

# Demographic and Clinical Parameters of Patients with High Risk Behavior in a General Hospital: The Use of Constant Observation

Joseph Mergui MD<sup>1\*</sup>, David Raveh MD<sup>2</sup>, Jean-Louis Golmard MD PhD<sup>4</sup>, Arik Fuer<sup>3</sup>, Cornelius Gropp MD<sup>1</sup> and Sol Jaworowski MBBS FRANZCP<sup>1\*</sup>

<sup>1</sup>Department of Consultation/Liaison Psychiatry, <sup>2</sup>Unit of Infectious Diseases and <sup>3</sup>Department of Security, Shaare Zedek Medical Center, Jerusalem, and Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

<sup>4</sup>Biostatistics Unit, Hôpital Pitié-Salpêtrière, AP-HP Paris, France

**Key words:** constant observation, general hospital, suicide, high risk behavior, prevention

## Abstract

**Background:** General hospital staff are often required to care for physically ill patients who arouse concern regarding risk of harm to themselves or others. Some of these patients will be placed under one-to-one "constant observation." This is the first Israeli study of general hospital patients with high risk behavior.

**Objectives:** To examine a population of general hospital patients whose behavioral management required the use of constant observation. Demographic and clinical parameters including physical diagnoses were examined, and risk factors for constant observation were identified. The findings of this study were compared to those of previous studies.

**Methods:** This prospective observational study examined 714 inpatients referred for psychiatric consultation; 150 were found to require constant observation, and 156 who did not served as a control group.

**Results:** In this study younger age, suicidal concerns and alcohol/substance abuse were identified as risk factors for ordering constant observation. Ischemic heart disease and chronic obstructive pulmonary disease were the only physical diagnoses found to be significantly correlated with a longer duration of observation, regardless of admission duration. Constant observation was less frequently used in the management of organic brain syndrome patients in this study compared to other studies.

**Conclusions:** Some of our results (predictive factors for constant observation) confirmed the findings of overseas studies. Our finding that a diagnosis of organic brain syndrome was not a predictive factor for constant observation was unexpected and requires further investigation. The correlation between a diagnosis of ischemic heart disease or COPD and duration of observation has not been reported previously and warrants further studies.

*IMAJ 2008;10:681–685*

General hospital staff are often required to care for physically ill patients who arouse concern regarding risk of harm to themselves or others. Many of these patients will receive one-to-one "constant observation." This is a technique in which continuous one-to-one monitoring is used to assure the safety and well being of an individual patient or others [1].

Violence in the general hospital is most frequently manifested

in the emergency room. Various psychiatric diagnoses have been associated with violent behavior: personality disorder, substance abuse and organic mental disorder [2]. It has also been described in relation to patients' complaints about pain management [3] and ward regulations [4]. Repeated violence by the general hospital patient is associated with high levels of the following psychiatric co-morbidities: substance abuse, schizophrenia, personality disorder and bipolar disorder [4].

The most common method of general hospital patient suicide is jumping from a height [5]. Patients who committed suicide during general hospital admission had been admitted for treatment of a variety of illnesses including attempted suicide, malignancy, chronic obstructive airways disease, cardiovascular disease and abdominal pain [6,7]. Major depression was diagnosed in 66% of patients. Depression and substance abuse were found to be risk factors for patients who committed suicide shortly after having been discharged from a general hospital [7]. Severe anxiety and agitation were found to be acute predictors of inpatient suicide [8].

A recent publication [9] reviewed the management of patients under constant observation. In the general hospital, constant observation is most commonly recommended because of concerns about the patient harming himself or others [10,11]. Suicidal ideation, confusion or delirium, homicidal ideation and elopement risk have been described as the most common reasons for observation [11]. It is also used for patients with agitation or psychosis. Occasionally, patients who were incarcerated or who were thought to be at risk of harm from others were placed on constant observation (e.g., abusive family members). It is less frequently reported for patients with eating disorders.

In the present study we searched the literature for the period 1966–2005 on high risk behavior in a general hospital, using Medline, the Cochrane Library, and various psychiatric journal sites. The term "general hospital" was matched with the terms "constant observation," "suicide" and "violence." We found very few studies that were both clinical and statistical.

