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Risk factors for return visits and rehospitalizations to the child emergency psychiatric unit: a retrospective study over 2 years at Saint-Etienne University Hospital

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Risk factors for return visits and rehospitalizations to the child emergency psychiatric unit: a retrospective study over 2 years at Saint-Etienne University Hospital

Abstract

Purpose: This retrospective study aimed to achieve a better understanding of risk factors leading children and adolescents hospitalized in an emergency psychiatric ward to return visits, and to propose preventive devices. **Method:** From January 2, 2010 through February 29, 2012, 180 children and adolescents younger than 17 years were hospitalized in a total of 261 stays in the emergency psychiatric ward of University hospital of Saint-Etienne (France). We assessed clinical and sociodemographic characteristics of these patients and traced any of their return visits to the same unit through December 31, 2012. Risk factors for patients' repeated visits were calculated using multivariate analysis, and the cumulative incidence of returns using the Kaplan-Meier method for censored data. We used confidence interval of relative risk, considering 0.05 to reflect significance. **Results:** Over the 2 years of the study, 77 (42.8%) of the 180 patients revisited the emergency psychiatric ward; 62 (80, 7%) of these required further hospitalizations. Multivariate analysis linked the patients' psychiatric history (RR = 2.5) and pursuit of vocational education (RR = 4) with the risk of return. Return visits rose from 27.2% at 6 months to 41.2% at 2 years. **Conclusion:** Knowledge of risk factors would allow implementation of secondary or tertiary preventive devices. Students could undergo early screening of psychiatric pathologies using mobile screening teams which would save money, avoid hospitalizations, and when necessary, facilitate both hospitalization and return visits.

Keywords: adolescent; psychiatry; emergency unit; hospitalization; risk factors; returns

Introduction

In 2003 the French National Institute of Health and Medical Research (INSERM) reported that one in eight children in France had a mental disorder [1], and although French infant and adolescent psychiatry arose as a medical discipline in the mid-1930s, challenges remain that prevent most of these young people from obtaining adequate treatment. Issues include a limited number of available hospitals with specialized care, hospital stays which are not long enough for proper care to be given, and prolonged waiting periods for attention in ambulatory care facilities [2-7] which lead to increased consultations in general emergency wards as families and institutions recognize no viable alternative [8,9]. Most such consultations involve adolescents, usually defined as no older than 15 years and 3 months [10-12], who are in a time of psychological readjustment. Their symptoms may be acute, and attempted suicide is common. Suicide is the second most frequent cause of death among teenagers in France [13,14]. In addition, uncertainty regarding the paediatric or adult status of these individuals can delay timely admission in emergency wards. Generally, a psychiatrist should be on the emergency staff to quickly assess possible situations within his or her expertise, initiate appropriate treatment, and support the efforts of other caregivers [15-19]. When hospitalization is required, child psychiatric wards are often crowded, or paediatric departments are reluctant to accept this at-risk population. Although the Hospital of Saint-Etienne University established a 12-bed psychiatric emergency ward in 1979, less than 1% of its patients have been

young people [20]. The addition of a 4-bed unit dedicated to young patients in February 2010 permitted greater accessibility of specialized attention for this population. A child psychiatrist interviews the young patient and his/her parents, and the young person can generally be admitted to the hospital after no more than one hour and a half. Hospitalization offers these young patients a stability “protective shield” and relief from their suffering and allows for implementation of therapeutic strategies [21,22]. Located near the emergency pediatric department and in the same building as the general emergency department, the facility is open 24 hours a day, 7 days a week, and 365 days a year.

We retrospectively evaluated characteristics of patients who paid multiple visits to emergency facilities for consultation and/or hospitalization after an index hospitalization, and propose possible strategies to avoid this burden. We assessed risk factors for patients’ repeated visits to our psychiatric emergency unit. Additionally, we examined comprehensive data of all these patients.

Materials and Methods

We evaluated medical records of all 180 patients younger than 17 years who were hospitalized at Saint Etienne either in our 4-bed pediatric unit or adult beds requisitioned by the hospital’s executive director from January 2, 2010 through February 29, 2012 and traced any return visits of these individuals to the psychiatric emergency unit through December 31, 2012. We did not include patients who underwent simple consultation in the unit or who were hospitalized outside the emergency department. We recorded age, sex, place of residence, parental marital status, number of years of education, and results of psychosocial prescription as well their personal and familial history of somatic, psychiatric, or psychosocial problems, rape or sexual abuse, and previous general therapies or psychiatry-related treatments, and existence of criminal record. For each hospitalization, we recorded the reason for and date of admission, referring person, type of hospitalization, interval between consultation and hospitalization, requisitioned bed, receipt of social or legal assistance, receipt of drug treatment, requirement for physical restraint, and adverse events related to the hospitalization.

