

# Association between the timing of consultation-liaison psychiatry interventions and the length of stay in general hospital

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## Background

Psychiatric comorbidities are frequent in patients admitted in general hospital and are associated with greater lengths of stay (LOS). Early consultation-liaison psychiatry (CLP) interventions may reduce the LOS but previous studies were underpowered to allow subgroup analyses and have generally not considered the severity of the condition for which patients were admitted ('disease severity').

## Aims

To investigate the association between the timing of CLP interventions and LOS in a general hospital.

## Method

We retrospectively included 4500 consecutive patients admitted in non-psychiatric wards of a university hospital between 2008 and 2016 who had a first CLP intervention. We used general linear models to examine the association between the referral time, defined as  $\log(\text{days before the consultation})/\log(\text{LOS})$ , and  $\log(\text{LOS})$ , adjusting for age, gender, year of admission, place of residence, main psychiatric diagnosis, admission to the intensive care unit (ICU), main physical condition and disease severity.

## Results

Referral time was associated with  $\log(\text{LOS})$  ( $\beta = 0.31$ ;  $P < 0.001$ ), notably for older patients ( $\beta = 0.43$ ;  $P < 0.001$ ) and those admitted to the ICU ( $\beta = 0.50$ ;  $P < 0.001$ ), but not for those with psychotic disorders ( $\beta = -0.20$ ;  $P = 0.10$ ). The association was confirmed

when considering the expected LOS for each patient. For instance, for an expected LOS of 10 days, a CLP intervention on day 3 compared with day 6 was associated with a reduction of the actual LOS of 2.4 days.

## Conclusions

Earlier CLP interventions were associated with a clinically significant shorter LOS in a large population even after adjusting for disease severity. Early CLP interventions may have benefits for both patients and health-related costs.

## Declaration of interest

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## Keywords

Economics; cost-effectiveness; epidemiology; consultation-liaison psychiatry; length of stay.

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Comorbid psychiatric disorders are frequent in patients admitted to general hospitals, with an estimated prevalence around 30%.<sup>1</sup> Several studies have observed that patients with psychiatric comorbidities had a longer length of stay (LOS).<sup>2,3</sup> The costs of hospital admissions have come under high scrutiny and a growing interest has been shown in demonstrating the effectiveness of consultation-liaison psychiatric (CLP) interventions. Thus, beyond their clinical impact on patients, CLP interventions might convey a significant economic benefit by attenuating this increase in LOS. As early as 1941, Billings *et al*<sup>4</sup> reported that 5 years after setting up a CLP service at the University of Colorado Hospital, the hospital LOS for medical in-patients with psychiatric comorbidities was reduced from 28 to 15 days. Since then, some studies have investigated the relationship between CLP interventions and shorter LOS. In 1981 and 1991, two studies investigated the LOS of elderly patients with a hip fracture and found that CLP interventions were associated with a reduced LOS.<sup>5,6</sup> In 1992, a first randomised controlled trial addressed this question, but no evidence for a reduction in LOS was found.<sup>7</sup> More recently, some evidence of cost-effectiveness for proactive CLP interventions was found in observational and quasi-interventional studies.<sup>8,9</sup> The need to conduct studies with robust methodology that would also reflect the real-life operation of CLP services<sup>10</sup> led to another approach, consisting in investigating the association between the timing of CLP interventions and the LOS. If CLP interventions do indeed reduce the LOS,

then having a psychiatric consultation earlier in the hospital stay may have a greater impact than having the consultation later in the stay.<sup>11</sup> Studies with different approaches have suggested that early psychiatric consultation is associated with early discharge.<sup>10–16</sup> However, study samples were too small to allow subgroup analyses and the majority did not take into account the severity of the condition for which patients were admitted ('disease severity'), which is a critical determinant of the LOS. This large-scale study aimed to confirm the association between the timing of CLP intervention and the LOS in a large population of in-patients of a general university hospital, to investigate the contribution of the disease severity to this association, to explore the extent to which this association may vary across subgroups and to estimate the clinical significance of such an association.