We compared demographic and diagnostic variables of two groups of patients referred for psychiatric consultation: one group required constant observation while the other did not. Furthermore, we sought to identify risk factors in our hospital for ordering constant observation. We compared our findings with those of previous studies. The clinical data presented may

\* The first and last authors, Joseph Mergui and Sol Jaworowski, were equal contributors to this article.

COPD = chronic obstructive pulmonary disease

be helpful for developing more appropriate clinical policies and options for less costly management alternatives.

## Patients and Methods

This prospective observational study was conducted in a 550-bed university-affiliated hospital in Jerusalem, Israel. The hospital has no inpatient psychiatric department. The consultation/liaison psychiatry unit consists of three experienced consultation/liaison psychiatrists (C.G., J.M. and S.J.). Each psychiatrist provides consultation to different medical and surgical wards in the hospital; for the emergency room the responsibility is shared. The study population comprised 714 consecutive inpatients referred by their hospital physicians for psychiatric consultation over a 7 month period (1 January to 31 July 2005). Every patient was examined by one of the psychiatrists. Among the 714 eligible patients, 150 were found to be at risk for harming themselves or others and were thus put on constant observation. Among the remaining 564 patients, 156 were randomly drawn to build the control arm, corresponding to 3 groups of 52 patients, each group of patients having been seen by a senior psychiatrist.

A 35-item data sheet was completed by the consultant psychiatrist for each patient. This sheet included demographic information, physical and psychiatric diagnoses, and indication for constant observation when appropriate. Data were typed into a computerized questionnaire written in Epi Info 2000 (CDC, Atlanta, USA).

### Statistical analysis

For the comparison of constant observation and non-constant observation groups, descriptive statistics used frequencies for

qualitative variables and means ( $\pm$  SD) for quantitative ones. Between-groups differences were tested using chi-square tests and Fischer's exact tests for qualitative variables and Student's tests for quantitative ones. A stepwise logistic regression was performed: variables significant with a  $P$  value  $< 5\%$  at the univariate analysis were included in the stepwise regression, and the variables reaching a  $P$  value  $< 5\%$  using the Wald test were retained in the final model. Since some groups were small, relationships between the duration of constant observation and qualitative variables were tested using two-sample Wilcoxon tests. For the same reason, descriptive statistics used medians and interquartile ranges. Statistical analysis was done by Epi Info and SAS statistical package (version 8).

## Results

The patients' ages in the two groups ranged from 10 to 95 years, and 8.5% were less than 18.5 years old. A comparison was made between groups with and without constant observation according to demographics and divisions [Table 1]. The mean age of the constantly observed patients was significantly lower:  $39.7 \pm 19$  versus  $56.8 \pm 25$  years. There was no significant statistical difference between age of the suicidal and non-suicidal group of constantly observed patients. Single status was more often represented in the constant observation group. The patients under constant observation were referred more often for psychiatric consultation by the emergency room than by the medical departments: 63% vs. 29%,  $P < 0.001$ . In contrast, the non-constantly observed patients were more frequently referred by the medical departments: 42% vs. 19%,  $P < 0.001$ . For the consultation/liaison

