

# Improving Emergency Psychiatric Services for People with Schizophrenia

A Final Report submitted to the Ethel and James Flinn Family Foundation

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Arfken CL, Zeman LL, Yeager, L, White A, Mischel E, Amirsadri A: Case-Control Study of Frequent Visitors to an Urban Psychiatric Emergency Service. *Psychiatric Services* 2004, 55, 295-301.

## **Background to the proposal submission**

People with schizophrenia have a chronic disease requiring ongoing mental health care to manage symptoms and maximize function. Even with the best of care, there may be occasional need for emergency psychiatric services where they can obtain prompt and compassionate care. The role of emergency psychiatric services as such should be to coordinate and support ongoing care, with the individual ideally requiring emergency services infrequently. In addition to treating acute problems and supporting the connection to primary care, emergency psychiatric services represent a portal of entry to the mental health care system where people with first onset of psychosis are taken. At this vulnerable time, patients and their families need care, support and connection to ongoing, primary care. It also, unfortunately, has become the final link in the quickly constricting safety net. As such, the emergency psychiatric service is entrusted with the dual tasks of providing crises and front-line care (Gerson & Bassuk, 1980; Schwartz et al., 1972).

In 1999 it was obvious that the safety net was being overtaxed. At the Crisis Center in Detroit Receiving Hospital (Detroit, Michigan), the mean length of stay from time of presentation to time of discharge was over 13 hours. In contrast, the stated goal was two hours. The Crisis Center at that time was the second largest emergency psychiatric service in the country. Built to service 5,000 admissions per year, it was servicing over 12,000 admissions per year (at a budget of over \$2.5 million). In this facility, 7 FTE psychiatrists, 12.5 FTE psychiatric nurses, 12.5 FTE nurse extenders and 8.5 FTE psychiatric social workers were working round the clock to provide emergency services at the primary emergency psychiatric service in the Detroit metropolitan area.

Physically, the Crisis Center occupied 3200 square feet and had 15 gurneys placed against the walls under an identifying number. There were no chairs or curtains separating the gurneys, and family members, if present, stayed in the emergency medicine waiting room. A separate room connected to the main emergency psychiatric service room had chairs and one television. All patients admitted had to strip and wear hospital gowns. They were to stay on the gurney, unless interviewed or given permission to leave, until time for discharge. Cold sandwiches were provided at mealtimes and had to be consumed on the gurneys. Interviewing occurred in one of three small rooms each containing two chairs, a desk and an alarm button for emergencies. The buttons sounded in the police substation located just outside of the Crisis Center.

The setting, unfortunately, may have acted to exacerbate presenting problems. Clinical observations suggested that some patients actually became more agitated or decompensated further in response to the behavior of other patients around them, the lack of privacy, the extended wait without contact with family members or lack of something to occupy them. For these reasons, there was an urgency to reduce the length of stay and number of admissions and concomitantly to modernize the facility.

As stated above, the Crisis Center was being swamped by people seeking care. It had become increasing difficult for the clinical staff to provide effective services, and

they could not provide the prompt and compassionate care needed. Furthermore, it was estimated that a third of the patients were repeat admissions. To improve the care in the Crisis Center, the goals were to modernize the facility, shorten the length of stay and reduce the number of admissions. Knowing the underlying factors predisposing some patients or events that prompt them to use these services (or not use them) frequently would assist in developing a targeted program sensitive to the medical and psychological needs of people with schizophrenia. This knowledge would be the first step to devising a targeted program to lower the repeat admission rate and thus lower the admission rate. If the admission burden was lowered, then staff could respond more effectively with the presenting patients and thus reduce the length of stay.

Frequent visitors are generally estimated to account for one third of all visits to emergency psychiatric services (Ellison et al., 1986). Constraints on resources make addressing their disproportionate use a high priority for both clinicians and policymakers. Several studies have examined how frequent visitors differ from other visitors with differing results (Bassuk & Gerson, 1980; Slaby & Perry, 1980; Purdie et al., 1981; Munves et al., 1983; Ellison et al., 1989; Hansen & Elliot, 1993; Klinkenberg & Calsyn, 1997; Spooen et al., 1997; Dhossche & Ghani, 1998; Saarento et al., 1998). These differences in results may be due to varying definitions of frequent visitors, different healthcare and social welfare systems, different configurations of services available, different climates, and different populations served.

Urban emergency psychiatric services are more likely to have specialized staff and space than their suburban or rural counterparts but are challenged by the number of patients and their patients' lack of resources (Huffine & Craig, 1974). Treatment approaches have changed due to the sharp decline in available hospital beds, and compliance is undermined by the high rate of homelessness, disappearance of family support, poverty, substance abuse and lack of transportation. Further undermining compliance, families (when they exist) and providers are suspicious of each other (Morgan, 1989). Finding ways to provide quality care in such a resource-poor environment is compounded by patients who return repeatedly to the emergency psychiatric services (i.e., frequent visitors). In addition to taking space and time from attending to all patients, the staff may feel antagonized by them, leading to poor rapport and negative expectations as well as over- and under-treatment.

Several studies have found higher rates of psychiatric hospitalization and lower access to resources to be risk factors for frequent visitors (cf. studies cited above). These same studies differ, however, on whether rates of substance abuse and psychotic disorders are risk factors. Unfortunately, the source of information in most of these studies has been medical records. Given the often strong and negative staff attitudes towards frequent visitors (Gerson & Bassuk, 1980; Ellison et al., 1986), data recorded may be biased or incomplete. Supporting the potential for bias, Gilfillan and colleagues (1998) showed that documentation, but not presence of substance abuse, differed by primary diagnosis. In addition, there is a bias towards documenting what payers will cover or exaggerating symptoms to aid in disposition. A supplementary source of information would be interviews with patients and their support system. The strong

attitudes by staff may also color their response to any proposed interventions. Knowledge of staff's attitudes is crucial to both interpreting results from chart reviews and preparing for possible interventions.

In addition, none of the studies to date has included the patients' perspective for seeking care at the emergency psychiatric services. Interviewing patients and their support system, if they have one, may help identify additional risk factors. These risk factors may suggest specific clinical interventions or system-based interventions (Goldfinger, et al., 1984). Such risk factors could include lack of support system, limited access to outpatient care and worse patient functioning in the areas of symptoms, living, social, financial and legal status.

Analyzing the temporal pattern of use can assist in supplementing results from chart reviews. A common clinical impression is that frequent visitors use the emergency psychiatric service for shelter during inclement weather but other temporal patterns may occur. The finding of increased emergency department visits and psychiatric hospitalizations during the first week of the month by individuals who receive disability checks has led to the proposal that a neutral third party should handle the disability checks for some individuals (Shaner et al., 1995; Grossman et al., 1997; Satel, 1995). Temporal patterns have also been used to assess emergency medicine department volume fluctuations with seasonal patterns, holiday and weather (Diehl et al., 1981; Holleman et al., 1996). One specific temporal pattern, the lunar cycle, appeared to be associated with medical and emergency psychiatric service volume (Lieber, 1978) but were refuted in more recent studies (Thompson & Adams, 1996; Byrnes & Kelly, 1992). No one has examined possible temporal patterns to emergency psychiatric services for frequent and infrequent visitors.

System-based interventions, such as assertive community treatment (Stein & Test, 1980) and crisis residential housing, require the commitment of resources and staff at a system level. To quantify the burden represented by frequent visitors beyond the percentage of emergency psychiatric services admissions attributed to them and to put it in a system perspective, the frequency of admissions to all healthcare facilities is needed.

Due to the lack of consensus on why some patients visit emergency psychiatric services more frequently, we aimed to address this issue locally and determine staff attitudes. The proposal submitted to the Ethel and James Flinn Family Foundation in 1999 and subsequently funded had the following three objectives:

*Objectives:*

1. To determine how patients with schizophrenia who frequently use emergency psychiatric services differ from patients with schizophrenia who use these same services infrequently.
2. To develop targeted programs sensitive to the psychological needs of people with schizophrenia and responsive to individuals who frequently use emergency psychiatric services.
3. To implement and evaluate the effectiveness of the targeted programs.