## Method

### Participants

The study was conducted in a 712-bed acute metropolitan general university hospital in Paris, France (the Georges-Pompidou European Hospital). All consecutive in-patients referred for the first time to a consultation-liaison psychiatrist between 1 January 2008 and 31 December 2016 were included in the study. Patients were not included if they had previously met a

consultation-liaison psychiatrist in the hospital, because of a difference in referral pathway, as psychiatrists may decide to plan a consultation even if not asked by the medical team in charge of the patient. For each patient, the main psychiatric diagnosis was added to their computerised medical record by the psychiatrist after the consultation.

Eligibility criteria were:  $\geq 18$  years of age, living in France, having a main psychiatric diagnosis according to ICD-10 codes F0–F6 made during the hospital admission (F0, Organic, including symptomatic, mental disorders; F1, Mental and behavioural disorders due to psychoactive substance use; F2, Schizophrenia, schizotypal and delusional disorders; F3, Mood disorders; F4, Neurotic, stress-related and somatoform disorders; F5, Behavioural syndromes associated with physiological disturbances and physical factors; F6, Disorders of adult personality and behaviour) and having no missing data for the selected variables. Exclusion criteria were: a length of stay  $< 2$  days or a psychiatric consultation on the day of admission.

We assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on medical research and with the Helsinki Declaration of 1975, as revised in 2008. All procedures were approved by the local ethics committee (CERHUPO) under the allocated reference number 17-7-1. For research based on data collected in the context of the administration of care and treatment, French law does not require written informed consent but only that the patient is informed of their right to oppose to the use of their data.

### Data collection

Data were obtained from the computerised medical records. Collected data included age, gender, admission date, discharge date, date of the first psychiatric consultation, place of residence, type of ward, main psychiatric diagnosis, main non-psychiatric diagnosis and an indicator of disease severity.

The LOS was calculated as the whole number of days from admission to discharge. The number of days before the psychiatric consultation was calculated as the whole number of days from admission to the first CLP consultation. Year of admission was derived from the date of admission and categorised into nine classes, from 2008 to 2016. Place of residence was categorised into three classes: Paris, Paris area and elsewhere in France. Type of ward was taken to be where the patient had a bed at the time of the psychiatric consultation and categorised into two classes: intensive care unit or not. The main psychiatric diagnosis was recorded by the psychiatrist according to the seven ICD-10 codes from F0 to F6. The main non-psychiatric diagnosis was identified by the *Groupe Homogène de Malades* (GHM), the French version of the diagnosis-related group (DRG) and categorised into two classes: medical or surgical. We used the *Groupe Homogène de Séjour* (GHS) tariff, a French version of the DRG-based tariff derived from the GHM, as a proxy of disease severity. GHS tariffs were extracted from the annual national databases for public health facilities. For each patient, we used the GHS tariff corresponding to their GHM diagnosis and to the admission year. The GHS was preferred to the GHM as this variable is continuous, whereas the GHM contains a thousand of different categories and was thus not usable for statistical analyses.

### Statistical analysis

Statistical analysis was carried out using the R Statistics software (<http://cran.r-project.org>, version 3.0.2 for Windows).

Our principal aim was to investigate the associations between the timing of CLP intervention and the LOS. As previously reported in the literature,<sup>11–13,15</sup> as patients who are in the hospital longer will obviously be more likely to receive psychiatric consultations later, it

would be inaccurate to merely study this association. To control for this, Lyons *et al*<sup>16</sup> suggested using the ratio of duration of hospital stay before the consultation to the LOS as an indicator of the timing of the consultation, and because the LOS and the number of days before the consultation are both positively skewed, they applied logarithmic transformations to both. We therefore used the following formula, described by Lyons *et al* and used by several authors since,<sup>11–13,15</sup> to calculate the referral time: referral time =  $\log(\text{number of days before the consultation})/\log(\text{LOS})$ .

Preliminary analyses were performed to identify factors associated with referral time. To this aim, all variables (i.e. age, gender, place of residence, type of ward, main psychiatric diagnosis, main non-psychiatric diagnosis and disease severity) were included in the same general linear model, taking referral time as the dependent variable.

