guides and monitoring, feedback reports, and electronic communication between hospital EDs using the ED information exchange system.<sup>14</sup>

A preliminary report of the effects of this program reduced total ED visits by Medicaid-covered frequent

users by 23% in a 5-month period.<sup>14</sup> Examining only the Medicaid-insured participants in PRMCE's program resulted in a 76% reduction over 6 months, suggesting that the individualized care plans provided by the case managers at PRMCE had a much greater impact than the "ER is for Emergencies" program alone.

An additional limitation in this study is that software systems are designed to provide ready access to an individual's pertinent medical

records, but also referral sources, coded intervention fields on an individual level, and outcome data on whether the primary outcome—diversion to primary care—is taking place. The largest obstacle to implementing this means of tracking is resources. By January 2015, 314 patients had ED care plans devised and attached to their medical records.

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to EDs were due to behavioral/psychiatric issues, and alcohol and/or other substance use is likely the most common underlying cause of transport in this population.<sup>9</sup> However, program managers reported providing psychiatric and chemical dependency service coordination less than 5% of the time. Upon questioning, the program managers reported that a screening, brief intervention, and referral to treatment, or SBIRT, program was implemented to capture and coordinate substance abuse cases in the ED, and the ED provided a social worker for mental health crisis management on site.<sup>16</sup> There didn't appear to be formalized care coordination between these various teams. With the likely overlap in case management and frequent utilization, chemical dependency issues, and mental health needs, this seemed to be an area where internal processes can be altered to break down these silos.



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information, but not to examine data and trends in aggregate. To conduct this study, county researchers were required to manually count, enter, and code each individual's data into a second program, a labor-intensive process that also increases the risk of human error. Expanding the capacity of these programs to allow for database queries will allow researchers at hospitals or their collaborators to more readily assess individual programs such as the EDCMP.

### Looking ahead

Evaluation of the program revealed two areas for expansion. The first is improved tracking capacity of the program outcomes. Ideally, an evaluation plan will be devised to capture not only basic patient demographic data to identify patients who received ser-

ved. The evaluation reported here was undertaken by an external collaborative resource, the research division at Snohomish County Human Services. This is a mutually beneficial relationship, but presents some challenges in understanding collection and reporting of data, and gaining an in-depth understanding of the program itself. Evidence of program success creates compelling reasons for increasing funding and resources for such projects.<sup>15</sup>

The second area for expansion highlighted by this and other work at Snohomish County's research division is the treatment of those with mental health or chemical dependency issues in the ED. Analyses of two major fire districts' EMS primary impression data suggest that 15% of their frequent utilizer transports

### A positive reduction

The evaluation of the EDCMP demonstrated a reduction in frequent utilizers' return ED visits in the 6 months following enactment of an individualized care plan in their EHR. Further questions remain about the disposition of these patients after the program and total actual hospital costs that may be mitigated by this reduction, but the initial assessment suggests that the program has value to the patients and staff at PRMCE. **NM**

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