## Significance of this project

At the time of the proposal submission, budgets supporting care for patients with schizophrenia were constricting, and policy makers were looking at managed care for cost containment. One area of high priority for cost containment was limiting the use of expensive emergency services. Reimbursement for the high levels of expensive emergency services used by repeat admissions drew the already limited funds from the rest of the system designed to support outpatient clinics and rehabilitation efforts. Besides being expensive, emergency psychiatric services are an inappropriate level of care for ongoing management of schizophrenia. It is better to treat before crises occur. By identifying patients who utilize emergency psychiatric services frequently and their characteristics, sensitive and targeted programs can be developed and implemented with the goal of reducing use of emergency services and encouraging appropriate level of care for patients with schizophrenia. The success of such programs would allow the level of care for all patients at the Crisis Center to improve. The programs developed, however, must be evaluated using both process and outcome measures. Thus, this proposal sought to establish a knowledge base for development of a program, include a multidisciplinary team in designing a program that could be institutionalized, and evaluate the program with both process and outcome measures. The program developed by this grant could then be used at the Crisis Center to improve emergency psychiatric services for people with schizophrenia. The program could also be used in other urban areas with the potential to improve the emergency psychiatric services for the majority of people with schizophrenia in the US.

The subsequently funded grant addressed those three objectives, and in an extension of the grant, also addressed the generalizability of the finding to the state of Michigan. Below is a report summarizing our findings based upon the data collected under the Flinn Foundation funding. All studies were approved by Wayne State University Institutional Review Board.

**Objective 1: To determine how patients with schizophrenia who frequently use emergency psychiatric services differ from patients with schizophrenia who use these same services infrequently.**

To address this objective, preliminary analyses of patients' pattern of admission and staff beliefs on frequent users were assessed. Below is description of the methods used, results and discussion for these preliminary analyses, summarized from:

*Arfken CL, Zeman, LL, Yeager L, Mischel E, Amirsadri A: Frequent visitors to psychiatric emergency services: staff attitudes and temporal patterns. Journal of Behavioral Health Services and Research 2002, 29, 490-496.*

These findings have also been disseminated through presentations at the state and national levels:

*Arfken CL, Zeman L, Yeager L, Amirsadri A, Uhde TW: Staff perceptions of reasons motivating emergency psychiatric service utilization. Presented at the American Public Health Association, 2001.*

*Arfken, CL, Zeman L, Yeager L, White A: Frequent visitors to Screening and Crisis Center: Heavy Utilizers of Health care Resources. Presented at the quarterly meeting of the Michigan Association of Community Mental Health Boards, 2002.*

## Methods for staff survey and temporal trends

### Staff survey

In the anonymous one page survey, all staff members were asked to check common reasons why they believe "frequent users" come to the emergency psychiatric service. This process was then repeated for "infrequent users". No explicit definition of frequent or infrequent users was given as the purpose was to assess attitudes. The 24 listed reasons, arranged alphabetically to minimize response biases, were drawn from clinical observations and the literature with space for additional reasons. Questions on job classification, usual shift worked, and length of service were included to assess the influence of these factors on the staff responses. No effort, either implicit or explicit, was made to discourage discussion or consultation within staff on completing the survey. The participation rate was 75% for the 48 people on staff.

Due to some similarity within the 26 total reasons (24 listed reasons and 2 supplied other reasons), items were categorized post hoc to form fewer but broader reasons for visits. The 10 resulting categories were derived by group consensus of the

investigators and suggestions from the literature. In situations where consensus could not be achieved, the items remained separate categories.

The analysis consisted of tabulating the categorical reasons for visits and comparing the results for frequent users and infrequent users with McNemar's test. Categories were also examined across shifts, job classifications and job tenure using chi-square tests with Holm's adjustment for multiple comparisons (Aickin & Gensler, 1996). These factors were not further examined in multivariate analysis due to the small sample size.

### Temporal trends

Emergency psychiatric service admission records for calendar year 1999 were reviewed. During that year, the service had 10,178 admissions by 5,722 different individuals. For each of the 5,722 individuals, the number of admissions they had to the emergency psychiatric service during 1999 was summarized. Individuals with six or more admissions during 1999 were categorized as frequent visitors. The outcomes of 1) number of admissions for nonfrequent visitors and 2) number of admissions for frequent visitors were separately summarized for each day of the year.

Temporal trends were examined for calendar, meteorological and lunar cycle variables. The calendar variables were season, week (coded as first, last or other), day of week, and December. December was included as a separate variable to assess potential holiday effects acting either directly on the patients or indirectly through their influence on caregivers. The daily meteorological data, obtained from the national weather service, included mean, maximum, and minimum daily temperature, minimum and maximum daily relative humidity, mean daily wind speed, daily precipitation amount, and days with weather (e.g., fog, haze, thunder). Information on daily hours of sunlight was, unfortunately, not available for Detroit. The four phase lunar cycle, obtained from the Farmer's Almanac, were coded as full moon, new moon, first quarter or last quarter for the actual days listed as well as the two days preceding and following each event.

The temporal pattern analysis consisted of constructing two separate hierarchical linear regression models with the number of infrequent and frequent admissions for each day as the dependent measures. For each regression, three blocks of independent variables, consisting of calendar, lunar and weather variables, were then entered in separate blocks. Collinearity was a problem for the temperature variables (all  $r$ 's  $> .9$ ). To eliminate this problem, only minimum daily temperature was included because it had the highest correlation with both number of frequent admissions and number of infrequent admissions of all the temperature variables. Results were virtually unchanged when other temperature variables were substituted in the regression models. Curvilinear patterns and extreme deviations from the means were also examined but did not fit the data.

## Results of staff survey and temporal trends analyses

### Staff survey

The staff endorsed significantly more reasons for why frequent visitors came to the emergency psychiatric service than for infrequent visitors (means of 13.44 versus 6.64,  $t=5.94$ ,  $df=35$ ,  $p<.001$ ). Furthermore, 6 of the 10 categories had significantly higher staff endorsement for why frequent visitors come to the service than for infrequent visitors (see table below). A substantial majority of the staff (>75%) endorsed the following categories as reasons frequent visitors came to the service: difficulty accessing alternative services (94%), substance abuse (92%), basic needs (92%), wanting inpatient admission (86%), noncompliance with treatment plan (81%) and psychosocial problems (81%). For infrequent visitors, no category was endorsed by 75% or more of the staff. The most commonly endorsed categories for infrequent visitors coming to the service were psychosocial problems (69%) and symptoms/medical problems (67%). The percentage of staff endorsing any one category did not differ significantly across shifts, disciplines and length of service.

*Percentage of staff who endorsed item as reasons for frequent visitors and infrequent visitors to the Crisis Center*

Reason	Frequent visitors	Infrequent visitors
Difficulties accessing alternative services	94	53
Substance abuse	92	44
Basic needs	92	14
Wanted inpatient admission/shopping crisis centers	86	22
Patient noncompliance with treatment plan	81	44
Psychosocial problems	81	69
Symptoms/medical problems	75	67
External factors	61	31
Need medication	58	53
Acute event or problem	39	61

*NOTE: The percentages are derived from a sample of 36.*

*\* differences in paired proportions at  $p<.05$*

### Temporal pattern analysis

During 1999 the number of admissions per individual ranged from 1 to 60 with 3.5% of them having 6 or more admissions (i.e., frequent visitor). As a group, the 3.5% of patients who were categorized as frequent visitors accounted for 23% of all admissions during that year.

The number of admissions per day for the group of frequent visitors had a mean of  $6.4\pm 2.8$  (range 0 to 16, median of 6, and mode of 7) over the course of the year. For the group of infrequent visitors, the mean number of admissions per day was  $21.4\pm 5.3$  (range 7 to 42, median of 21, mode of 20). The number of daily admissions for the two groups had a small, positive correlation ( $r=.15$ ,  $p=.003$ ).

In the regression model for frequent visitors, the block of calendar variables was significant ( $F(12,346)=4.24, p<.001$ ) in explaining variation with no additional contribution of lunar cycle variables ( $F(4,342)=0.39, p=.81$ ). The weather variables showed a significant association with number of daily frequent visitor admissions ( $F(6,336)=3.32, p=.003$ ) even after controlling for calendar and lunar cycle variables (see table below). When the full model was examined, the significant individual variables associated with admission of frequent visitors were first week, last week, Monday, daily precipitation, and minimum daily temperature.

For infrequent visitors, only the block of calendar variables was significant in explaining variation ( $F(12,346)=5.87, p<.001$ ). Neither the lunar cycle nor weather had additional statistical contribution (see table below). The significant individual variables within the full model associated with admission of infrequent visitors were first week, last week, spring, summer, and Sunday.