Then, we first assessed the associations between referral time and  $\log(\text{LOS})$  using three general linear models, taking  $\log(\text{LOS})$  as the dependent variable. Model 1 included only age and gender as covariates. Model 2 further included all the covariates except disease severity (i.e. year of admission, place of residence, type of ward, main psychiatric diagnosis and main non-psychiatric diagnosis). Model 3 included all covariates plus disease severity measured by the GHS tariff. Next, we tested for the presence of an interaction between referral time and each covariate by including corresponding interaction terms in the fully adjusted model (model 3). Should these interactions be significant, we planned to further examine the association with  $\log(\text{LOS})$  in stratified analyses.

As the association between referral time and  $\log(\text{LOS})$  may differ between patients with short, intermediate and long LOS, stratified analyses were performed for patients with LOS  $< 5$  days, 5–30 days and  $> 30$  days using the same covariates as model 3. The cut-offs of 5 and 30 days were drawn from the literature.<sup>8–10,13</sup>

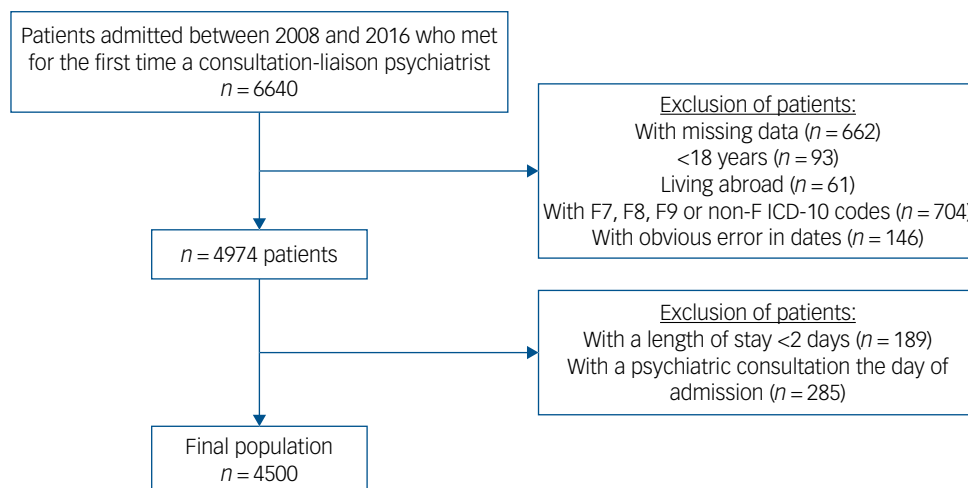
Finally, exploratory analyses were carried out to take into account the theoretical LOS of each patient, given the severity of their disease. To this aim we used the national database of average LOS (ALOS). For each patient, we extracted the ALOS corresponding to their GHM (the French version of the DRG-based tariff) and to the admission year, and calculated a relative stay index (RSI). The RSI was calculated as the actual number of days spent in hospital (LOS) divided by the expected number of days spent in hospital (ALOS):<sup>17</sup>  $\text{RSI} > 1$  indicates that the LOS was higher than expected, whereas  $\text{RSI} < 1$  indicates that the length of stay was less than expected.<sup>17</sup> The association between the ratio 'number of days before the consultation divided by ALOS' ( $n_{\text{days}}/\text{ALOS}$ ) (the main exposure) and RSI (outcome) was investigated using the same covariates as in model 2.

Finally, to assess the clinical significance of these results we aimed to predict the adjusted RSI on the basis of the timing of the first CLP consultation. To this aim, patients with a LOS between 5 and 30 days were divided in ten deciles of the ratio  $n_{\text{days}}/\text{ALOS}$ . These deciles were used as the main exposure in a model assessing their association with RSI (outcome) using the same covariates as in model 2.

## Results

The final study population consisted of 4500 participants (2298 women, 51%) with a mean age of 59.83 years (s.d. = 19.29). The study population selection is described in Fig. 1. Table 1 displays the characteristics of the study participants.