In addition, we recorded the ICD-10 classification of mental and behavioral disorders using the blue book and known diagnoses, therapeutic orientation at discharge, whether they returned home, were hospitalized in the psychiatric ward, underwent psychiatric consultation/s, or received other therapies. If they returned to the psychiatric emergency ward, we noted whether it was for consultation and/or hospitalization and the date of the visit.

We anonymized data in an Excel spreadsheet and calculated statistics using Statistical Analysis System (SAS) software (Version 9.2, SAS Institute, Inc., Cary, North Carolina, USA). Descriptive analyses of qualitative variables concerning patients and hospitalizations were presented as percentages and frequencies and those of quantitative variables, as averages and standard deviations. Analyses of sociodemographic data took into account only the first stay, and analyses of hospitalization considered all stays. We calculated the cumulative incidence of returns using the Kaplan-Meier method for censored data, using the time between discharge from the hospital and the first return to the emergency psychiatric ward. We assessed the degree of association by

confidence interval of relative risk, considering 0.05 to reflect significance. The ethics committee of the hospital accepted the protocol (n°: IRBN082019/CHUSTE)

Results

Figure 1 (insert) presents flow charts of the patients' first stay and return visits to the emergency psychiatric ward. Over the two years of the study, 180 children and adolescents were hospitalized in a total of 340 stays (180 first stays and 160 rehospitalisations) and 71 consultations; 77 (42.8%) of the 180 revisited the emergency psychiatric ward, and 62 (80, 5%) of these required further hospitalizations.

Table 1 (insert) summarizes the patients' sociodemographic data. The 180 patients comprised slightly more girls (n = 97) than boys (n = 84), and almost two-thirds (n = 115) were between 15 and 17 years of age. Most attended regular schools. Half of the patients had frequently undergone court-ordered psychosocial prescription. Asthma and epilepsy were the primary somatic problems. Psychiatric histories were not detailed, but psychotropic treatments at the time of hospitalization were : no treatment : n= 81 (45 %) ; antipsychotic drugs : n= 49 (27,2 %) ; antidepressant drugs : n = 11 (6%) associated 2 times to antipsychotics ; benzodiazepines : n= 35 (19,4%) associated 8 times to antidepressant ; mood stabilisers : n= 6 (3,3 %) ; psychostimulants : n = 4 (2,2%).

The main diagnoses were as follows: pervasive developmental disorders: 33 (18,33%); depressive episodes: 26 (14,44%); specific personality disorders: 20 (11,11%); adjustment disorders: 12 (6,7 %); mixed disorders of conduct and emotions: 10 (5,5%); mental and behavioral disorders due to use of alcohol, opioids, cannabis and substances: 9 (5 %); conduct disorders confined to the family context : 7 (3 ,9 %); schizophrenia: 6 (3,3%); acute and transient psychotic disorders: 6 (3,3 %); other disorders of psychological development: 5 (2,8 %); Unspecified disorder of psychological development: 4 (2, 2%) ; Dissociative disorders: 3 (1,7%); Phobic anxiety disorder of childhood: 3 (1,7 %) ; Generalized anxiety disorder: 2 (1,1 %) ;_Acute stress reaction: 1 (0, 5%) ; Anorexia nervosa : 1 (0,5 %) ;_Hyperkinetic disorder: 1 (0,5%) ; Mild mental retardation: 1 (0,5 %) ; missing or not reliable: 30 (17%).

Parents of 100 children were separated, and family psychiatric history included, sometimes cumulatively, alcoholism and delusional and personality disorders. Domestic violence against the wife and children were notable.

Table 2 (insert) delineates the reasons for patients' hospitalizations, shows the reasons about the patients' hospital stays and orientation after discharge. About half were referred for behavioural disorders, 46% by physicians (treating psychiatrist, hospital services, and other physicians) and 42% by family members or social workers. Patients were admitted mainly on Mondays and Wednesdays, more than 25 in March, May, and October and fewer than 20 in July and December. Application for admission was signed by parents in 89.2% of cases and implemented into the form of an interim placement order in 7%, or at the request of an official representative of competent public authorities in the remaining cases. Admission followed consultation on the same day in 83% of the cases.