*Results from temporal pattern on daily admission for frequent and infrequent visitors to emergency psychiatric services*

I. For frequent visitors (six or more admissions per calendar year)

	<b>R<sup>2</sup></b>
Block 1: Calendar Variables	.128***
Block 2: Lunar Variables	.004
Block 3: Weather Variables	.049**
Total Model	.181

II. For infrequent visitors (five or fewer admissions per calendar year)

	<b>R<sup>2</sup></b>
Block 1: Calendar Variables	.169***
Block 2: Lunar Variables	.014
Block 3: Weather Variables	.012
Total Model	.195

\*\* test of incremental change in  $R^2 p<.01$ , \*\*\* $p<.001$

Discussion of staff survey and temporal trends analyses

These two studies, staff survey and temporal pattern analysis, together contribute to understanding why frequent visitors utilize emergency psychiatric services in this urban location. The staff survey presents data supporting previous assertions that the staff

have strong attitudes towards frequent visitors and why they seek care. These strong attitudes spanned disciplines, shifts and length of service.

The staff did not report reasons that were different from those already reported by a reading of the literature. The staff, however, very clearly gave different reasons for why people come frequently versus infrequently to the crisis center. This finding underscores examining the frequent users as a distinct subset of patients in the crisis center. Their clinical impression echoed common themes of difficulty accessing alternative care, basic needs, substance abuse, wanting inpatient admission, and noncompliance with treatment plan. The similarity of reasons across shifts, tenure in the crisis center, and job classifications would suggest either similar clinical acumen, obvious reasons for why patients come to the crisis center, common new and ongoing training of staff, common source of information (i.e., opinion leader in the crisis center) or an organizational culture which reinforces certain beliefs (Schein, 1992).

The staff gave more responses to reasons for why people come frequently to the crisis center than why they come infrequently. It is not clear if staff believe that there are many different profiles of people coming frequently or if they believe that the people coming frequently have many co-existing different reasons. The reasons endorsed painted a composite picture of disadvantaged individuals with unmet basic needs who lack support and alternatives to emergency psychiatric services.

The staff also endorsed external events, in particular weather and day of the week/month, as reasons for frequent visits by patients. This endorsement was partially supported by the temporal pattern analysis. Contrary to the reporting by the majority of the staff, calendar effects were also important for infrequent visitors. The discrepancy may be due to individuals' differing definitions of frequent visitors or staff attention focused on the frequent visitors with less attention on the infrequent visitors. The finding reinforces the need for interventions to ameliorate this problem. As already suggested, third-party designee of disability checks may be considered. None of the admitted patients during 1999 had neutral third-party designees for disability checks.

Consistent with the findings from the staff survey, the pattern of admissions for frequent visitors was associated with meteorological variables. Specifically, the association was for an increase in frequent visitor admissions with both higher minimum temperature and more precipitation. No differences by season were noted, suggesting that length of day or amount of sunlight is not the underlying effect. Such associations may suggest the use of emergency psychiatric services by these patients for shelter, a finding also consistent with the results of the staff survey. Possible reasons for increased frequent visitor admission volume with increasing temperature instead of decreasing temperature include more limited mobility in cold weather and increased activity and potential for contact or conflict with other people during warmer weather. Anecdotally, clinicians remarked that people may be less likely to be pushed out of a house during cold weather.

The survey was limited in that it did not explicitly define frequent visitors. The lack of definition in the staff survey could have artificially increased the variation in the frequency response and blurred common themes. Another limitation was that the staff and temporal patterns were studied in one urban area and may not be generalizable to

other areas. Cities located in different climates or with different funding sources or service configuration may find different associations.

The staff survey and temporal pattern analysis contribute to understanding the context for frequent use of emergency psychiatric services. The staff's consistent endorsement of specific reasons for frequent use can be used as a starting point for other investigations but it also may introduce some bias in studies based solely on data in medical charts. Attempts to design or monitor changes in use of emergency psychiatric services must be cognizant of these contextual factors. Ideally, proposed changes would be consistent with existing staff attitudes. Understanding staff attitudes and temporal patterns should be conducted in complement with patient and family interviews as part of a comprehensive evaluation of emergency psychiatric services.

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After the staff survey and temporal analyses had been completed, the objective of determining risk factors for frequent admissions or visits to the emergency psychiatric service could be directly addressed. We conducted a case-control study of frequent visitors to emergency psychiatric services using a combination of interviews with patients and support system, and chart reviews at the emergency psychiatric services and in community facilities. In addition, we estimated the additional increase in current healthcare financial charges contributed by frequent visitors to emergency psychiatric services. Below is description of the methods used, results and discussion for this component of the overall study, summarized from:

*Arfken CL, Zeman LL, Yeager L, White A, Mischel E, Amirsadri A: Case-Control Study of Frequent Visitors to an Urban Psychiatric Emergency Service. Psychiatric Services 2004, 55, 295-301.*

These findings have also been disseminated through presentations at the state, national and international levels:

*Arfken CL, Zeman L, Yeager L, Amirsadri A, Uhde TW: Risk factors for frequent utilization of emergency psychiatric services. Presented at the American Public Health Association, 2001.*

*Arfken, CL, Zeman L, Yeager L, White A: Frequent visitors to Screening and Crisis Center: Heavy Utilizers of Health care Resources. Presented at the quarterly meeting of the Michigan Association of Community Mental Health Board, 2002.*

*Arfken CL, Zeman L: Frequent visitors to an urban crisis center. Presented at the Institute on Psychiatric Services, 2002.*

*Arfken CL, Zeman LL, Amirsadri A, Mischel E, Yeager L, White A, Roth S: Frequent Visitors to Emergency Psychiatric Services. Presented at the International Center of Mental Health Policy and Economics, 2003.*

## Methods for determining risk factors

### Sample

Defining “frequent visitors” has historically varied by investigators from two or more visits in two years (Spooren et al., 1997) to six or more visits in six months (Purdie et al., 1981). Our previous investigations found no natural break in the distribution of the number of emergency psychiatric services visits in a year. For this study, we were motivated by the clinical imperative imposed by the primary funding agency of reducing the number of people who come back six or more times to the emergency psychiatric services. Based upon that clinical mandate, we defined cases as patients having six or more emergency psychiatric services visits in the 12 months prior to the index visit (n=74). Controls were defined as patients having five or fewer emergency psychiatric services visits in the 12 months prior to the index visit (n=74). To address the robustness of the findings, we post-hoc defined a smaller group of controls with only one emergency psychiatric service visit in the previous 12 months.

To avoid bias in reason for visit by day of the month (e.g., more drug-related visits during the first week of the month, (Shaner et al., 1995)), the sampling strategy was to recruit evenly over days of the month. The first patients discharged from both morning and afternoon shifts for each day of the week for each week of the month (e.g., first Sunday of the first week) were approached for recruitment. This sampling strategy yielded 4 subjects per day of the week for each week of the month. If the person had already been recruited or declined to participate, the next discharged patient with the same frequency of previous visits would be recruited. Recruitment from the evening shift was attempted, but the visits (less than half the volume of other shifts) and participation rates (less than 50%) were below acceptable levels. Additional recruitment during morning and evening shifts was then equally spaced over the shifts, calendar days and weeks. Recruitment was initiated in June 2000 and ended in December 2000. Participation rate was 84.6% and did not differ between groups. Those who did refuse were more likely to have been under petition or certification (77.8% (n=21) versus 45.9% (n=68),  $\chi^2(df=1)=9.26$ ,  $p=.002$ ).

### Measures

The in-person interview occurred in a private area of the emergency psychiatric service after final disposition, regardless if the patient was to be admitted to an inpatient hospital, placed in a residential facility, or released to the community. The interview was developed with the active participation of the emergency psychiatric service clinical staff

and focused on identifying risk factors that may suggest emergency psychiatric services or system-wide interventions. The structured interview lasted approximately one hour and included demographics, social support systems, levels of functioning, service history, medication use, self-reported reasons for seeking emergency psychiatric service (both open-ended and 23 pre-defined reasons), and measures evaluating patient comprehension (subscale of the Weschler Adult Intelligence Scale – Third Edition), logical memory (subscale of the Weschler Memory Scale Third Edition), and symptoms (BASIS-32, Eisen et al., 1994). Full written consent was obtained for each patient prior to the start of the interview. Each patient was also asked to provide the name and contact information for an individual (family or friend) who knew them well. At the end of the interview, each patient was asked to sign a release of medical information form to allow review of medical charts. Each patient received a \$20 gift certificate from a nearby grocery chain for participating.