In preliminary analyses, factors associated with shorter referral time were: younger age, admission to the ICU, more recent year of admission, main psychiatric diagnoses F1, F2 or F3, and lower disease severity (supplementary Table 1 available at <https://doi.org/10.1192/bjp.2019.233>). Patients with psychotic disorders (F2)



**Fig. 1** Flowchart of the study population.

ICD-10 codes for: F7, Intellectual disabilities; F8, Pervasive and specific developmental disorders; F9, Behavioral and emotional disorders with onset usually occurring in childhood and adolescence.

**Table 1** Characteristics of the study population (n = 4500)

Variables		
Length of stay, mean (s.d.)	21.83	(24.67)
Days before the consultation, mean (s.d.)	8.72	(12.42)
Referral time [0; 1], mean (s.d.)	0.58	(0.32)
Average length of stay, days: mean (s.d.)	15.48	(10.33)
Relative stay index, mean (s.d.)	1.44	(1.39)
Age, years: mean (s.d.)	59.83	(19.29)
Disease severity (GHS tariff), €: mean (s.d.)	8122.98	(7651.55)
Gender, n (%)		
Women	2298	(51%)
Men	2202	(49%)
Year of admission, n (%)		
2008	364	(8%)
2009	239	(5%)
2010	331	(7%)
2011	417	(9%)
2012	424	(9%)
2013	577	(13%)
2014	648	(14%)
2015	796	(18%)
2016	704	(16%)
Place of residence, n (%)		
Paris	2189	(49%)
Paris area	1867	(41%)
Elsewhere in France	444	(10%)
Type of ward, n (%)		
Medical or surgical unit	3674	(82%)
Intensive care unit	826	(18%)
Psychiatric diagnosis, n (%)		
F0	490	(11%)
F1	301	(7%)
F2	425	(9%)
F3	1175	(26%)
F4	1799	(40%)
F5	60	(1%)
F6	250	(6%)
Main non-psychiatric diagnosis, n (%)		
Surgical	1608	(36%)
Medical	2892	(64%)

F0, Organic, including symptomatic, mental disorders; F1, Mental and behavioural disorders due to psychoactive substance use; F2, Schizophrenia, schizotypal and delusional disorders; F3, Mood disorders; F4, Neurotic, stress-related and somatoform disorders; F5, Behavioural syndromes associated with physiological disturbances and physical factors; F6, Disorders of adult personality and behaviour; GHS tariff, the treatment tariff based on the *Groupe Homogène de Séjour* (the French version of the diagnosis-related group), used as proxy of disease severity.

were especially likely to have a shorter referral time than those with another main psychiatric diagnosis (supplementary Fig. 1).

In the main analyses, after adjustment for age and gender, referral time was significantly associated with log(LOS) ( $\beta = 0.52$ ;  $P < 0.001$ ). This association remained roughly similar following adjustment for all covariates except disease severity (model 2:  $\beta = 0.47$ ;  $P < 0.001$ ) and slightly decreased after further adjustment for disease severity (model 3:  $\beta = 0.31$ ;  $P < 0.001$ ) (Table 2). Associations between referral time and LOS in the univariate model and in eight bivariate models adjusted for each covariate separately are presented in supplementary Table 2.

The interactions between referral time and age ( $P = 0.002$ ), type of ward ( $P = 0.02$ ) and psychiatric diagnosis ( $P = 0.002$ ) were significant. Stratified analyses revealed a more important association between referral time and log(LOS) in older patients ( $\beta = 0.43$ ,  $P < 0.001$  in the 1763 patients  $\geq 60$  years, compared with  $\beta = 0.22$ ,  $P < 0.001$  in the 1717 patients  $< 60$  years) and in patients admitted to the ICU ( $\beta = 0.50$ ,  $P < 0.001$  in the 826 patients admitted to the ICU, compared with  $\beta = 0.25$ ,  $P < 0.001$  in the 3674 patients not admitted to the ICU). Considering psychiatric diagnoses, referral time remained significantly associated with log(LOS) in patients with an F0, F3 or F4 code (respectively:  $n = 490$ ,  $\beta = 0.30$ ,  $P < 0.001$ ;  $n = 1175$ ,  $\beta = 0.17$ ,  $P = 0.01$ ;  $n = 1799$ ,  $\beta = 0.49$ ,  $P < 0.001$ ). In patients with an F1, F5 or F6 code, we may lack sufficient power to reach significance (respectively:  $n = 301$ ,  $\beta = 0.22$ ,  $P = 0.10$ ;  $n = 60$ ,  $\beta = 0.06$ ,  $P = 0.86$ ;  $n = 250$ ,  $\beta = 0.35$ ,  $P = 0.35$ ). Finally, in patients with an F2 code (i.e. psychotic disorders), there was no association between referral time and log(LOS) ( $n = 425$ ,  $\beta = -0.20$ ,  $P = 0.10$ ).

