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First-year follow-up of the Psychiatric Emergency Response Team (PAM) in Stockholm County, Sweden: A descriptive study

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ABSTRACT

In the spring of 2015 a project named PAM (Psykiatrisk akut mobilitet, i.e., Psychiatric Emergency Response Team) started in Stockholm, Sweden. The main purpose of PAM is to respond to emergency calls regarding persons in severe mental health or behavioral distress, with focus towards patients with acute risk of suicidal behavior. In Sweden these emergency cases are traditionally handled by the police, though suggestions have been made to involve trained health professionals, thus improving the quality of care provided, as well as minimizing stigmatization of patients with psychiatric problems. The PAM vehicle is staffed with two specialized psychiatry nurses and a paramedic, who often collaborate with police, ambulance and rescue services. This article is an evaluation of the first year of the project. Our objective was to quantify certain parameters regarding patients, response time and cooperation with other departments. Data were collected from medical records, the police department, the emergency call center and from a logbook kept by the PAM personnel. During the first year, PAM was requested 1,580 times, and had 1,254 cases attended to which is an average of 4.3 requests and 3.4 cases per day. 1,036 individuals of all ages were attended to, and 96 of them had contact more than once. One third of all attended cases resulted in no further action after a psychiatric assessment and sometimes crisis intervention had been made on site.

KEYWORDS

Mental disorders; emergency service; pilot project; referral and consultation; crisis intervention team; suicide prevention; psychiatric emergency

Background

Stockholm County consists of a population of 2.2 million. The region is growing with approximately 35,000 people per year [1]. The county has one psychiatric emergency department (PED) located in Central Stockholm providing a 24/7 psychiatric emergency service. The PED handled close

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to 20,000 patient consultations in 2015. There are also numerous mobile psychiatric teams throughout the region. These usually operate from 8 am to 10 pm, handling scheduled visits. However, they have no capacity to respond to emergency situations, like an ongoing suicide attempt. These situations, involving a person in severe mental health or behavioral crisis, are traditionally handled by the police department and often result in a police transport to the PED. In 2011, a pilot project was conducted in Stockholm County during two weeks, with a nurse specialized in psychiatry accompanying a police vehicle. The purpose was to have a first line response to acute mental illness with high psychiatric competence, and suicidal attempts were highly prioritized [2]. The pilot generated a positive response from patients, police, and health care staff. Similar projects have been conducted in several countries with an overall positive response [3–6]. A Norwegian model is well established in Bergen and has spread to several other cities in Norway [7]. In the United States, there is a widespread and well-documented model for educating police officers to provide first line response to calls involving a person with mental illness, called Crisis Intervention Teams [8–12]. There are also publications of an Australian model named PACER, which describes a partnership trial between mental health and emergency services offering alternative response pathways with improved outcomes in care [13, 14].

In the spring of 2015, a new project started in Stockholm County, which has been given funds to run a prehospital psychiatric operation from a vehicle during two years. It is named Psychiatric Emergency Response Team (PAM; see Figure 1) and is operational from 3 P.M. to 1 A.M. every day. The main purpose is to respond to emergency calls regarding persons in severe mental health or behavioral distress, with suicide prevention as the main priority. The vehicle bears a close resemblance to an ambulance and is equipped with

Figure 1. Psychiatric Emergency Response Team (PAM) vehicle (exterior).