All facilities listed on the release form were contacted for type of service and dates of service provided to the individuals. The facilities included the most common providers in the area (pre-listed) and those specifically identified by the patients in response to structured questions on sources of care. For financial charges, we used estimates derived from average current financial charges for levels of care at the hospital in which the emergency psychiatric service is located. This facility was the predominate source of care for both groups. The charges are inclusive of facility, professional, laboratory and medication fees. The emergency medicine fee, however, is exclusive of trauma charges.

The individual (family or friend) identified by each patient was contacted by telephone. A brief telephone interview consisting of the Family Burden Interview Schedule - Short Form (FBIS-SF, Tesslet & Gamache, 1994) supplemented by open-ended questions on involvement in care was attempted with the individual identified by each patient. The purpose of the interview was to obtain information on support received and extent of burden on the support system. It was not to verify information received from the patient.

## Data Analysis

Bivariate analysis was conducted using t-tests and chi-square tests. Factors identified in bivariate analysis as significantly different ( $p < .05$ ) between groups were then entered into multivariate logistic regression models with stepwise selection. This analytical strategy identifies independent risk factors with the odds ratios (OR) summarizing the magnitude of the association. The analysis was repeated with the patient having only one emergency psychiatric service visit in the previous 12 months.

## Results of risk factor analysis

The frequent visitors had a range of 6 to 99 emergency psychiatric visits in the prior year with a median of 9 visits. The infrequent visitors, by definition, had a range of 1 to 5 emergency psychiatric visits in the prior year with 42% having one visit. Over 90% ( $n=132$ ) of both groups had public insurance.

From chart records, frequent visitors were more likely to be documented as noncompliant by the clinician ( $\chi^2(df=1)=5.92, p=.015$ ) and less likely to have been brought under petition or certification ( $\chi^2(df=1)=10.88, p<.001$ ). The infrequent visitors were more likely to be admitted to an inpatient hospital ( $\chi^2(df=1)=6.85, p=.009$ ). There was no difference between the groups, however, in the rate of any substance abuse diagnosis (either primary or secondary) listed in the chart records for the index visit.

From patient interviews, frequent visitors were more likely to report they went to the emergency psychiatric service because it is a convenient location ( $\chi^2(df=1)=9.60, p=.002$ ) where they do not need appointments ( $\chi^2(df=1)=10.19, p<.001$ ) but can receive shelter ( $\chi^2(df=1)=13.91, p<.001$ ) and medication ( $\chi^2(df=1)=5.92, p=.015$ ). Frequent visitors were more likely to be homeless or to have spent time during the past year in an institution ( $\chi^2(df=2)=31.10, p<.001$ ). Although there was no difference in reporting of any drug or alcohol consumption in the three days prior to admission, frequent visitors were more likely to report drinking as opposed to taking drugs during that time ( $\chi^2(df=1)=4.70, p=.03$ ). There were no differences between the groups on the BASIS-32, logical memory or comprehension. Frequent visitors were more likely to receive SSDI ( $\chi^2(df=1)=7.11, p=.008$ ) but less likely to have a partner provide them with money ( $\chi^2(df=1)=6.98, p=.005$ ).

*Demographic and Clinical Characteristics*

Variable	Frequent Visitors (n=74)	Infrequent Visitors (n=74)	OR	95% CI
Mean age (standard deviation)	40.6 (8.2)	38.5(10.4)	1.02	0.99 – 1.06
Male**	74%	51%	2.74	1.37 – 5.48
African American**	96%	82%	5.04	1.37 – 18.53
Discharged to inpatient hospital**	30%	51%	0.41	0.21 – 0.81
Diagnosed with psychosis	70%	55%	1.90	0.97 – 3.75
Diagnosed with substance abuse	35%	32%	1.13	0.57 – 2.23
Brought under petition or certification***	32%	60%	0.33	0.17 – 0.64
Chemical restraints used	10%	3%	3.76	0.76 – 18.75
Physical restraints used	8%	12%	0.64	0.22 – 1.89
Noncompliance noted*	43%	24%	2.37	1.17 – 4.79
Brought by ambulance /police*	24%	41%	0.47	0.23 – 0.95
Living Situation past 12 months***				
Homeless	60%	26%	9.73	4.06 – 23.33
Institution (prison etc)	27%	18%	6.46	2.42 – 17.24
Lived in a home	14%	57%	1.00	reference
Problem with criminal justice system	19%	19%	0.98	0.43 – 2.24
Self-reported reason for seeking care				
Symptoms	81%	78%	1.18	0.53 – 2.64
Convenient location**	47%	23%	3.01	1.48 – 6.11
Don't need appointment***	28%	8%	4.49	1.69 – 11.92
Always come here*	41%	24%	2.21	1.05 – 4.29

Need shelter***	28%	5%	6.93	2.25 – 21.41
Needed medication*	43%	24%	2.37	1.17 – 4.79
Attempted suicide*	3%	12%	0.20	0.04 - .96
Self-reported substance use in past 3 days				
Alcohol*	41%	24%	2.17	1.07 – 4.40
Marijuana*	3%	14%	0.18	0.04 – 0.85
Any drug*	12%	27%	0.38	0.16 – 0.90
Drug or alcohol	44%	39%	1.21	0.63 – 2.34
Self-reported health care utilization, past 12 months				
Admission to psychiatric hospital***	66%	26%	5.67	2.79 – 11.54
Been to other emergency psychiatric service*	22%	8%	3.13	1.15 – 8.51
Been to a drug-related program or referral agency	37%	24%	1.79	0.88 – 3.64
Referred to publicly funded clinic*	46%	28%	2.15	1.09 – 4.24
Referred to Crisis Residential***	53%	10%	10.67	4.33 – 26.30
Self-reported reason for missing treatment visits, past 12 months				
“Other things to do”*	22%	8%	3.13	1.15 – 8.51
Psychiatrist canceled**	15%	3%	6.29	1.34 – 29.44
Didn’t agree with treatment plan**	19%	5%	5.52	1.52 – 20.13

\*p<.05, \*\* p<01, \*\*\* p<.001

The frequent visitors were more likely to report during the past 12 months being admitted to a psychiatric hospital ( $\chi^2(df=1)=24.49$ ,  $p<.001$ ), visiting another emergency psychiatric service ( $\chi^2(df=1)=5.34$ ,  $p=.021$ ) and being referred to a publicly funded clinic ( $\chi^2(df=1)=4.89$ ,  $p=.027$ ). Although there was no difference in self-reported attendance with outpatient therapist or psychiatrist, the frequent visitors were more likely to endorse they had “other things to do” ( $\chi^2(df=1)=5.34$ ,  $p=.021$ ), the psychiatrists cancelled visits ( $\chi^2(df=1)=6.83$ ,  $p=.009$ ) or they did not agree with the treatment plan ( $\chi^2(df=1)=8.04$ ,  $p=.005$ ) as reasons why they had missed visits

Frequent visitors were less likely to give a name of an individual (family or friend) who knew them well (35.1% (n=26) versus 56.8% (n=42),  $\chi^2(df=1)=6.96$ ,  $p=.008$ ). There was no difference between groups, however, in the contact or participation rate of the individual once a name was provided. None of the FBIS-SF subscales (i.e., objective assistance in daily living, subjective assistance in daily living, objective supervision, subjective supervision, impact and worry) were significantly different between the groups. Few family or friends responded to the open-ended questions. Of responses offered, individuals named by infrequent visitors were more

likely to report speaking with emergency psychiatric service staff (22% (n=8) versus 4% (n=1),  $\chi^2(df=1)=3.94$ ,  $p=.047$ ). Very few (8% (n=3) of the individuals named by the infrequent visitors and 0% of the individuals named by the frequent visitors) mentioned family support in assisting the patient.

Because the risk factors listed above and others identified in the table above may be related to each other, they were entered into multivariate analysis to identify independent risk factors (see table below). Those identified were self-report of psychiatric hospitalization in past 12 months (OR=3.54), self-reported need medication as reason for seeking care (OR=2.80), homeless (OR=7.24) or other non-home environment (OR=3.84), and not giving a name of a friend or family for interview (OR=2.40). Results from the analysis using the subset of patients with only one emergency psychiatric service visit in the previous year were virtually identical, except lack of significance for not giving a name of a friend or family to interview. Results from the analysis substituting documented psychiatric hospitalization for self-reported psychiatric hospitalization were virtually identical except lack of significance for not giving a name of a friend or family for interview.