Stratified analysis according to the LOS indicated a significant association between referral time and log(LOS) in patients with a LOS  $\leq 30$  days. The strongest association was observed in patients with a LOS  $< 5$  days ( $n = 569$ ,  $\beta = 0.11$ ,  $P < 0.001$ ), followed by patients with a LOS between 5 and 30 days ( $n = 3025$ ,  $\beta = 0.09$ ,  $P < 0.001$ ). We only observed a trend for an association in patients with a LOS  $> 30$  days ( $n = 906$ ;  $\beta = 0.10$ ;  $P = 0.06$ ).

In exploratory analyses taking into account the theoretical LOS, similar results were obtained, with a significant association between the ratio  $n_{\text{days}}/\text{ALOS}$  and the RSI ( $\beta = 1.10$ ;  $P = 0.03$ ). When patients were divided in ten deciles of this ratio, we observed that in patients for whom the CLP intervention occurred after 40% of the ALOS (i.e.

**Table 2** Associations between referral time (exposure) and logarithm of length of stay (outcome) in multivariate models<sup>a</sup> (n = 4500)

	Model 1			Model 2			Model 3		
	$\beta$	s.e.	P	$\beta$	s.e.	P	$\beta$	s.e.	P
Referral time	0.523	0.044	<0.001	0.468	0.041	<0.001	0.309	0.037	<0.001
<b>Covariates</b>									
Age	0.005	0.001	<0.001	0.009	0.001	<0.001	0.008	0.001	<0.001
Gender									
Women	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Men	0.162	0.028	<0.001	0.095	0.026	<0.001	0.051	0.023	0.03
Year of admission									
2008	–	–	–	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
2009	–	–	–	0.126	0.069	0.07	0.004	0.064	0.095
2010	–	–	–	0.031	0.064	0.63	–0.046	0.058	0.43
2011	–	–	–	–0.051	0.060	0.39	–0.149	0.055	0.007
2012	–	–	–	–0.092	0.060	0.13	–0.216	0.055	<0.001
2013	–	–	–	–0.076	0.056	0.18	–0.207	0.051	<0.001
2014	–	–	–	–0.144	0.055	0.009	–0.308	0.050	<0.001
2015	–	–	–	–0.149	0.053	0.005	–0.279	0.049	<0.001
2016	–	–	–	–0.268	0.054	<0.001	–0.355	0.050	<0.001
Place of residence									
Paris	–	–	–	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Paris area	–	–	–	0.011	0.028	0.69	0.002	0.025	0.95
Elsewhere in France	–	–	–	0.046	0.045	0.30	–0.067	0.041	0.10
Type of ward									
Medical or surgical	–	–	–	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Intensive care	–	–	–	0.323	0.034	<0.001	0.095	0.032	0.003
Psychiatric diagnosis									
F0	–	–	–	0.096	0.044	0.03	0.031	0.040	0.44
F1	–	–	–	–0.029	0.053	0.59	0.039	0.048	0.42
F2	–	–	–	0.021	0.047	0.65	0.068	0.042	0.11
F3	–	–	–	–0.142	0.032	<0.001	–0.099	0.029	<0.001
F4	–	–	–	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
F5	–	–	–	–0.137	0.110	0.21	–0.184	0.100	0.07
F6	–	–	–	–0.382	0.057	<0.001	–0.259	0.052	<0.001
Main non-psychiatric diagnosis									
Surgical	–	–	–	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Medical	–	–	–	–0.648	0.027	<0.001	–0.179	0.029	<0.001
Disease severity (GHS tariff, thousands of €)	–	–	–	–	–	–	0.058	0.002	<0.001