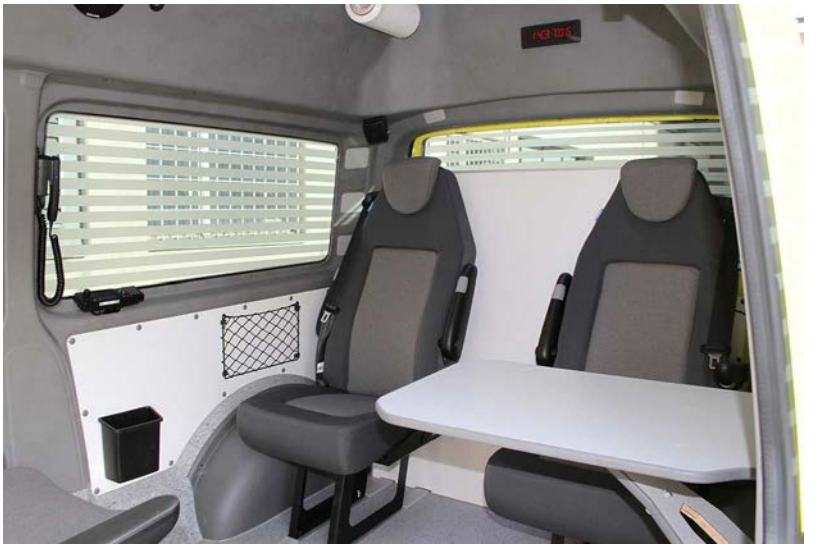

Figure 2. PAM vehicle (interior).

emergency vehicle lighting, defibrillator, and computer with mobile access to medical records and essential medication. It is staffed by two nurses specialized in psychiatry and a paramedic. The interior (Figure 2) is designed to be able to provide both assessment and transportation of psychiatric patients, with four rotatable seats omitting the stretcher.

A PAM response is initialized by a call from the public to the Emergency Call Center (ECC) in Stockholm County. An emergency call operator receives the call and identifies a mental health related crisis suitable for PAM. There is no exclusion regarding age. The operator then puts an index on every call and thereby assesses a suitable priority level for the case from a three-grade priority level scale. Priority 1 means immediate action, and emergency vehicle lights are turned on during turn out. Suicide threats or attempts are typically assigned highest priority level. Cases with low priority (level 3) are usually pure transportation cases.

Every person that is a registered resident of Sweden gets a personal identification number (similar to a social security number). During missions, the staff can wirelessly access the patient's journal through this identification number. All the public hospitals in Stockholm County share the same system for medical records. This enables the staff to receive medical background before seeing the patient. Assessment often takes place in the PAM vehicle. The staff can ask for a voluntary alcohol breath test when it seems relevant. It is common with cooperation from police, ambulance, rescue service, and the somatic emergency departments, and a possibility to communicate with the psychiatrist on call in the PED. If the patient is violent or agitated, police will sometimes stay and assist during assessment and transportation.

A patient in need of further assessment and inpatient care will be transported by PAM and admitted to the appropriate emergency department (psychiatric, somatic, or substance use ED). In Stockholm County, PED is separated from substance abuse ED, the latter traditionally handling drug induced psychosis and acute alcohol-related medical conditions like abstinence and alcohol induced delirium. The PAM staff can also decide to hand the case over to paramedics from the common ambulance services if the medical condition requires this, or leave the patient without further immediate action.

Objective

The project PAM represents a novel approach to prehospital emergency psychiatry care and assessment. This is an evaluation of the first year of the project. Our objective was to quantify certain parameters regarding response times, cooperation with other departments, and patient related data such as the ratio of admission to inpatient care after assessment by PAM.

Methods

Data were collected during the first year of the project, between April 1, 2015 and March 31, 2016. Every event that generated a contact with PAM is included in the study. Data are combined from different sources including medical records, Stockholm County Police department, Stockholm County ECC, and the independent PAM logbook. Patient-related data such as age, gender, residence, previous contact with PAM, suicide risk assessment, alcohol breath test, and admission (including voluntary or involuntary psychiatric care) were collected from medical records. Vehicle response time and emergency call index were collected from the ECC. Data regarding course of action after assessment and cooperation with police, paramedics, or rescue service were collected from the PAM logbook. Police records contain de-identified data only and are used to overview the total amount of emergency calls in Stockholm County regarding suicide attempts and mental illness that required police involvement during the evaluation period.

A study register has been established containing data regarding the patients. The register is stored on secure servers under Stockholm Health Care Services, Stockholm County Council. The material has been de-identified during processing and presentation of the data. The study was approved by the Ethical Review Board at Karolinska Institutet (2014/1816-31/5).