**Table 1.** Demographic characteristics and psychiatric diagnoses of patients in our study

	Goldberg, 1989	Lamdan et al., 1996		Blumenfeld et al., 2000	Our findings		<i>P</i>
	Constant observation (N=80)	Non-constant observation (N=100)	Constant observation (N=64)	Constant observation (N=115)	Non-constant observation (N=156)	Constant observation (N=150)	
<b>Age (yrs)</b>	46.3	51.7	41		$56.8 \pm 25$	$39.7 \pm 19$	$< 0.001$
Range	21–80				10–95	13–95	
<b>Gender</b>							
Male	58%	NS		71.3%	39.7%	47.3%	NS
Female	42%	NS		28.7%	60.3%	52.7%	NS
<b>Marital status</b>							$< 0.0001$
Single	36%	28%	47%	53%	20%	50%	$< 0.001$
Married	38%	20%	14%	30.4%	46%	22%	$< 0.001$
Divorced/Widowed/Separated	27%	35%	16%	9.6%	33%	27%	NS
<b>Diagnosis</b>							
Organic brain syndrome	37%	40%	27%	42.1%	25.6%	8.7%	$< 0.0001$
Schizophrenia/Other psychotic				12.2%	9%	15.3%	NS
Adjustment disorder				4.4%	17%	19%	NS
Mood disorder				15.8%			
Personality disorder	22%	7%	25%		14.1%	44%	$< 0.0001$
Substance abuse only		11%	11%				
Any substance abuse		40%	63%	21%	6%	21%	$< 0.0001$
Depression/Anxiety					46.8%	24.7%	$< 0.0001$
Bipolar disorder					3.2%	2.7%	NS

Similar findings from previous studies are included for comparison.

patients from the surgery department, constant observation was less significantly ordered ( $P < 0.01$ ). For the other departments (obstetrics, intensive care and pediatrics) no significant difference was found.

The two groups were compared by indications for psychiatric consultation [Table 3], and by diagnoses [Tables 1 and 2]. The

**Table 2.** Physical diagnoses of patients with and without constant observation

	Non-constant observation (N=156)	Constant observation (N=150)	P
No medical problem	23.1%	71.3%	<0.0001
Chronic pain syndrome	3%	5.3%	NS
Ischemic heart disease	12.2%	5.3%	0.035
Sepsis	7.7%	3.3%	NS
Terminal illness	8.3%	2.7%	0.03
Chronic obstructive airways disease	5%	2.7%	NS
Diabetes	4.5%	0.7%	NS
Neurological illness	9%	0.7%	<0.001
No data	27%	8%	<0.001

**Table 3.** Reasons for psychiatric consultation request

	Goldberg 1989	Lamdan et al, 1996		Our findings		P
	Constant observation (N=80)	Non-constant observation (N=100)	Constant observation (N=58)	Non-constant observation (N=156)	Constant observation (N=150)	
Suicidal or past attempt	54%	18%	47%	4.4%	66.6%	<0.001
Depressed		18%	2%	26.2%	0%	<0.001
Confused/agitated	44%	11%	20%	21.7%	12%	<0.03
Psychotic		5%	3.5%	4.4%	10%	NS
History of psychiatric disorder		11%	15.5%	8.3%	0%	<0.001
Management problem		13%	5%			
Competency		8%	5%	8.9%	0%	<0.001
Hospital elopement risk				0%	5.3%	<0.01
Violence				0%	3.3%	<0.03
Drug-seeking behavior				0%	2.6%	NS
Anxiety				12.8%	0%	<0.001
Somatoform disorder				5.7%	0%	<0.01
Adjustment disorder				1.3%	0%	NS
Anger towards staff				1.3%	0%	NS
Post-traumatic				1.3%	0%	NS
Non-compliant				0.6%	0%	NS

Findings from previous studies are included for comparison.

**Table 4.** Duration of constant observation related to presence of medical /psychiatric condition

Condition	No. of patients with condition (%)	Duration of constant observation (hrs)		P
		Condition not present median [Q1-Q3]	Condition present median [Q1-Q3]	
Ischemic heart disease	8/150 (6%)	16 [6-36]	67.5 [24.5-97.5]	0.009
Personality disorder	66/150 (44%)	13.5 [4-30]	22.5 [12-42]	0.054
COPD	4/150 (3%)	16 [6-36]	72 [48-72]	0.023
Organic brain syndrome	13/150 (9%)	16 [6-36]	24 [12-48]	NS
Chronic pain	8/150 (6%)	17.5 [6-36]	14 [6-24]	NS
Alcohol / substance abuse	31/150 (21%)	16 [6-36]	24 [12-42]	NS
Depression / anxiety	37/150 (25%)	14 [5-24]	24 [12-48]	0.015

most common reasons for ordering constant observation were suicidal behavior (50.6%) and threats of self-harm (16%). Most patients in these groups had been admitted to the emergency room for medical or surgical treatment of suicide attempts and/or psychiatric evaluation after suicide attempt or suicidal threats. Constant observation was instituted most often to prevent suicidal behavior. Confusion (principally geriatric delirium), agitation and psychotic state were less frequent indications. Diagnoses of personality disorder (44%) and alcohol/substance abuse (21%) were significantly related to use of constant observation.