*Results of the Multivariate Model*

Variable	Odds Ratio	95% CI
Self-report of hospitalization, past 12 months**	3.54	1.56 – 8.04
Did NOT give name of friend or family for interview*	2.40	1.08 – 5.35
Self-reported reason for going to Crisis Center:		
Needed medications*	2.80	1.20 – 6.51
Living situation, past 12 months***		
Homeless	7.24	2.73 – 19.20
Institution (prison, etc.)	3.84	1.26 – 11.72
Lived in a home	1.00	reference

\*  $p<.05$ , \*\*  $p<.01$ , \*\*\*  $p<.001$

From the medical chart reviews, we examined healthcare utilization in the 12 months prior to the index visit and utilization in the following 3 months (see table below). In the prior 12 months, frequent visitors were more likely than infrequent visitors to have any inpatient admission ( $\chi^2(df=1)=12.84$ ,  $p<.001$ ), outpatient treatment ( $\chi^2(df=1)=6.63$ ,  $p=.01$ ), crisis residential stay ( $\chi^2(df=1)=9.98$ ,  $p=.002$ ), and emergency department visit ( $\chi^2(df=1)=8.60$ ,  $p=.003$ ). In addition, in the following three months, frequent visitors were more likely to have an emergency department visit ( $\chi^2(df=1)=6.46$ ,  $p=.01$ ), and another emergency psychiatric service visit ( $\chi^2(df=1)=20.58$ ,  $p<.001$ ).

*Health Service Utilization*

Variable	Frequent visitors	Infrequent visitors	Odds Ratio	95% CI
Any inpatient admission: past 12 months***	54% (n=33)	23% (n=15)	3.93	1.83 – 8.45
Any inpatient mental health admission: past 12 months**	54% (n=33)	19% (n=12)	5.21	2.33 – 11.63
Median total number of days for those with inpatient admission, mental health	14.00 days	12.50 days		
Any outpatient treatment: past 12 months**	31% (n=19)	12% (n=8)	.31	.12 - .78
Crisis residential: past 12 months**	21% (n=13)	3% (n=2)	8.53	1.84 – 39.61
post 3 months	15% (n=9)	6% (n=4)	2.64	.77 – 9.07
Any emergency department: past 12 months**	71% (n=43)	45% (n=29)	2.97	1.42 – 6.19
post 3 months**	43% (n=26)	22% (n=14)	2.71	1.24 – 5.90
Any emergency psychiatric service: post 3 months***	75% (n=45)	34% (n=22)	5.73	2.63 – 12.49

*Notes: “past 12 months” and “post 3 months” are referenced to the day of the interview. Number of responses varied depending if the participant signed the release and availability of records.*

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The frequent visitors had a median healthcare charge at inpatient and outpatient behavioral health service and emergency medical and psychiatric service over the prior 12 months of \$19,500. In contrast, the infrequent visitors had a median charge of \$3,300. The excess healthcare charges attributed to being a frequent visitor at these services was \$16,200. Given this estimate, the system could receive healthcare charges from 5.9 infrequent visitor for each frequent visitor covered.

Discussion of determining risk factors for frequent visitors

This study found frequent visitors to an urban emergency psychiatric service have fewer resources, such as homes and support systems, than infrequent visitors. From the patients’ perspective, the frequent visitors’ reliance on the emergency psychiatric service was entirely rational—they value it for its location, lack of required appointment, and provision of food, shelter and medications. From the patient identified support persons’ perspective, the frequent visitors did not pose a burden to them. From the healthcare system’s perspective, frequent visitors were expensive with one frequent visitor incurring almost as much financial charges as six infrequent visitors.

The goal of the study was to suggest interventions, either clinic-based or system-based, to address the high utilization of the emergency psychiatric service. Based upon the results, focus on the support person does not appear promising as a way to reduce high emergency psychiatric service utilization in this urban area. Likewise, enhancing access to outpatient clinics does not appear promising. The identified risk factor of needing medication suggests a brief, focused emergency psychiatric service intervention directed at medications for these patients. This intervention would minimize the burden to the emergency psychiatric service and should result in lower financial charges to the system. Such an intervention needs to be evaluated, however, to avoid adverse impact on quality of care and cost-offsets. It appears that system-based interventions may be most promising to address the patients' lack of resources and low financial functioning. One such intervention, assertive community treatment (Stein & Test, 1980), may be most appropriate although recent trials with homeless individuals are not as promising (Hornstra et al., 1993). It is noteworthy that very few patients in this study were identified to have assertive community treatment by either interview or chart review.

The study was limited to patients who visit the emergency psychiatric service and by the length of the assessment. We know nothing about patients who do not visit the emergency psychiatric service. They may be composed of patients not receiving the care they need or those who are successful in preventing crises and/or deterioration in functioning. Inclusion of these individuals in the future would be very informative in designing system-based interventions. Our decision to have a relatively short interview precluded an independent assessment of psychiatric diagnoses. We also did not have a drug and alcohol screen due to concerns about reducing the level of participation (Schiller et al., 2000). We focused on high participation rates and were pleasantly surprised by the levels achieved. The patients did not, however, seem to be motivated to answer the cognitive functioning questions or expand on open-ended questions, such as reasons for their noncompliance with previous treatment plans.

Despite these limitations, the findings were much appreciated by the emergency psychiatric service clinical staff and its funding agency. The risk factors of homelessness, self-reported or documented recent hospitalization, and self-reported seeking medications as reason for seeking care paint a picture of resource-poor mentally ill individuals who rely on the emergency psychiatric service for support. The findings of higher utilization of other healthcare facilities reinforce the need for the system as a whole to address the needs of frequent visitors.

In conclusion, given that the emergency psychiatry serves as the primary entry point for inpatient and crisis residential admissions, the higher utilization of these services amongst the frequent visitors makes sense. However, it is less intuitive that the frequent visitors also are more likely to use outpatient services. Together these findings suggest, despite receiving more services, frequent visitors to the emergency psychiatric service do not appear to have their needs met. These individuals are not only using a disproportionate share of emergency psychiatry resources but of other resources as well. For the system, it is imperative to carefully evaluate the quality, appropriateness, and

effectiveness of available services to better target the needs of the frequent visitors. It may be that frequent visitors would be better served by nontraditional services that comprehensively address needs for food and shelter as well as medication.

**Objective 2: To develop targeted programs sensitive to the psychological needs of people with schizophrenia and responsive to individuals who frequently use emergency psychiatric services.**

To address this objective, we decided to communicate the results to the Crisis Center staff in small groups. Three such presentations occurred. The staff appreciated the study and agreed with the conclusions. They, however, did not voice any targeted program to implement. We then decided to meet with the staff individually to discuss possible solutions. Every licensed staff member was interviewed individually. A compilation of the comments was then circulated with the investigators and staff, followed by numerous meeting to discuss potential interventions. Due to the high utilization of services, we decided to focus on interventions that:

- 1) would *save* the system money
- 2) was *indicated* as needed by data from objective and
- 3) was *feasible* to implement within the Crisis Center

As one of the predictors for excess use was *need for medication* and the Crisis Center has started to introduce reduced billing for focused medication review visits, we decided to evaluate this intervention.

This treatment strategy has been used successfully elsewhere in the country, for example, Washtenaw County, but not to our knowledge in urban areas. Less densely populated areas have few outpatient clinics and clinicians. The clinicians seen during emergencies would be the same ones they see for ongoing care. There is a continuity of care in those areas.

In an urban area serving more outpatient clinics, this intervention or targeted program carries the risk that patients will discontinue outpatient appointments. To address this concern, Dr. Amirsadri met with the clinic directors of centrally located CMHC's to discuss enhanced linkages and to emphasize that the medication review only visits are to complement and not supplement their services.

Thus, it was decided the targeted program was enhanced coordination of care with the outpatient clinics and focused medication review visits as needed in the Crisis Center. The outcomes measured would be consumer satisfaction, provider satisfaction and health service utilization. It was hypothesized that the intervention would increase satisfaction of both consumers and providers and decrease health service utilization.

