Timing of Psychiatric Consultations

The Impact of Social Vulnerability and Level of Psychiatric Dysfunction

PETER DE JONGE, PH.D., FRITS J. HUYSE, M.D., PH.D.
G. MAARTEN-FRISO RUINEMANS, M.SC., FRIEDERICH C. STIEFEL, M.D.
JOHN S. LYONS, PH.D., JORIS P.J. SLAETS, M.D., PH.D.

The authors examined the timing of patient referrals to a psychiatric consultation-liaison service in relation to the patient's social vulnerability and level of psychiatric dysfunction. One hundred consecutive patients were assessed with the INTERMED, a method to document biopsychosocial and health care-related aspects of disease. Although 30% of patients were referred within the first day of admission, 19% of requests for referrals were made after 2 weeks. Late referral was associated with high social vulnerability and early referral with severe psychiatric dysfunction. The authors illustrate the disadvantages of a psychiatric liaison model focusing on psychopathology alone and demonstrate the need for an integrated patient assessment in the general hospital, focusing on detecting frail elderly patients. (Psychosomatics 2000; 41:505–511)

The number of elderly patients and their associated health care needs as well as the simultaneous reduction of the average length of hospital stay (LOS) requires that health care professionals efficiently treat patients in the general hospital. Within the elderly population, the term frailty has been used to describe a combination of aging, poor functional and mental status related to extended LOS, and increased risk of nursing home placement.[1,2] Similarly, case complexity or "case-mix" refers to those patient characteristics that describe how patients with similar types and stages of disease vary in their health care needs and utilization.[3] Psychiatric consultation-liaison (C-L) services see many frail and complex patients with a high prevalence of psychiatric diagnoses.

Psychiatric and geriatric intervention studies have demonstrated a beneficial effect in terms of medical health care utilization, especially when focusing on early detection and subsequent coordination of care during the hospital stay of patients with combined medical and psychiatric disturbances. [4–7] However, early detection of patients

that may benefit from such interventions is hampered by C-L psychiatry's current referral process.[3,8,9] Several studies demonstrated that only a minority of psychiatric comorbid patients are referred to C-L psychiatry, and most of the patients are referred late in the process of hospitalization. The timing of psychiatric consultations results from the interaction of several phenomena, such as patient and hospital staff characteristics, physicians' psychosocial competence, and the theoretical background of psychiatric consultants.[10] Although the late timing of referrals is associated with an increased LOS in medical and surgical inpatients,[11] early psychiatric consultations with depressed

medical inpatients are associated with shorter hospital stays.[12]

Two recent studies identified factors associated with the timing of psychiatric referral.[10,13] Ormont et al.[10] confirmed the association between timing of referral and total LOS to report that patients with schizophrenia were referred earlier than those with other psychiatric diagnoses, and patients with acquired immunodeficiency syndrome (AIDS) were referred later than patients with other somatic diseases. Hadrinos et al.[13] described that the diagnosis of personality disorder predicted an earlier referral and depression predicted a later referral. In the present study, we evaluate a more general hypothesis that patients with obvious psychopathology are referred early while "complex" or frail patients with social vulnerability are referred late.

METHODS

The Sample

In our study, we included 100 medical surgical patients referred to the psychiatric C-L service of the Vrije Universiteit Hospital of Amsterdam between January and June 1999. The Vrije Universiteit Hospital is a teaching hospital with a focus on cancer care and traumatology. The psychiatric C-L service was founded in the beginning of the 1980s. The staff of C-L service at the time of the study consisted of 3 registrars, 2 residents, 1 general practitioner in training, and 2 psychiatric nurses. In 1998, 21,686 patients were admitted to the hospital with a mean hospital stay of 8.9 days.[14] Also in 1998, 708 patients have been referred for psychiatric consultation, which is about 3.3% of all patients admitted to the hospital. The study has been approved by the medical ethics committee of the Vrije Universiteit Hospital.