Based on the univariate analysis, the following variables were included in a logistic regression model, where the dependent variable was constant observation: alcohol abuse, depression/anxiety, marital status, suicidal state, age, and adjustment disorder. From these independent variables, the following were found to be significant: a) suicidal state (odds ratio 61.5, 95% confidence interval 22.7–166.5,  $P < 0.0001$ ), b) no depression/anxiety (OR 5.5, CI 2.3–13.3,  $P = 0.0001$ ); c) alcohol/substance abuse (OR 3.2, CI 1.2–8.2,  $P = 0.019$ ); and d) age (years) (OR 0.98, CI 0.960.99,  $P = 0.0014$ ). Of the 150 patients who received constant observation, 73 were suicidal patients treated in the emergency room.

We correlated the presence of medical/psychiatric conditions with the duration of constant observation [Table 4]. This table displays median and inter-quartile intervals of constant observation duration according to the patient's medical or psychiatric condition. Ischemic heart disease and COPD were the only physical diagnoses associated with increased duration of constant observation. The relationship with personality disorder was associated with longer constant observation but this relationship did not reach statistical significance ( $P = 0.054$ ). Of the constantly observed patients, 21.8% were transferred to a psychiatric hospital, compared to only 1.3% of the non-constantly observed patients.

## Discussion

The results of our study demonstrate that patients who required constant observation in our hospital shared a number of characteristics. As compared with the non-constantly observed patients we saw in the consultation/ liaison service, these patients were more likely to be younger, of single marital status, and physically healthy. They were more likely to suffer from the following disorders: suicidal concerns, personality disorder, and history of substance/alcohol abuse.

We compared our results with those of

OR = odds ratio  
CI = confidence interval

previous studies [Tables 1 and 3]. Younger age and single marital status were predominant in the constantly observed patients [1,12]. Suicidal concerns as a principal indication for constant observation was also found in two other studies [10,12]. The higher proportion of patients in our study, 66.6%, compared to 50% in the other studies may be related to the fact that our hospital does not have an in-house psychiatric unit. Furthermore, compared to the countries in other studies, compulsory psychiatric hospitalization in Israel requires the intervention of the district psychiatrist in addition to the examining psychiatrist. In Israel, patients are required to fulfill both of the following criteria [13]: a serious impairment of judgment (usually psychosis) and a risk of harm to self or others. Most patients who present to our hospital with suicidal concerns do not fit the criteria for involuntary psychiatric hospitalization and frequently do not agree to be voluntarily hospitalized in a psychiatric unit. In western countries, the treating psychiatrist may directly refer patients who are deemed to suffer from mental illness with evidence of danger to self or others for involuntary psychiatric hospitalization. Patients who present to the emergency room following suicidal behavior in these countries may therefore be referred more directly for psychiatric hospitalization without the need for constant observation in the general hospital setting. Legislation in the United States, for example, relating to involuntary psychiatric hospitalization (civil commitment) focuses on matters of the patient's danger to self rather than whether he or she suffers from a psychotic illness [14].

We found a high percentage of personality disorders (44%) and alcohol/substance abuse in our patients who were placed under constant observation. This finding is consistent with other studies [10,12]. Severe personality disorders with threatening and abusive behaviors can be dangerously disruptive in acute medical settings, particularly when associated with alcohol/substance withdrawal syndromes. These patients require early psychiatric diagnosis and intervention.