**Objective 3: To implement and evaluate the effectiveness of the targeted programs.**

To address this objective, an evaluation of focused medication reviews in the Crisis Center was conducted. Below is the description of the methods used, results and discussion for these analyses, summarized from:

*Lackman LL, Arfken CL: Adding a lower level of care to psychiatric emergency services. Psychiatric Services (submitted).*

These findings have been disseminated through presentations at the national level:

*Arfken CL, Zeman L, Yeager L, Temple A, Roth SL: Impact of less costly, focused reviews in emergency psychiatric service. Presented at the American Public Health Association, 2003.*

*Arfken CL, Zeman L: Medication reviews in an urban emergency psychiatric service. Presented at the Institute on Psychiatric Services, 2003.*

Methods for evaluating the effectiveness of the targeted program (focused medication review)

A focused medication review (nursing assessment and medication management by a psychiatrist) contrasts with comprehensive services which include a nursing assessment, substance abuse evaluation, psycho-social assessment, full assessment by a psychiatrist, and laboratory work and medication management as warranted. The study occurred in urban Detroit at a stand-alone emergency psychiatric service staffed by psychiatrists, nurses, social workers and technicians.

Patient Level data

We interviewed patients after a focused medication review. The emergency psychiatric service clinicians identified patients appropriate for the focused medication review based on symptom presentation and/or prior knowledge of the patient. All patients who received the focused medication review were eligible for this study. The trained research assistants recruited potential participants when the patients were cleared for discharge from the emergency psychiatric service. None of the participants were discharged to an inpatient facility. Informed consent was obtained prior to the interview. Participants (n=82) were recruited between January 3, 2002 and June 18, 2002 (participation rate = 96%). Additional consent was obtained from 77 patients (94%) to review records from providers they had used and the community mental health agency responsible for insuring the majority of this population.

To assess patient satisfaction, open-ended questions and a 13-item Likert scale instrument were developed. Each item ranged from 1=highly dissatisfied to 4=highly satisfied, and the resulting scale had an internal reliability of .89.

#### Provider Level data

Surveys were distributed to clinicians at the emergency psychiatric service and two nearby outpatient clinics, (referred to as Clinic A and Clinic B). The two clinics are the primary outpatient mental health service providers to the publicly-funded population presenting to the emergency psychiatric service. The surveys included a question about provider awareness of the focused medication review and open-ended questions on their reactions to it. In addition, Likert-type scales on perceptions of its impact on quality of care (1=better and 3=worse) and workload (1=much lighter and 4=much heavier) were included along with an eight-item measure of clinician satisfaction (internal reliability of 0.94).

#### Payer Level

We examined the healthcare utilization of the participants after the focused medication review. To control for propensity to seek care, we also examined healthcare utilization prior to the focused medication review. Medical records from community providers, and the administrative database of the community mental health funding agency were abstracted by the research assistants. The resulting data were summarized as number of visits/admissions per month in the 12 months prior to and the number of visits/admissions per month following the focused medication review. The follow-up date was truncated at October 1, 2003 as the payer system was reorganized, potentially affecting referral and admission patterns. Mean follow-up time for the participants was 7.3 months (SD=1.8).

#### Statistical analysis

Descriptive statistics were used to summarize the impact on the patients. The impact on the providers at the three sites was contrasted using chi-square analysis for categorical variables and analysis of variance models for continuous models with Dunnett's test for post hoc comparisons. Only those clinicians who were aware of the service were included in the analysis on satisfaction, quality of care and workload.

Impact on the payer was summarized as healthcare utilization rates per month to control for different lengths of follow-up. Costs were then estimated using community based charges of \$800 for each day of inpatient admission, \$1100 for comprehensive visits, \$150 for focused medication reviews and \$100 for outpatient visits. Due to limitations in the administrative databases examined, it was not always clear if a visit was comprehensive or focused medication review. To address this limitation, we present *upper* limits on estimates of costs by assuming all visits were comprehensive following the introduction of medication reviews and *lower* limits on estimates of costs by assuming all emergency psychiatric visits were focused medication reviews. The actual

index visit was not included in the analysis. Differences in utilization between time periods were analyzed using Wilcoxon Ranked Sum tests and confirmed with the sign tests. Due to the skewed distributions of costs, a natural logarithmic transformation was used prior to using paired t-tests for assessing changes in costs.

## Results

Patients ranged in age from 18 to 59 with a mean age of 42.1 (SD=8.6). The patients reflected the overall emergency psychiatric service population (7): 76 patients were African American (93%) and 55 were men (67%). At the focused medication review visit, 56 patients (68%) were diagnosed with psychotic disorders, 19 patients (23%) had substance use disorders. Based on medical records, all of the patients had public funding. The median number of emergency psychiatric visits during the 12 months prior to the focused medication review was 4 and ranged from 1 to 33.

### Patient Level Results

The mean score on the 13-item patient satisfaction questionnaire was 3.56, (S.D. of .54) and a range of 1.23 to 4.0 (with 4 being perfectly satisfied). Only 11 patients (13%) scored a 4 on the total scale, indicating minimal ceiling effect and ability of the patients to assess satisfaction. When asked to identify the best thing about the visit, 35 patients (43%) indicated the providers, 20 patients (24%) indicated getting medication, and 16 patients (20%) did not indicate anything. For the worst thing about the visit, 57 patients (69%) did not indicate anything, but 7 patients (9%) indicated a long wait and 6 patients (7%) indicated the providers. When asked how the care could be improved, 57 patients (70%) did not indicate anything. However, 8 patients (10%) indicated that they wanted hospitalization or shelter from the visit. None of these latter patients was hospitalized during the next 30 days.

### Provider Level Results

The awareness of the focused medication review level of care varied from 29 emergency psychiatric service clinicians (97%) to 10 clinicians (28%) and 9 clinicians (27%) at the two outpatient clinics ( $\chi^2=40.57$ ,  $df=2$ ,  $p<.001$ ).

Of those clinicians who were aware of the new level of care, there was significant differences in satisfaction between sites ( $F(2,35)=3.80$ ,  $p=.032$ ). Emergency psychiatric clinicians had a higher mean satisfaction score ( $M= 2.90$ ,  $SD=0.57$ ) than those clinicians at Clinic B ( $M= 2.24$ ,  $SD=0.89$ ). Clinicians at Clinic A had a mean score of 2.79 ( $SD=0.25$ ). emergency psychiatric service clinicians also reported lighter workloads as a result of the focused medication review ( $M=2.36$ ,  $SD=0.86$ ) than clinicians at either of the two clinics, (Clinic A:  $M=3.50$ ,  $SD=0.58$  and Clinic B:  $M=3.50$ ,  $SD=0.84$ ;  $F(2,32)=6.67$ ,  $p=.004$ ).

Similar differences occurred in perceptions of the impact on quality of care. Emergency psychiatric service clinicians believed it improved quality of care ( $M=1.20$ ,

SD=0.58) while the Clinic B clinicians were less sure (Clinic B: M=2.33, SD=1.00 and Clinic A: M=1.56, SD=0.88;  $F(2,40)=7.67, p=.002$ ).

### Payer Level Results

The patients in this sample significantly increased their rate of seeking care at outpatient clinics from a median of 0.08 per month to 0.45 per month (see table below). However, inpatient utilization decreased, rather than increased, after the focused medication review ( $p<.001$ ). There was no change in the rate of seeking care at any emergency psychiatric service.

*Median monthly rate of healthcare utilization and costs prior to and after a focused medication review*

	Prior to medication review visit	After the medication review visit
Inpatient admission per month**	0 (22 patients had an admission)	0 (4 patients had an admission)
Emergency psychiatric services visits per month	.34	.31
Outpatient visits per month**	.08	.45
Costs for healthcare utilization	\$727	
Costs for healthcare utilization, upper limit		\$387
Costs for healthcare utilization, lower limit		\$129

\*\*  $p<.01$  using Wilcoxon Ranked Sum test

*Lower limit: all emergency psychiatric visits in post-index period were charged as comprehensive visits. Upper limit: all emergency psychiatric visits in post-index period were charged as focused medication review visits*

The median estimated cost per patient per month prior to the focused medication review was \$727. The upper estimate for median cost per patient per month (assuming all post-index emergency psychiatric visits were comprehensive), was \$387 following the focused medication review ( $t=10.48, df=76, p<.0001$ ). In contrast, the lower estimate for median cost per patient per month (assuming all post-index emergency psychiatric visits to be focused medication reviews) was \$129 ( $t=3.24, df=76, p=.002$ ). The net median savings to the payer, therefore, was between \$340 and \$598 per patient per month.