Hospitalizations averaged 7.2 days (1 to 39 days), and staffs were authorized to apply physical restraint if deemed necessary. Pervasive developmental, behavioural disorders, personality, and mood disorders accounted for 43, 88 % of diagnoses. Most patients returned home, but one-fifth were transferred to psychiatric services.

Risk factors for return to psychiatric emergency services

Table 3 (insert) shows frequency of returns to the emergency psychiatric unit according to patients' sociodemographic characteristics. Average age did not differ between those who visited the psychiatric emergency unit once or multiple times. Univariate analysis associated risk factors for return visit/s with vocational educational level, but with only borderline statistical significance. Clinical variables with associated risk of return included the patient's psychiatric history, hospitalization or consultation in a psychiatric adolescent unit, initial treatment with antipsychotic medication/s and treatment at discharge, court-ordered placement, and hospitalization motivated by suicide attempt. Multivariate analysis significantly linked the patients' psychiatric history (RR = 2.5) and pursuit of vocational education (RR = 4) with the risk of return.

Cumulative incidence

Figure 2 (insert) shows cumulative incidence for first returns to psychiatric emergencies in function of time. The mean duration of observation was 750 days in the groups with and without return without significant difference. Return visits rose from 27.2% at 6 months to 41.2% at 2 years, and the cumulative incidence of returns with hospitalization was about 10% higher than for single consultations at 6 months, one year, and two years. Table (4)

Discussion

The rate of hospitalization among our patients was roughly comparable to those found in the literature [20,23-25], although we encountered more female patients [26-36]. Admissions were more frequent on Mondays and Wednesdays, less frequent on weekends, and showed seasonal peaks in the spring and autumn, findings in accordance with those of other reports [33,35,36]. Nevertheless, some [2,37,33,34,38] have reported more frequent admissions in the evening and on weekends. Fewer of our patients were referred by family to psychiatric emergency than the numbers reported elsewhere [3, 11,24,32,33,36]. Conversely, medical doctors have referred patients to psychiatric emergency facilities to facilitate expert consultation in response to crowding in ambulatory care facilities. Rates of separation/divorce [30, 32, 39] and history of family psychiatric disorders [32, 39] among our patients were mainly consistent with those in the literature but lower than those found by Incarnazzo (33%) [40], Lee (31%) [41] and Pacheco (37%) [30], which is perhaps partly explained by differences in socioeconomic level, number of parents present in the home, and history of psychiatric disorders in families among the populations described.

Similar to the findings of Nadereau and colleagues [39], about half of our adolescents receive educational setting, court-ordered placement, or assistance in the community. In addition, those with psychiatric disorders and psychic suffering- as many as 30% in those reported by Stewart and associates [42] - who receive psychiatric

care also benefit from child welfare services or placement in foster families or children's homes [4,6,38,43]. However, poorly qualified personnel and inappropriate individualized response to children's needs in these institutions can result in frustration and subsequent violence [33,34] and lead to more intense use of psychiatric emergency consultations.

Data concerning family psychiatry history are rarely reported in articles concerning adolescents and emergency psychiatry. Nevertheless the teams of Pacheco [30], Grupp-Phelan [44], and Laget [29] reported similar results to ours.

Adolescents presenting with psychiatric pathologies often come to the emergency ward in crisis because of their poor compliance with prescribed psychiatric care and drug treatment. For adolescents with a personal psychiatric history, several studies [27,43,45,46] have shown a relative risk of return to emergency of 2.5. We did not include some patients whose diagnoses were unreliable, because data were missing or not reliable. Nevertheless, we reported, as have others, the presence of psychotic, mood, but not addictive disorders as possible risk factors for return visits to emergency [43, 44]. Christodulu and associates [46] indicated adaptation disorders, behaviour disorders, and acting out as such factors contrarily to others studies [43, 45, 46]. Multivariate analysis does not support the protective role of educational measures and psychotropic treatment.

The relative risk for return to emergency is 4 for adolescents enrolled in vocational education. We found no data in the literature on this topic, but numerous authors have emphasized that about 30% of pupils who fail in school receive psychiatric care [3, 26, 35, 41] and, in France, those who fail in school are often enrolled in this type of education.