Results

Table 1 presents data collected from Stockholm County ECC. Out of 1,580 requests to PAM, 80% resulted in attended cases, and 97% of all requests had high or medium priority (Priority level 1 or 2). The five most common indexes

Table 1. Data from ECC for PAM during the first year.

General	
Requests	1,580
Attended cases	1,254
Average requests per day	4.3
Average cases per day	3.4
Priority	
1 (High)	51%
2 (Medium)	46%
3 (Low)	3%
Emergency call center index	
Severe suicide threat	36%
Suspicion of severe psychiatric illness	25%
Acute crisis	18%
Severe suicide attempt	6%
Suspicion of intoxication/overdose	3%
Other	12%
Average respons times	
Request to arrival	20 min
Request to arrival, prio 1	15 min
Total time per job	1 hour 15 min

for PAM requests are listed in Table 1, and represent 1,392 of all requests. The remaining 188 cases are divided into 50 different indexes and are not specified here for practical reasons. Response time is estimated from the time of requesting PAM from ECC to the time when PAM reaches the patient. Total time is calculated from request to when PAM indicates case cleared.

The Police Department in Stockholm County registered a total of 3,271 emergency cases regarding suicide (communication/attempt) and 1,128 cases regarding acute mental illness/distress during the first year of PAM. This is an average of 9.3 cases a day, and the highest incidence occurs between 9 and 10 P.M.

Table 2 presents data from medical records. Forty percent of all cases led to inpatient care within 24 hours, not including somatic care and only including adults. A third of these admissions were involuntary at least at the initial stage of hospital care.

A total of 136 alcohol breath tests were performed, of which 77% were positive (> 0.2‰ or approximately > 5.5 mmol/L). The average test result was 1.37‰; approximately the same value is the absolute upper limit for admission to PED according to local guidelines (a patient under significant influence of alcohol is usually presented with the option of sobering up in an adjacent dependent care department before a valid psychiatric assessment can be performed at the PED).

PAM admitted 333 adult patients to the PED, of which 259 (78%) were further admitted to inpatient care. The corresponding data are 239 patients to substance use ED and of these 211 (88%) were admitted to substance use inpatient care.

Table 2. Baseline characteristics of patient cohort handled by PAM.

Demographics*	
Number of individuals	1,036
Male	43%
Female	56%
Sex unknown	0.4%
<18 years	9%
18–29 years	27%
30–39 years	18%
40–49 years	14%
50–59 years	15%
60 + years	16%
Age unknown	0.7%
Contact with PAM	
One occasion	940
Two occasions	56
Three occasions or more	40
Admissions**	
Total	40%
Psychiatry inpatient care	22%
Volontary	58%
Involontary	42%
Substance use inpatient care	18%
Volontary	82%
Involontary	18%
Suicide risk assessment	
Minimal	10%
To some degree	56%
High	16%
Very high	1%
Unknown	17%
Alcohol breath test	
Occasion of performed test	11%
Positive tests (> 0.2%)	77%
Average test result	1.37%

*A person is included in the demographic statistics only once, even if they have had multiple contacts with PAM.
**Inpatient care within 24 hours after contact with PAM, excluding persons <18 years.

A total of 1,036 unique individuals were in contact with PAM during its first year of service. Several patients had repeated contacts with PAM. The youngest person in contact with PAM was 5 years old and the oldest, 100 years old.

Table 3 presents data from the logbook recorded by the PAM staff. It shows that cooperation with other departments were common, mainly ambulance (55%) and police (49%), but rescue services were also involved in some cases (7%). Only 24% of the cases were handled without other services involved.

There were multiple possible outcomes regarding immediate course of action for a patient in contact with PAM. In one third of all cases, the patient was left after assessment without further action, usually at home. This could, however, include some kind of arrangement regarding follow-up. Some of the patients were transported to less common destinations, such as dependent

Table 3. Outcome of cases handled by PAM.