### Discussion

A more efficient service must first prove its acceptability. In this case, adding a lower level of care in an urban emergency psychiatric service – focused medication reviews only vs. comprehensive services – was met with mixed success by the various stakeholders. The medication review was well received by patients and the clinicians at the emergency psychiatric service but not by clinicians at outpatient clinics.

Although efforts were made by the emergency psychiatric service to inform community providers of the new level of care, relatively few outpatient clinicians were aware of the intervention. While the subsequent analysis was restricted to clinicians who were aware of the new level of care, the outpatient providers' negative perceptions of it could in part be attributed to limited knowledge of the intervention and its goals or to reluctance to change (Corrigan et al., 1997). Alternatively, there was some anecdotal evidence that outpatient providers perceived the patients receiving the focused medication review in the emergency psychiatric service would be absent from the outpatient setting longer. They believed this change would result in a need to re-evaluate the patients when they returned to their settings, increasing related paperwork. However, the review of medical records and claims in the community mental health administrative database did not support this perception, with patients actually increasing their rate of outpatient visits per month. There was also no evidence to support the concern that the new level of care in the emergency psychiatric service would "steal" patients from the outpatient clinics.

A small sub-group of patients who received the focused medication reviews reported they wanted hospitalization or shelter. This preference may be construed as the emergency psychiatric service under-detecting problems that may ultimately result in inpatient admissions. However, the data show a significant decrease in hospitalization as opposed to any increase in the rate following the focused medication review, suggesting the emergency psychiatric service can identify patients who do not need comprehensive services. This finding echoes findings in emergency medicine when patients were triaged to a lower level of care (Washington et al., 2000).

While patients receiving the focused medication review level of care increased outpatient services after the focused medication review compared to their prior history, there was no change in utilization of the emergency psychiatric service. No increased "shopping" for inpatient admission through emergency services at other facilities materialized.

The outcome measures following the focused medication review are limited to service utilization based on claims data and do not include direct assessment of symptoms and functioning at follow-up. Most importantly, the one group pre-post design of this study does not control for changes due to temporal trends. A more rigorous clinical trial to test the intervention was considered premature by the clinicians and payers.

Despite the support for the focused medication review or lower level of care in the emergency psychiatric service, it was discontinued in favor of less efficient comprehensive psychiatric emergency services to all patients regardless of clinical justification. This discontinuation underscores a second issue of changing to a more efficient level of service, that of sustainability. We encountered a complicated interaction of payer and hospital factors that lead to the discontinuation. Efforts by emergency psychiatric service clinicians to create new billing codes for community mental health services reflective of lower levels of care in the emergency psychiatric service were

unsuccessful. Furthermore, other local third-party payers rejected claims for the focused medication review level of care on the basis that medication reviews can be provided in an outpatient setting and thus are not covered at the emergency psychiatric service even though the patients continue to access care at the emergency psychiatric service.

## Conclusions

This study demonstrates how structural changes in the emergency psychiatric service to improve efficiency can result in patient and provider satisfaction without decreasing perceived quality of care or resulting in worse outcomes as measured by follow-up hospitalization rates. The initial concerns about substituting focused services for comprehensive assessments were not supported by the data. The study, however, also highlights the multiple system factors that need to be accounted for when attempting to alter long-standing protocols, involving multiple stakeholders with sometimes competing agendas.

Unfortunately, the findings confirm previous conclusions (Haraden & Resar, 2004) that inefficiencies in the hospital system will continue as long as costs are covered. It also typifies a recent report in the Harvard Business Review that states payers, health plans, providers, physicians and others in the system often work against each other rather than together to enhance efficiencies in care (Porter & Teisberg, 2004).

**Objective 4: To evaluate the potential generalizability of the targeted program (focused medication review).**

To address this objective, a survey of all publicly funded emergency psychiatric services in Michigan was conducted. Below is the description of the methods used, results and discussion for these analyses, summarized from:

*Arfken CL, Zeman LL: Impact of statewide changes on local emergency psychiatric services. Psychiatric Services (submitted).*

These findings have been disseminated through a presentation at the national level:

*Arfken CL, Zeman L: Impact of statewide changes on local emergency psychiatric services. Presented at the annual meeting of the Institute on Psychiatric Services, 2004.*

Methods for evaluating the potential generalizability of the focused medication review  
Survey

We devised a survey to be completed by administrators. The survey covers ownership, structure, services offered, local patient demographics, services offered, local challenges, areas of change and whether the changes were positive or negative. A list of 11 services (i.e., make referrals, evaluations, crisis intervention, administer medications, medication management, substance abuse screening, residential facilities, mobile teams, dispense medications, detoxification, and holding areas) were listed with an option for the administrator to add an additional service.

A paper survey was mailed to administrators of emergency psychiatric service throughout the state of Michigan. The administrators were identified by calling each CMHA in the state and requesting the names of all the emergency psychiatric service administrators in their area. Altogether 60 surveys were sent out with a cover letter explaining the purpose of the study and reimbursement for their time to complete the survey, and a stamped self-addressed envelope for returning the completed survey. The administrator had the option of responding by mailing the completed survey, faxing the survey or verbally by telephone. A second mailing was followed by telephone calls to those administrators who had not responded. As some administrators are responsible for multiple areas, we counted responses by administrator. Altogether, we received completed questionnaires from 30 or 50% of the administrators. No bias was observed for geographic distribution, population size, density and median county income between those counties with an administrator responding and those counties where the administrator did not respond.

## Results

According to the 30 reporting administrations, the facilities were operated by a community mental health agency (69% or n=22), private non-profit agency (14% or n=4), healthcare system (14% or n=4) and private for-profit agency (3% or n=1). The administrators identified their service as being located in an outpatient clinic (40% or n=12), hospital (30% or 9) or a free-standing building (23% or n=7).

To characterize the patients each administrator serves, we asked method of payment, age group, and diagnoses. The percentage of patients whose care is covered by Medicaid varied from 10% - 85% with a mean of 50%. Other sources were uninsured (mean of 20% across responses), Medicare (mean = 13%) and self-pay (mean = 2%). The mean proportion of patients who are pediatric was 17% and 10% for geriatric. The percentage of patients who have a psychotic disorder varied from 2 – 80% (mean = 31%). The percentage of patients who have a substance abuse disorder varied from 5 – 75% (mean = 32%).

An additional patient characteristic that may affect treatment is the resources available to patients. We asked the percentage of patients who arrive with family, guardian or who are homeless. The percentage of patients who arrive with family varied from 5 – 60% (mean of 26% across responses), arrive with guardian varied from 0 – 30% (mean = 8%) and are homeless varied from 0 – 40% (mean = 12%).

To measure complexity of services, we tallied the number of services the facilities offer. From a list of 11 distinct services (and an option for a 12<sup>th</sup> “other”), the range was 1 – 10 services with a mean of 6.5 (see table below). The most commonly offered service was making referral (97%) followed by evaluations (93%) and crisis intervention (90%). Least common services offered were detoxification (17%), or provide holding areas (13%).

### *Services Offered*

	(n=30)
Make referrals	97%
Evaluations	93%
Crisis intervention	90%
Administer medications	67%
Medication management	60%
Substance abuse screening	50%
Residential facilities	47%
Mobile teams	47%
Dispense medications	43%
Detoxification	17%
Holding area	13%

As documented above, the facilities service distinct populations with a different array of services. To assess the challenges they face, we asked them to estimate the difficulty associated with each of seven different items (see table below). The challenge

with the highest mean score was lack of substance abuse treatment facilities (mean of 3.5 on a scale from 1=no difficulty to 5=major difficulty).

*Local difficulties*

	Mean score, n=30
Lack of substance abuse treatment facilities	3.47
Transportation	3.03
Lack of providers	2.77
Sharing information across systems	2.72
Distance to providers	2.57
Hiring / retaining staff	2.43
Regulatory requirements for inpatient admission	1.97

*All items scored from 1=no difficulty to 5=major difficulty*

The administrators were then asked what changes in coordination they had that dated to the change in the state’s organization (see table below). Out of a list of eight areas that may require coordination, 77% said there was a change in administration. Overall, the administrators reported a mean of 2.7 changes with a range of 0 to 7.