Procedure

We documented sociodemographic data, referral characteristics, psychiatric diagnosis, and discharge status for every consenting patient. Patients were asked to participate in a 20–30 minute interview that covered their medical, psychosocial, and health care related history. We examined the patient's current illness, level of physical functioning and prognosis from the medical record. With this information, the INTERMED was scored by the third author (GMFR) after a training consisting of a joint scoring of 10 patients. All INTERMED scores were checked with the first author (PdJ), who codeveloped the INTERMED.

The INTERMED synthesizes information from four domains: biological, psychological, social, and health care (Figure 1). These domains are assessed in the context of time (i.e., history, current state, and prognosis) and contain variables known from clinical experience and/or scientific evidence to influence the degree of case complexity.[15–18] Within each of the four domains, two variables of the patient's history and current state and one variable of the patient's prognosis are rated with a score ranging from 0 to 3 (a higher score indicates a higher degree of case complexity and reflects an increase in health care needs). A series of studies have demonstrated INTERMED's interrater reliability,[15] validity,[16] and clinical and scientific utility.[17,18]

For our present analysis, we selected six variables—three are indicative for the severity of psychiatric dysfunction and three for the level of social vulnerability. A description of the six items and their scoring is given in Figure 2. We calculated psychiatric dysfunction and social vulnerability scores by adding the scores of the three individual items, resulting in two scales with a minimum score of 0 and a maximum score of 9. We refer to the manual for the exact scoring of all INTERMED items.[19]

Statistical Analysis

To examine the relationship between referral time and LOS, we calculated natural logarithmic transformations in order to obtain approximately normal distributions. The relationship between psychiatric dysfunction and social vulnerability with referral time and LOS were evaluated with Pearson's correlation coefficients. To further assess the relationship, we constructed four groups of patients based on their scores on the two scales (above or below median value) and compared them on sociodemographic data, referring characteristics, psychiatric diagnosis, and discharge status.

RESULTS

Table 1 summarizes the background characteristics of the sample: average age was 60.6 years with an equal gender distribution; the median referral time of 4 days and the average referral time of 13 days indicated a very skewed distribution with some patients being referred very late. Of the patients, 30% were referred on the Day 1, 24% on Days 2–4, 27% on Days 5–13, and 19% after Day 14. The average LOS of our sample was 29.6 days (median = 19 days). Most patients were discharged to their home (54%),

but a substantial proportion was admitted to a nursing home (20%).

The most frequently referring departments were surgery and internal medicine and the most frequently diagnosed disorders were delirium, depression, and alcohol abuse (Table 2).

Referral time correlated strongly with total LOS (Pearson's $r = 0.69$). Psychiatric dysfunction and social vulnerability scores were significantly correlated to each other (Pearson's $r = 0.36$; $P < 0.01$). Psychiatric dysfunction had significantly negative correlation with LOS (Pearson's $r = -0.26$; $P < 0.01$); social vulnerability had a significantly positive correlation with referral time (Pearson's $r = 0.29$; $P < 0.01$) and a tendency towards a positive association with LOS (Pearson's $r = 0.19$; $P = 0.06$) (Table 3).

Based on their scores on the psychiatric dysfunction and social vulnerability scales, we constructed four groups of patients. We considered patients with a score on the social vulnerability scale of 0 to 3 ($n = 47$; 47%) to have relatively low social vulnerability. We considered patients with a score on the psychiatric dysfunction scale of 0 to 4 ($n = 47$; 47%) to have relatively low psychiatric dysfunction. A cross tabulation resulted in a group having low

---

FIGURE 1.   INTERMED

	History	**Current State**	**Prognosis**
Biological	Chronicity Diagnostic complexity	Severity of illness Diagnostic complexity	Complications and life threat
Psychological	Restrictions in coping Premorbid psychiatric dysfunction	Resistence to treatment Severity of psychiatric symptoms	Mental health threat
Social	Restrictions in social integration Social dysfunctioning	Residential instability Restrictions of social network	Social vulnerability
Health Care	Intensity of prior treatment Prior treatment experience	Organizational complexity Appropriateness of admission or referral	Care needs

---

TABLE 1.   Background characteristics of the sample ($n = 100$)