$\beta$ , estimated parameter (GLM coefficient) of the association between referral time (exposure) and logarithm of length of stay (outcome) or between each covariate and logarithm of length of stay; Ref., reference category; F0, Organic, including symptomatic, mental disorders; F1, Mental and behavioural disorders due to psychoactive substance use; F2, Schizophrenia, schizotypal and delusional disorders; F3, Mood disorders; F4, Neurotic, stress-related and somatoform disorders; F5, Behavioural syndromes associated with physiological disturbances and physical factors; F6, Disorders of adult personality and behaviour; GHS tariff, the treatment tariff based on the *Groupe Homogène de Séjour* (the French version of the diagnosis-related group), used as proxy of disease severity.

a. Model 1 was adjusted for age and gender; model 2 is model 1 further adjusted for smoking status; model 3 is model 1 further adjusted for disease severity.

**Table 3** Adjusted relative stay index (RSI) according to deciles of the ratio of the number of days before the consultation to the average length of stay ( $n_{\text{days}}/\text{ALOS}$ )

Deciles	$n_{\text{days}}/\text{ALOS}$	Adjusted RSI <sup>a</sup>	95% CI	P
1	<0.11	0.88	0.76–1.00	Ref.
2	0.11–0.18	0.96	0.84–1.08	0.28
3	0.18–0.25	0.95	0.83–1.07	0.34
4	0.25–0.32	0.98	0.86–1.10	0.18
5	0.32–0.41	1.01	0.89–1.13	0.08
6	0.41–0.51	1.14	1.02–1.27	<b>&lt;0.001<sup>b</sup></b>
7	0.51–0.62	1.22	1.10–1.34	<b>&lt;0.001</b>
8	0.62–0.78	1.28	1.16–1.40	<b>&lt;0.001</b>
9	0.78–1.07	1.46	1.34–1.59	<b>&lt;0.001</b>
10	>1.07	2.35	2.22–2.47	<b>&lt;0.001</b>

Ref., reference category.

a. Adjusted for age, gender, year of admission, place of residence, type of ward and main non-psychiatric diagnosis.

b. Bold figures indicate significant results at  $P < 0.05$ .

in deciles 6–10), the ALOS was significantly higher than expected (Table 3). For instance, for a patient with an ALOS of 10 days, a CLP intervention at day 3 (i.e. in the 4th decile of the ratio) would be associated with an ALOS of 9.8 days (95% CI 8.6–11.0), compared with 12.2 days (95% CI 11.0–13.4) for an intervention at day 6 (in the 7th decile) (i.e. a LOS reduction of 2.4 days) (Table 3).

## Discussion

This study confirms and extends previous literature. First, the long LOS for our population (21.48 days, compared with 5.31 days in the same period for patients in the hospital not referred to a consultation-liaison psychiatrist) confirmed the increased LOS associated with mental disorder.<sup>2,3</sup> This longer LOS is partly explained by exclusion from the study of patients with a LOS < 2 days. But it is also certainly partly explained by a greater disease severity, which could be a consequence of the comorbid mental disorder (e.g. because of a lack of ambulatory care), one of its causes (e.g. stress-related disorders) or both, testifying to a greater biopsychosocial complexity.<sup>19</sup> The relatively high ALOS and mean GHS tariff for our population (€8122.98, compared with €2030.96 for non-referred patients in the same period) confirm a high mean disease severity in our population. Other factors, such as a greater difficulty providing optimal care, could contribute to longer LOS for patients with psychiatric comorbidities. The high RSI in our study supports this hypothesis.