*Changes in coordination of care concurrent with states’ reorganization*

	(n=30)
Inpatient	47%
Outpatient	33%
Crisis residential	30%
Case management	27%
Substance abuse treatment	27%
Other shelter	23%
Faith-based organizations	7%
Administrative burden	77%

The administrators were then asked to rate the direction on the change in administrative burden on a scale from 1 to 5. For those who reported that there was a change in burden, 10% rated the change as “very negative” and 0% as “very positive”. However, 23% of the administrators reported neither a negative nor positive change with only 10% reporting a somewhat positive change. Adding together those who indicated no change in administrative burden and those who felt the impact was neither negative nor positive resulted in a total of 46% of the facilities.

We then examined the association between changes in administrative burden and the case-mix and indicators of the organization. There was no association with population size, density, median household income or percentage of patients covered by private insurance. There was, however, a clear association with distance to provider and administrative burden. As the burden increased, the challenge of distance increased problems (M=3.15 vs M=2.13, t=2.48, df=27, p=.02). In addition, of those facilities who

faced an increase in administrative burden, they were had a higher mean percentage of patients with substance abuse problems ( $M=41.4$  vs  $M=25.3$ ,  $t=2.18$ ,  $df=25$ ,  $p=.039$ ).

## Discussion

The change in organization of the publicly financed system was experienced by the administrators of the emergency psychiatric services. It, however, was experienced differently across the system. The only measure that was consistently reported as a problem was administrative burden. Of those who felt a change in administrative burden, however, 10% perceived it as a positive change and 23% as a neutral change in burden.

The perception of the impact was not related to the organizational measures we had (ownership, location, complexity) or to population and population income. There was a variety of emergency psychiatric service configurations, offering a wide mix of services. The only case-mix variable that was associated with perception of the impact was distance to other providers (more of a challenge was associated with increased administrative burden) and percentage of patients with substance abuse problems (more patients was associated with increased administrative burden).

Although the study is limited by the response rate, perception of the administrator and multiple comparisons, it is possible that the distance to other providers increases the difficulty in coordinating care as required by the change. It also makes it more difficult to plan treatment follow-up from the emergency psychiatric service when providers are located at a distance. This does not mean that less populated regions experienced the change more acutely as population size or population density was not related to their perception of the change.

As the intent of the change was to enhance integration of care, it was not surprising that administrative burden was increased for those facilities serving more patients with substance abuse problems. Administrative burden also increased as percentage of uninsured and percentage of patients with psychotic disorders increased. These findings held when excluding the most populous county, meaning the difficulty was not due to one county's implementation. As such, a more challenging case-mix in terms of insurance or diagnoses or co-occurring disorders resulted in more challenges in administrative burden.

We did not ask how the administrators handled the burden or what steps were taken to avoid burden. Such leadership lessons would be useful in managing future changes. Nor do we have evidence that staff or patient load changed. Anecdotally, the administrators did ask us to pass along any tips we heard as they were trying to do more with less money.

These findings confirm that changes to the organization of mental health care will be felt in the emergency psychiatric service and planning is needed to minimize the stress on the service. Although this was a case study of one state's changes, it offers lessons to

other states contemplating changes. The findings support surveillance of emergency psychiatric services to monitor the impact of future changes to systems.

The results also confirm that focused medication reviews can be generalized to approximately half of the psychiatric emergency services in the state. The other facilities rely primarily on mobile teams and would not be able to implement the level of care.

## Summary of Project

The funding provided by the Ethel and James Flinn Family Foundation were used to determine staff beliefs, temporal patterns of emergency psychiatric service utilization, risk factors and costs associated with high utilization of emergency psychiatric services, utility of a focused medication review to address high utilization and the generalizability of the findings. We found that there were markedly uniform staff attitudes about high utilization of emergency psychiatric services and predictable temporal patterns of that utilization. Such information contributes to understanding the context for frequent use of emergency psychiatric services. The staff's consistent endorsement of specific reasons for frequent use can be used as a starting point for other investigations but it also may introduce bias in studies based solely on data in medical charts. Attempts to design or monitor changes in use of emergency psychiatric services must be cognizant of these contextual factors.

We also found frequent visitors to an urban emergency psychiatric service have fewer resources, such as homes and support systems, than infrequent visitors. From the patients' perspective, the frequent visitors' reliance on the emergency psychiatric service was entirely rational—they value it for its location, lack of required appointment, and provision of food, shelter and medications. Independent risk factors were homelessness, needing medication, recent history of psychiatric hospitalization and not giving the name of a family or friend to be interviewed. From the patient identified support persons' perspective, the frequent visitors did not pose a burden to them. From the healthcare system's perspective, frequent visitors were expensive with one frequent visitor incurring almost as much financial charges as six infrequent visitors on a yearly basis.

Identifying risk factors is the first step to devising optimal interventions, either clinic-based or system-based, to address the high utilization of the emergency psychiatric service. Based upon our results, focus on the support person does not appear promising as a way to reduce high emergency psychiatric service utilization in this urban area. Likewise, enhancing access to outpatient clinics does not appear promising. The identified risk factor of needing medication suggests a brief, focused emergency psychiatric service intervention directed at medications for these patients. This intervention would minimize the burden to the emergency psychiatric service and should result in lower financial charges to the system. System-based interventions may also be promising to address the patients' lack of resources and low financial functioning.

The evaluation of a focused medication review level of care showed patient and provider satisfaction without decreasing perceived quality of care or worsening outcomes as measured by follow-up hospitalization rates. Concerns about substituting focused services for comprehensive assessments were not supported by the data. The evaluation, however, highlighted the difficulty in changing a system with multiple stakeholders holding competing agendas.

If emergency psychiatric focused medication review level of care could be adopted by systems, they would be appropriate for approximately half of the emergency

psychiatric services in the state of Michigan. These facilities serve the majority of the state's population. The other facilities rely primarily on mobile teams. For them, our clinic-based intervention is not feasible. System-based interventions would be appropriate for locations in the state of Michigan.

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## List of Publications

- Arfken CL, Zeman, LL, Yeager L, Mischel E, Amirsadri A: Frequent visitors to psychiatric emergency services: staff attitudes and temporal patterns. *Journal of Behavioral Health Services and Research* 2002, 29, 490-496
- Arfken CL, Zeman LL, Yeager, L, White A, Mischel E, Amirsadri A: Case-Control Study of Frequent Visitors to an Urban Psychiatric Emergency Service. *Psychiatric Services* 2004, 55, 295-301.
- Arfken CL, Zeman L, Yeager A, MacDonald A, Amirsadri A: Drug abuse in patients using emergency psychiatric services. Presented at the College on Problems of Drug Dependence, 2001.
- Arfken CL, Zeman L, Yeager L, Amirsadri A, Uhde TW: Risk factors for frequent utilization of emergency psychiatric services. Presented at the American Public Health Association, 2001.
- Arfken CL, Zeman L, Yeager L, Amirsadri A, Uhde TW: Staff perceptions of reasons motivating emergency psychiatric service utilization. Presented at the American Public Health Association, 2001.
- Arfken, CL, Zeman L, Yeager L, White A: Frequent visitors to Screening and Crisis Center: Heavy Utilizers of Health care Resources. Presented at the quarterly meeting of the Michigan Association of Community Mental Health Boards.
- Arfken CL, Zeman L: Frequent visitors to an urban crisis center. Presented at the Institute on Psychiatric Services, 2002.
- Arfken CL, Zeman L, Yeager L, Temple A, Roth SL: Impact of less costly, focused reviews in emergency psychiatric service. Presented at the American Public Health Association, 2003.
- Arfken CL, Zeman L: Medication reviews in an urban emergency psychiatric service. Presented at the Institute on Psychiatric Services, 2003

Arfken CL, Zeman LL, Amirsadri A, Mischel E, Yeager L, White A, Roth S: Frequent Visitors to Emergency Psychiatric Services. Presented at the International Center of Mental Health Policy and Economics, 2003.

Arfken CL, Zeman L: Impact of statewide changes on local emergency psychiatric services. Presented at the annual meeting of the Institute on Psychiatric Services, 2004

Publications under review

Zeman LL, Arfken CL: Adding a lower level of care to psychiatric emergency services. Psychiatric Services (submitted).

Arfken CL, Zeman LL: Impact of statewide changes on local emergency psychiatric services. Journal of Behavioral Health Services and Research (submitted).