Age, mean ± SD	60.6 ± 19.3
Gender	
Men	48%
Women	52%
Psychiatric history	
Yes	50%
No	50%
Referral time, in days	
0–1	30%
2–4	24%
5–13	27%
>13	19%
Length of stay, in days	
Mean	29.6 ± 31.8
Median	19.0
Discharge status	
Home	54%
Deceased	10%
Nursing home	20%
Psychiatric hospital	2%
Other	14%

scores on both scales ($n = 27$; 27%), a group with low social vulnerability and high psychiatric dysfunction scores ($n = 20$; 20%), a group with high social vulnerability and low psychiatric dysfunction scores ($n = 20$; 20%) and a group of high scores on both ($n = 33$; 33%). In Table 4, we compared sociodemographic data, referral characteristics, psychiatric diagnosis and discharge status for the four groups.

DISCUSSION

It has often been demonstrated that patients referred to psychiatric C-L services can be described as frail and complex, suffering from multiple somatic and psychosocial comorbidities with an increased level of medical care utilization. We confirmed these findings in our present study. In general, our patients were elderly medical and surgical patients frequently diagnosed with delirium or mood disorders. Half of the patients had a psychiatric history that high-

lighted the overlap between somatic diseases and mental disturbances. A considerable proportion of these patients had been discharged to a nursing home. The average LOS was over 30 days, which tripled the normal stay in this hospital. A high correlation between referral time and total hospital stay indicated that about half of the variance of LOS in this population can be explained by their referral time, especially patients with dementia, mood disorder, and delirium who are referred late and stay long in the hospital. Contrary to this, patients with psychiatric disorders such as schizophrenia, personality and anxiety disorders, and substance abuse are generally referred early.

To study the factors involved in the timing of referral to psychiatric C-L services, we linked timing of the referral to the level of psychiatric dysfunction and social vulnerability. Patients with relatively high scores of psychiatric dysfunction were referred early, while patients with relatively high scores of social vulnerability were referred late. One of the possible explanations is the fact that severe psychiatric disorders are obtrusive for the ward staff as they can be accompanied by behavioral disturbances. On the other hand, one of the main reasons for late referral of socially vulnerable patients may be that they often cause discharge problems that occur late during hospital stay.

TABLE 2.   Referring specialisms and psychiatric diagnoses

	Number	Referral Time (Days) Mean ± SD	Length of Stay (Days) Mean ± SD
Referred From			
Surgery[a]	33%	12.8 ± 25.2	30.0 ± 31.5
Internal medicine[b]	30%	17.0 ± 28.7	35.1 ± 39.9
Neurology[c]	14%	16.6 ± 26.7	33.9 ± 31.9
Ear, nose, and throat[d]	11%	4.6 ± 5.4	16.6 ± 10.0
Others	12%	7.9 ± 16.5	22.0 ± 18.7
Psychiatric Diagnosis			
Delirium	28%	15.4 ± 26.7	31.5 ± 33.3
Mood disorders	15%	22.3 ± 28.7	41.9 ± 35.7
Alcohol/substance abuse or dependence	15%f	1.9 ± 3.3	16.1 ± 11.2
Anxiety, panic, obsessive disorders and phobias	8%	3.5 ± 3.7	11.5 ± 5.2
Dementia	7%	31.1 ± 47.1	52.3 ± 49.5
Adjustment or stress disorder	7%	5.3 ± 4.8f	20.1 ± 12.9
Personality disorders	6%	7.2 ± 11.0	47.3 ± 67.3
Schizophrenia or Delusions	4%	4.0 ± 5.0	21.0 ± 14.9
No psychiatric diagnosis or other	10%	17.2 ± 25.5	34.6 ± 40.9

Note: [a]Includes orthopedics.
[b]Includes dermatology, gastroenterology, lung, haematology, nefrology, and oncology.
[c]Includes neurosurgery.
[d]Includes oral diseases and dental surgery.