Knowledge of risk factors would allow implementation of secondary or tertiary preventive devices. Students could undergo early screening of psychiatric pathologies by their general practitioners or trained nurses, and implementation of mobile screening teams, such as that of Saint-Etienne, might, in future, save money, avoid hospitalizations, and when necessary, facilitate both hospitalization and return visits to the emergency psychiatric ward.

Few articles address psychiatric hospitalization in adolescents, and our study is limited by its retrospective nature and its conduct in a single institution. Data regarding diagnoses and type of hospitalization were sometimes missing, and our sample size was small. Future prospective multicentre studies might provide more comprehensive data permitting more accurate multivariate analysis.

Conclusion

Most of the young patients hospitalized in our emergency psychiatric unit were adolescents. Many had a personal and family psychiatric history, and many had undergone frequent drug treatment. Hospitalization was often related to behaviour and psychotic disorders. Minor children were easily referred to the emergency psychiatric unit because of its accessibility. Frequency of returns tended to increase over time, and in case of

return, hospitalizations were more frequent than consultations. Personal psychiatric history and participation in vocational education were the only apparent risk factors of return. Lack of data in the literature about vocational study prevents comparison. Case control and multicentre study would be worthwhile for a more powerful analysis.

For there is no conflict of interest for any of the authors in relation to the subject of this study.

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Figure 1: Flow chart of first stays and returns to psychiatric emergency unit

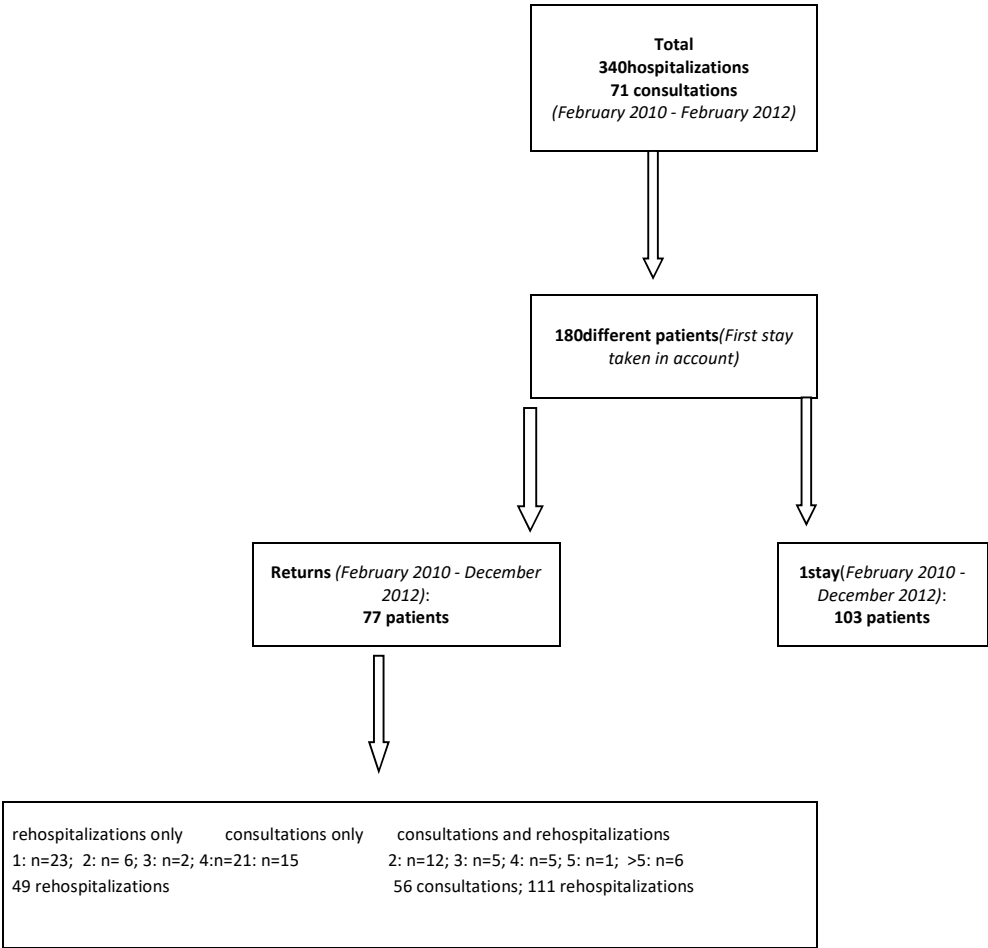


Figure 2: Kaplan-Meier curve showing cumulative incidence for returns to Psychiatric emergencies in function of time in days