Patients with organic mental syndrome comprise a relatively large category (25.6%) of our non-constant observation group. These are usually patients with a diagnosis of dementia and delirium, and they were under-represented in our constant observation group (8.7%). In other studies, 27–42% of the total number of patients on constant observation were diagnosed as suffering from this syndrome [1,10,12]. This under-representation may be related to cultural factors. In Israel, the presence of family members or a nominated caregiver by the patient's bedside is often the norm, particularly for the aged patient suffering from dementia. This hypothesis should be confirmed by comparative studies in other countries where this practice is not so widespread. Moreover, in our hospital constant observation can only be instituted following psychiatric consultation. Early pharmacological intervention for a confused and agitated patient may therefore be offered as an early intervention, thereby avoiding the need for constant observation.

The mean duration for constant observation in various studies was between 3.7 and 9.2 days (range 1–63 days) [10,12,15–18].

In our study, it was significantly shorter:  $29.8 \pm 8$  hours (range 1–261 hours). The reason for this difference is unclear. Of the physically ill patients who required constant observation in our study, the only medical diagnoses found to be significantly associated with duration of the observation was IHD and COPD. These two disorders were found to be associated with suicide in general hospital patients [6]. The significant relationship between duration of constant observation and IHD and COPD in our study could be explained as follows: Our patients with these conditions who required constant observation had a background of co-morbid substance abuse, unpredictable behavior (schizophrenia), or aggressive behavior (personality disorder). The life-threatening nature of IHD or COPD may have exacerbated pre-existing impulsive or unpredictable behavior. They required longer constant observation as their emotional crisis could not have been easily resolved with pharmacological or supportive interventions. Of the eight patients who suffered from IHD three needed constant observation because of the risk of elopement from hospital.

We compared the incidence of violence between the two groups. In five patients (3.3%) of the constantly observed group, the indication for observation was violence, whereas there were no episodes of violence as an indication for psychiatric consultation in the other group. Antisocial personality disorder accompanied by aggressive behavior toward staff was diagnosed in three of the five patients. The two other patients were diagnosed as suffering from schizophrenia with impulse control difficulties. For all these five cases, the appropriateness of the constant observation was justified with regard to imminent and ongoing danger toward self or others. These cases support findings in the literature that a diagnosis of personality disorder [2,4] or psychosis [4] is related to actual violence in the general hospital.

To our knowledge, no studies have examined the clinical outcome of patients placed under constant observation in general hospitals. There are clear ethical concerns when attempting to implement a randomized study comparing the frequency of harm to self or others in groups of potentially suicidal and/or violent patients under constant observation versus a similar group without. In our study, we did not address the issue of constant observation outcome as a prospective measure. However, after retrospectively reviewing violent incidents involving patients under observation during the period of the study, we found two reports of physical violence. The violence consisted of physical aggression directed only toward the staff member administering the constant observation. One patient was diagnosed as suffering from an antisocial personality disorder. In this incident, additional staff was rapidly mobilized and this intervention effectively resolved the confrontation. The second patient was referred to the emergency room after a suicide attempt and was diagnosed with a depressive illness and co-morbid anxiety. Moreover, there were no reports of self-harm during the study period in the group of patients under constant observation.

IHD = ischemic heart disease

## Conclusions

Early psychiatric intervention for patients with high risk behaviors in the general hospital is essential. This should include an adequate history from family and community sources, leading to accurate diagnosis and treatment of co-morbid psychiatric disorders including depression, organic brain syndrome and alcohol/substance withdrawal syndromes. Relief of the patient's emotional pain and distress will enable treatment of the underlying physical illness and formulation of the patient's discharge plan.

Our study highlights the importance of identifying risk factors in the patient related to harm toward self or others in the general hospital. In our study, personality disorder, alcohol/substance abuse and suicide concerns were found to be relevant. This is in keeping with existing research. In addition, organic brain syndrome has been identified as a risk factor by other authors. Appropriate intervention for these disorders with behavioral or psychopharmacological management may be sufficient to prevent at-risk behavior. Intervention by a consultation/liaison psychiatrist has been shown to improve the management of patients with high risk behavior. [19]. If psychiatric intervention is insufficient, constant observation may be required. The clinician should be aware that the risk of such behaviors increases with younger age and single marital status. These risk factors could be incorporated into a risk score for patients suspected of requiring constant observation. Future studies could determine whether such a risk score is a useful tool in deciding when to order this strategy.