TABLE 3.   Pearson's correlations of timing of referral, length of stay (LOS), psychiatric dysfunction, and social vulnerability

	Referral Time	LOS	Psychiatric Dsyfunction	Social Vulnerability
Referral time[b]	1.00			
LOS[b]	0.69[a]	1.00		
Psychiatric dysfunction	−0.26[a]	−0.09	1.00	
Social vulnerability	0.19	0.29[a]	0.36[a]	1.00

Note: [a]Correlation is statistically significant at 0.01 level (two-tailed).
[b]Based on natural logarithmic transformations in order to obtain normal distributions.

However, social vulnerabilities can be caused by psychiatric disturbances that may justify psychiatric consultation and interventions.

The group of patients with a combination of a relatively high level social vulnerability and a relatively low level psychiatric dysfunction, making up 20% of our sample, had the highest risk of being referred late. Of this group, 40% were referred after 2 weeks from the time of admission. In addition to the fact that these patients were relatively older patients with 80% of the sample≥65 years—they also frequently suffered from delirium (50%) or a mood disorder (30%), had a poor prognosis (30% died while in the hospital, 40% were placed in nursing home, 50% had a LOS≥30 days)—one can conclude that this is

a vulnerable type of patient referred to C-L psychiatry. When translating these findings into clinical practice, C-L psychiatrists argue for an admission risk screening procedure focused on detecting frail elderly and socially vulnerable patients. Such an admission screening procedure should include the three indicators we used to assess social vulnerability—residential instability and prognoses with respect to social care needs and the need for care coordination (see Figure 2). Because a high score on these variables is associated with a late referral, a long LOS, an increased risk of in-hospital death, and placement in a nursing home—this would be a group where preventive interventions may be of help in improving care.

Several studies have described the effectiveness of

TABLE 4. Comparison of patients with low and high social vulnerability and psychiatric dysfunction on sociodemographics and referral data, *n*(%)

	Low Dysfunction, Low Vulnerability (n = 27)	High Dysfunction, Low Vulnerability (n = 20)	Low Dysfunction, High Vulnerability (n = 20)	High Dysfunction, High Vulnerability (n = 33)	Total (n = 100)
Sociodemographics					
65 years or older	12(44)	3(15)	16(80)	15(45)	46(46)
Women	18(67)	7(26)	13(65)	14(42)	52(52)
Psychiatric history	6(22)	12(60)	12(60)	20(61)	50(50)
Referral Time					
0–1 days	7(26)	9(45)	3 (15)	11(33)	30(30)
2–4 days	5(19)	6(30)	3(15)	10(30)	24(24)
5–13 days	10(37)	4(20)	6(30)	7(21)	27(27)
>13 days	5(19)	1(5)	8(40)	5(15)	19(19)
Referral From					
Surgery	6(22)	8(40)	8(40)	11(33)	33(33)
Internal medicine	8(30)	4(20)	8(40)	10(30)	30(30)
Neurology	4(15)	1(5)	3(15)	6(18)	14(14)
Ear, nose, and throat	4(15)	3(15)	1(5)	3(9)	11(11)
Others	5(19)	4(20)	-	3(9)	12(12)

TABLE 5. Comparison of patients with low and high social vulnerability and psychiatric dysfunction on psychiatric diagnosis and discharge status, *n*(%)

	Low Dysfunction, Low Vulnerability (n = 27)	High Dysfunction, Low Vulnerability (n = 20)	Low Dysfunction, High Vulnerability (n = 20)	High Dysfunction, High Vulnerability (n = 33)	Total (n = 100)
Psychiatric diagnosis					
Delirium	11(41)	3(15)	10(50)	4(12)	28(28)
Mood disorders	6(22)	—	6(30)	3(9)	15(15)
Alcohol/substance abuse or dependence	—	7(35)	—	8(24)	15(15)
Anxiety, panic, obsessive disorders and phobias	3(11)	2(10)	2(10)	1(3)	8(8)
Dementia	—	—	1(5)	6(18)	7(7)
Adjustment or stress disorders	2(7)	3(15)	1(5)	1(3)	7(7)
Personality disorders	—	4(20)	—	2(6)	6(6)
Schizophrenia/delusions	—	—	—	4(12)	4(4)
No psychiatric diagnosis/other	5(19)	1(5)	—	4(12)	10(10)
Discharge status					
Home	21(78)	17(85)	3(15)	13(39)	54(54)
Deceased	2(7)	—	6(30)	2(6)	10(10)
Nursing home	2(7)	2(10)	8(40)	8(24)	20(20)
Psychiatric hospital	—	—	—	2(6)	2(2)
Other	2(7)	1(5)	3(15)	8(24)	14(14)
Length of hospital stay					
0–10 days	6(22)	7(35)	3(15)	6(18)	22(22)
11–20 days	10(37)	8(35)	5(25)	9(27)	32(32)
21–30 days	5(19)	4(20)	2(10)	6(18)	17(17)
>30 days	6(22)	1(10)	10(50)	12(36)	29(29)