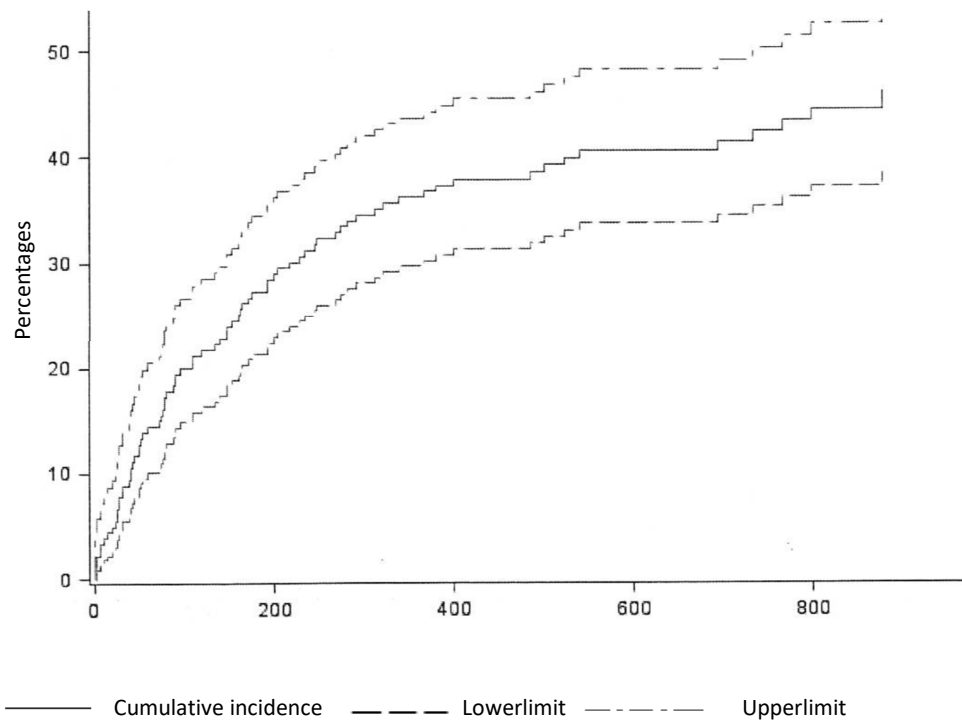


Table 1. Sociodemographic description of patients

Mean age (years) ± standard deviation	N = 180	14.8(±1.8)
Sex	N = 180	
Girls		97(53.9%)
Boys		83(46.1%)
Medical history	N = 171	
		36 (21%)
Personal background	N = 180	
Criminal record	9 (5%)	
Rape/sexual abuse		16 (8.9%)
Psychiatric history	N = 178	
No history		59(33.2%)
Consultation in child psychiatric unit		105(59%)
Consultation in psychiatric emergency unit		30(16.9%)
Day care centre		11 (6.2%)
Hospitalization in child psychiatric unit		30(16.9%)
Hospitalization in emergency psychiatric unit		20(11.2%)
Psychotropic treatment		
Family history	N = 154	
No history		55(35.7%)
Psychiatric history		84(54.6%)
Family violence		28(17.8%)
Ambulatory care	N = 178	
No ambulatory care		105(59%)
Educational measures		
No		94 (52%)
Court-ordered placement		50(27.8%)
Placement by administrative representative	3 (1.7%)	
AED	4 (2.2%)	
Educational policies in community		34 (19%)
Pending	8 (4.4%)	
Substance abuse	N = 155	
No abuse	79 (51%)	
Family situation	N = 180	
Parents together		62(34.4%)
Parents divorced		40(22.2%)
Parents separated		60(33.3%)
One parent dead		12 (6.6%)
Two parents dead		2 (1.1%)
Adopted		10(5.6%)
Educational level	N = 174	
Dropped out of school		29(16.7%)
Conventional education		106(60.9%)
Vocational education		17 (9.8%)
Medical and pedagogic institution		9 (5.2%)
Medical, pedagogic, psychotherapeutic institution		13 (7.5%)