In our study, many demographic and clinical characteristics were similar to those in the literature. We also found some differences that may relate to cultural factors applicable in Israel. To our knowledge, this study is the first of its kind to examine the relationship between constant observation and physical diagnosis. Our findings should be validated in further studies.

**Acknowledgments:** We thank Mrs. Yedida Ponger for her devoted secretarial assistance.

## References

1. Blumenfield M, Milazzo J, Orlowski B. Constant observation in the general hospital. *Psychosomatics* 2000;41:289-93.
2. Brayley J, Lange R, Baggoley C, Bond M, Harvey P. The violence management team. An approach to aggressive behavior in a general hospital. *Med J Aust* 1994;161(4):254-8.
3. Ochitill HN, Krieger M. Violent behavior among medical and surgical patients. *South Med J* 1982;75(2):151-5.

4. Drummond DJ, Spar LF, Gordon GH. Hospital violence reduction among high-risk patients. *JAMA* 1989;261(17):2531-4.
5. White RT, Gribble J, Corr MJ, Large MM. Jumping from a general hospital. *Gen Hosp Psychiatry* 1995;17(3):208-15.
6. Suominen K, Isometsa E, Heila H, Lonnqvist J, Henriksson M. General hospital suicides - a psychological autopsy study in Finland. *Gen Hosp Psychiatry* 2002;24:412-16.
7. Dhossche DM, Ulusarac A, Syed W: Retrospective study of general hospital patients who commit suicide shortly after being discharged from the hospital. *Arch Intern Med* 2001;161:991-4.
8. Busch KA, Fawcett J, Jacobs DG. Clinical correlates of inpatient suicide. *J Clin Psychiatry* 2003;64:14-19.
9. Jaworowski S, Raveh D , Lobel E, Fuer A, Gropp C, Mergui J. Constant observation in the general hospital, a review. *Isr J Psychiatry* (in press).
10. Goldberg RJ. The use of constant observation in general hospitals. *Int J Psychiatry Med* 1989;19:193-201.
11. Worley LLM, Kunkel EJS, Gitlin DF, Menefee LA, Gregory C. Constant observation practices in the general hospital setting. A national survey. *Psychosomatics* 2000;41:301-10.
12. Lamdan RM, Ramchandani D, Schindler B. Constant observation in a medical surgical setting. The role of consultation-liaison psychiatry. *Psychosomatics* 1996;37:368-73.
13. Law for the treatment of the mentally ill. Israel Law Statutes 1351, 1991.
14. Appelbaum PS. Almost a revolution: an international perspective on the law of involuntary commitment. *J Am Acad Psychiatry Law* 1997;25:135-48.
15. Talley S, Davis DS, Goicoechea N, Brown L, Barber LL. Effect of psychiatric liaison nurse specialist consultation on the care of medical-surgical patients with sitters. *Arch Psychiatr Nurs* 1990;4:114-23.
16. O'Dowd MA, Freedman JB, Bernstein G, Ricco P, McKeegney FP. Reduction in use of constant observation in the general hospital and cost savings as a result of quality improvement monitoring. *Psychosomatics* 1995;36(2):189.
17. Lamdan RM, Ramchandani D, O'Dowd MA, et al. A comparison study of constant observation in three urban centers. *Psychosomatics* 1995;36:188-9.
18. Lamdan RM, Ramchandani D, Schindler BA. Use of constant observation in an urban teaching hospital: implications for improved care. *Psychosomatics* 1995;36:189-90.
19. Jin C, Novik S, Saravay S. Consultation-liaison psychiatry training and supervision results in fewer recommendations for constant observation. *Gen Hosp Psychiatry* 2000;22:359-64.

**Correspondence:** Dr. S. Jaworowski, Dept. of Consultation/Liaison Psychiatry, Shaare Zedek Medical Center, P.O. Box 3235, Jerusalem 91031, Israel.

Phone: (972-2) 655-5083; Fax: (972-2) 655-5058

email: solj@szmc.org.il