FIGURE 2. Description of the six variables indicative for psychiatric dysfunction and social vulnerability.

Psychiatric Dysfunction

Score	Variable

Premorbid Level of Psychiatric Dysfunction

Score	Variable
0	No history of psychiatric dysfunction
1	A history of psychiatric dysfunction without clear effects on daily functioning
2	A history of psychiatric dysfunction with a clear negative impact on daily functioning
3	A history of at least one psychiatric inpatient admission

Severity of Current Psychiatric Symptoms

0	No psychiatric symptoms
1	Mild psychiatric symptoms (e.g., problems concentrating or feeling tense)
2	Moderate psychiatric symptoms (e.g., symptoms of anxiety, depression, or confusion)
3	Severe psychiatric symptoms with notable behavioral disturbances (e.g., violence or behavior resulting in physical harm of oneself)

Mental Health Threat

0	No risk for emotional problems
1	A risk for mild adjustment difficulties (e.g., anxious or depressive symptoms or risk for substance abuse)
2	A risk for a significant emotional reaction (e.g., depression or substance abuse necessitating treatment)
3	A risk for severe psychiatric reactions (e.g., necessitating psychiatric inpatient care)

Social Vulnerability

Score	Variable

Residential Instability

0	A stable housing situation and capability of independent living
1	A stable housing situation but in need of support by other or living in an institution
2	Expected changes in living situation
3	Homeless

Social Vulnerability

0	No expected changes in living situation and no additional nonmedical care needs
1	No expected changes in living situation but additional nonmedical care needs
2	Temporary stay in a facility/institution after discharge
3	Permanent stay in a facility/institution after discharge

Care Needs

0	Nonmental health care only (a primary care physician and a specialist)
1	Basic care (mentioned under 0) and in addition mental health care or simple forms of coordination of care
2	Specialist consults
3	Interdisciplinary case-management including mental health care

---

care management interventions, especially for frail elderly patients,[4,6,20] and of interventions to improve discharge planning[21] in terms of reduction of medical care utilization. Our findings may also partly explain the contradictory results and impact of psychiatric intervention studies on hospital stay.[22–24] If patients suffering from severe psychiatric disorders are referred early, there can hardly be a reduction in hospital stay when detecting them at admission, except that more patients may be detected at all.

We found the following limitations in our study. The INTERMED was scored with information available at referral to the psychiatric C-L service and not at time of admission. In addition, we were not able to fully interview

35 of our patients and had to rely on information from the family and/or their treating physicians and nurses. Therefore in future studies, we have to assess to what extent it is possible to detect vulnerable patients at time of admission and how it can benefit health care delivery.

Timing of referral is a crucial variable for the effectiveness of a C-L psychiatric intervention. We offer an explanation why some referrals are made early and some late. Although the reasons for nonreferral still need to be identified, of those who are referred, the socially vulnerable may especially benefit from an early detection and a comprehensive assessment that cover biological, psychological, and social aspects of disease.