Outcomes	
No action	34%
Admitted to psychiatry ED*	25%
Admitted to substance use ED	18%
Job overtaken by paramedics	10%
Admitted to psychiatric child care	4%
Completed suicide at arrival	0.3% (N = 4)
Other	8%
Unknown	2%
Cooperation with other departments	
Paramedics	55%
Police	49%
Rescue service	7%
No involvement	24%

*Emergency department.

care emergency department for youths (<18 years of age). The PAM logbook only specifies the five most common outcomes (Table 3) and the rest is sorted as "other" with the addition of four cases of completed suicide at arrival. In 24 cases, the outcome could not be identified.

Discussion

The prehospital care and assessment of patients with acute psychiatric distress or suicidality is traditionally handled by the police in Sweden. The PAM represents a novel approach to deliver advanced medical assessment of psychiatric patients in a prehospital setting. This article describes the first year of the PAM project in Stockholm County.

PAM has attended 1,036 unique individuals, of which 96 have had repeated contact. The baseline data regarding demographics in Table 2 only includes any individual ones, regardless of the number of contacts. The ratio of admission to either psychiatric or dependent inpatient care was 40% after contact with PAM. The data only includes adults, however. This is merely due to technical difficulties obtaining reliable data from the psychiatric child care clinics, but will hopefully be fixed in a future follow up. Inpatient care in a medical or surgical clinic is not included, and we might underestimate the actual amount of psychiatric admissions. One example could be an intentional intoxication requiring medical monitoring for more than 24 hours, before being referred to a psychiatric clinic. This would not be included in the statistics, which is limited to admissions within 24 hours after contact with PAM.

The indexing presented in Table 1 shows what an emergency call operator assesses as most relevant during a call, and does not necessarily represent what is actually the case when PAM assesses the patient. It should, however, give a rough estimation of different occurrences. Suicide risk assessment was not documented under the right heading in the medical journal in 215 of

1,254 cases. Although perhaps documented under other headings, suicide risk assessment could not be extracted in these cases (17%). The outcome of completed suicide at arrival is based upon reports from the PAM personnel, and might underestimate the total number. For example, there are a few occasions with witness reports of a person about to jump of a bridge or likewise, and the action is completed before PAM or other department gets there. On these rare occasions, either the witness becomes a patient and gets crisis intervention, or the job is cancelled and left over to the rescue department. These events are not included in the statistics of completed suicide at arrival.

The PED serving Stockholm County noticed a drop in visits the month PAM was initiated, an average of 2.4 fewer patients per day compared to the month before. However noticeable, it is of unclear significance and any possible correlation to PAM can be random. The major workload for PAM occurs between 9 and 10 P.M., which correlates well with police records of cases regarding suicidal behavior. PAM also has a large peak of requests at 3 P.M., which might be the result of the ECC accumulating cases suitable for PAM during hours when not in service. This might indicate the need of expanding the service. The police rarely have resources to perform the kind of interventions that PAM does, and often ends up bringing a person to a psychiatric emergency department regardless of whether the mental condition requires this or not. Of the 333 adult patients whom PAM brought to the PED, 78% were further admitted to inpatient care. It would be of future interest to follow up the patients brought to PED by the police, especially regarding the ratio of further admission of police transportations to inpatient care as this outcome somewhat might indicate the relevance of the transportations.

There are no pretrial data collected, and no control group available to compare with. The data presented are purely descriptive. Based on anecdotal feedback to the authors, a general opinion seems to be that the PAM project is well-received amongst health care staff, police, and patients. There is, however, no data available to confirm this, but similar anecdotal experiences are described regarding the Australian PACER model [13]. There is also an ongoing study with a qualitative approach and comprehensive interviews with a selection of patients, regarding their experience of contact with PAM. The stigma associated with mental health crisis [15, 16] might be reduced if first line of contact is with educated psychiatric personnel, rather than police officers [17, 18].

In conclusion, this article describes quantitative data of the first year of the PAM project in Stockholm County. This is a unique prehospital service that provides the psychiatric patients with a high quality prehospital assessment and reduces the workload of the police department as well as the ambulance services. It contributes to reducing the stigmatization of psychiatric illness. More studies are called for to investigate patient experience as well as possible economical benefits.

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