Table 2: Synthesis of hospitalisations and orientation at discharge

Reasons for hospitalization	N = 340	Reasons for stay in hospital	N = 340	Orientation	N = 336
Destructive behaviours	130 (38,23%)	Sedation of crisis	173 (51%)	Return home	201 (60 %)
Suicidal ideation	57 (16, 76 %)	Legal or administrative proceeding	3 (0,8 %)	Hospitalization in child psychiatry unit	56 (16,6%)
Suicide attempt	50 (14,7 %)	Medication adjustment	158 (46, 4 %)	Psychological counselling	21 (6, 2%)
Runaway	33 (9, 7 %)	Paraclinical examination/s	6 (1, 7%)	Sheltered accommodation	6 (1, 8%)
Scarification	23 (7%)			Wait before hospitalization	13 (3, 8%)
Anxiety	20 (5,8%)	Adverse events		Medico social device	7 (2%)
Alcohol abuse	14 (4%)	Suicide attempt	3 (1%)	Prevention of suicide attempt	12 (3, 5%)
Delusional ideation	13 (3, 8%)	Runaway	7 (2%)	Adult psychiatry	20 (6%)

Table 3 : factors for returns to psychiatric emergency unit : univariate and multivariate analysis

Sociodemographic data	Univariate analysis			Multivariate analysis		
	Return	No-return	p	Relative risk	95% CI	p
sex						
Girls	35(45.5%)	48 (46.6%)	0.88			
boys						
Psychiatric history						
No history	17 (28.8%)	47 (71.2%)	0.006*	2.505	1.166-5.832	0.0186
Consultation in child psychiatric unit	56 (53.3%)	49 (46.7%)	0.001*			
Consultation in psychiatry emergency unit	17 (28.8%)	13 (43.3%)	0.098			
Hospitalization in child psychiatry unit	19 (63.3%)	11 (36.7%)	0.015*			
Hospitalization in emergency psychiatric unit	11 (55%)	9 (45%)	0.25			
Day care centre	2 (18.2%)	9 (81.8%)	0.12			
Rape/sexual abuse	6 (37.5%)	10 (62.5%)	0.65			
Criminal record	2 (22.2%)	7 (77.8%)				
Family history						
No	22 (40%)	33 (60%)	0.44			
Psychiatric history	40 (47.6%)	44 (52.4%)	0.34			
Family violence	15 (53.6%)	13 (46.4%)	0.24			
Educational measures						
No measures	34 (36.2%)	60 (63.9%)	0.06			
Court-ordered placement	28 (56%)	22 (44%)	0.0262*			
Educational level						
Dropped out of school	11 (38%)	18 (62%)	0.58			
Vocational education	11 (64.7%)	6 (35.3%)	0.05*	3.395	1.2777-12.129	0.0163*
Substance abuse						
No abuse	31 (29.2%)	48 (60.8%)	0.18			
Ambulatory care						
No ambulatory care	41 (39%)	64 (61%)	0.17			
Antipsychotic drugs	29 (59%)	20 (40.8%)	0.008*			
Treatment at discharge						
No treatment	6 (21.4%)	22 (78.6%)	0.0129*			
Reasons for referral						
Suicide attempt	11 (29%)	27 (71%)	0.05*			
Anxiety	5 (37.5%)	9 (64.3%)	0.6			
scarification	6 (43%)	9 (64.3%)	1			
Destructive behaviour	37 (47.7%)	44 (54.3%)	0.5			
Runaway	9 (43%)	12 (57%)	1			
Alcohol abuse	4 (36.4%)	7 (63.6%)	0.8			
Delusional ideation	5 (45.5%)	6 (54.6%)	1			
Suicidal ideation	21 (49%)	22 (51%)	0.36			
contention	23 (45%)	28 (54.9%)				

Table 4 Cumulative incidence of returns at 6months, 1 and 2 years (n= 77)

Period	Cumulative incidence of returns	% of return	Confidence interval
At 6 months	hospitalizations and consultations	27.2	[23.9 - 30.5]
	hospitalizations	20.0	[17 – 23]
	consultations	12.2	[9.8 - 14.6]
At 1 year	hospitalizations and consultations	36.1	[32.5 - 39.7]
	hospitalization	28.9	[25.5 - 32.3]
	consultations	19.4	[16.4 - 22.3]
At 2 years	hospitalizations and consultations	42.8	[37.7 - 45.2]
	hospitalizations	32.9	[29.3 - 36.5]
	consultations	23,2	[20-26,4]