References

1. Winograd CH, Gerety MB, Chung M, et al: Screening for frailty: criteria and predictors of outcomes. JAGS 1991; 39:778–784
2. Rockwood K, Stadnyk K, MacKnight C, et al: A brief clinical instrument to classify frailty in elderly people. The Lancet 1999; 353:205–206
3. Huyse FJ, Herzog T, Lobo A, et al: Detection and treatment of mental disorders in general health care. Eur Psychiatry 1997; 12(suppl 2):70–78
4. Stuck AE, Siu AL, Wieland GD, et al: Comprehensive geriatric assessment: a meta-analysis of controlled trials. The Lancet 1993; 342:1032–1036
5. Slaets JPJ, Kauffmann RH, Duivenvoorden HJ, et al: A randomized trial of geriatric liaison intervention in elderly medical inpatients. Psychosomatic Medicine 1979; 59:585–591
6. Curley C, McEachern JE, Speroff T: A firm trial of interdisciplinary rounds on the inpatient medical wards: an intervention designed using continuous quality improvement. Medical Care 1998; 36(8):AS4-AS12
7. Inouye SK, Bogardus ST, Charpentier PA, et al: A multicomponent intervention to prevent delirium in hospitalized older patients. N Engl J Med 1999; 340(9):669–676
8. Maguire GP, Julier DL, Hawton KE, et al: Psychiatric morbidity and referral on two general medical wards. British Medical Journal 1974; 1:268–270
9. Schwab JJ: Psychiatric illness in medical patients: why it goes undiagnosed. Psychosomatics 1982; 23:225–229
10. Ormont MA, Weisman HW, Heller SS, et al: The timing of psychiatric consultation requests: utilization, liaison, and diagnostic considerations. Psychosomatics 1997; 38: 38–44
11. Lyons JS, Hammer JS, Strain JJ, et al: The timing of psychiatric consultation in the general hospital and length of hospital stay. General Hospital Psychiatry, 1986; 8:159–162
12. Ackerman AD, Lyons JS, Hammer JS, et al: The impact of coexisting depression and timing of psychiatric consultation on medical patients' length of stay. Hospital and Community Psychiatry, 1988; 39:173–176

13. Hadrinos D, McKenzie D, Smith GC: Timing of referral to a consultation-liaison psychiatry unit. Psychosomatics 1998; 39:311–317
14. Jaarverslag 1998 van het VU Medisch Centrum, 1998 Annual Report of the VU Medical Center]. Internal publication
15. Huyse FJ, Lyons JS, Stiefel FC, et al: INTERMED: a method to assess health service needs: I. Development and reliability. General Hospital Psychiatry 1999; 21:39–48
16. Stiefel FC, de Jonge P, Huyse FJ, et al: INTERMED: a method to assess health service needs: II. Results on validity and clinical use. General Hospital Psychiatry 1999; 21:49–56
17. Stiefel FC, de Jonge P, Huyse FJ, et al: INTERMED: an assessment and classification system for case complexity: results in patients with low back pain. Spine 1999; 24:378–385
18. Mazzocato C, Stiefel FC, de Jonge P, et al: Comprehensive assessment of patients in palliative care: a descriptive study utilizing the INTERMED. J Pain Symptom Manage 2000; 19(2):83–90
19. Huyse FJ, de Jonge P, Lyons JS, et al: INTERMED: integral multidisciplinary assessment of health care needs. English version 3, September 1999
20. Strain JJ, Lyons JS, Hammer JS, et al: Cost offsett from a psychiatric consultation-liaison intervention with elderly hip fracture patients. Am J Psychiatry 1991; 148:1044–1048
21. Evans RL, Hendricks RD: Evaluating hospital discharge planning: a randomized clinical trial. Medical Care 1993; 31:358–370
22. Hengeveld MW, Ancion FAJM, Rooijmans HGM: Psychiatric consultations with depressed medical inpatients: a randomized controlled costs-effectiveness study. Int J Psychiatry Med 1988; 18:33–43
23. Levenson JL, Hamer RM, Rossiter LF: A randomized controlled study of psychiatric consultation guided by screening in general medical inpatients. Am J Psychiatry 1992; 149:631–637
24. Gater RA, Goldberg DP, Effenson JM, et al: Detection and treatment of psychiatric illness in a general medical ward: a modified cost-benefit analysis. J Psychosom Res 1998; 45:437–448