Our results also confirm and extend previous findings showing an association between earlier CLP interventions and shorter LOS in general hospitals.<sup>10–16</sup> Only one study, focusing on patients with an organic mental disorder, did not find any association between the timing of the CLP consultation and the LOS.<sup>20</sup> Several hypotheses

may explain the association between earlier CLP interventions and shorter LOS. First, as mental disorders may interfere with medical care and recovery, early treatment of the psychiatric condition may improve later care.<sup>21</sup> In physically ill patients with depression, Aoki *et al*<sup>22</sup> reported that the LOS could be shortened by early effective antidepressant treatment. Second, early psychiatric interventions may lead to a better organisation of secondary care projects and reduce the delay of discharge or transfer. Third, the association may be explained by earlier CLP interventions in patients requiring a rapid transfer to a psychiatric ward. Previous studies have reported that patients with suicidal ideation and/or behaviour had earlier psychiatric consultations.<sup>12,13</sup> Furthermore, in a previous study from our group, we observed that, in 225 patients admitted to the Georges-Pompidou European Hospital after a suicide attempt by jumping, admission to a psychiatric unit on discharge from the hospital, which concerned 18% of the patients, tended towards an association with a shorter LOS in the hospital.<sup>23</sup>

In the present study, we also found that the association between the timing of the first CLP intervention and the LOS only slightly decreased and remained significant after adjustment for disease severity. To our knowledge, only one previous study also adjusted for the severity of the disease and it found an attenuated but still significant association between the date of the request for a CLP consultation and the LOS in 814 patients.<sup>16</sup> By demonstrating that early CLP interventions are associated with shorter LOS, independently of disease severity, the present results support the notion that CLP interventions may be cost-effective.

We also identified subgroups in which the association between earlier CLP interventions and shorter LOS was stronger. We first observed that the association was stronger in older rather than younger patients. This may be due to the relative underestimation of psychiatric comorbidities in older patients,<sup>24</sup> which may result in a longer LOS unless properly recognised by the medical team. This interpretation is consistent with the longer referral time observed for older patients in the present study as well as in other studies.<sup>13,15</sup> However, a stronger association between earlier CLP interventions and shorter LOS in younger patients has also been reported.<sup>15</sup> We also found a stronger association in patients admitted to the ICU. This result might be because patients admitted to the ICU who had an early CLP intervention were on average less seriously ill (had a lower disease severity). Indeed, patients with more serious medical conditions in an ICU are more likely to have a tracheal tube and/or to be sedated, which often delays psychiatric assessment. This may notably apply to patients admitted to an ICU after a suicide attempt by self-poisoning, whose non-psychiatric medical condition may rapidly improve so that a transfer to a psychiatry ward is urgently indicated. Psychiatric interventions in response to suicide attempts may indeed partly account for the shorter referral time observed after admission to the ICU. However, patients having received a CLP intervention on the day of their admission or with a LOS <2 days were not included in our study.

Considering psychiatric diagnoses, we did not find that earlier CLP interventions were associated with shorter LOS in all categories of psychiatric diagnosis. Regarding substance use disorders, personality disorders or behavioural syndromes such as eating or sleep disorders, we may lack sufficient power to reach significance as these diagnoses were present in only a small proportion of our sample. Regarding psychotic disorders, this might be explained by the high proportion of patients who had a first CLP consultation early in their hospital stay, thus leaving fewer patients for comparisons of later consultations. For example, in the present study, 57% of patients with a psychotic disorder had a consultation in the first 3 days after admission (compared with 36% of patients with other psychiatric diagnoses,  $\chi^2 = 71.16$ ;  $P < 0.001$ ). Earlier CLP

consultations for patients with psychotic disorders have been previously reported<sup>14</sup> and might be due to a greater vulnerability to the stress of the hospital admission, psychiatric symptoms that are more specific (i.e. positive symptoms), behaviours that could confuse non-psychiatric care teams or antipsychotic medications that these teams are not used to managing.

Stratified analysis according to LOS indicated that the association was observed in patients with short (<5 days) and intermediate (between 5 and 30 days) stays, while a simple trend was observed in patients with long stays (>30 days). Regarding patients with long stays, the result was consistent with the literature<sup>9</sup> and can be explained by the multiple other factors that may co-occur in prolonged stays.


## Strengths and limitations


The present study has several strengths. To our knowledge, it is the largest to address the association between the timing of CLP interventions and LOS in a general hospital, the first to investigate this association in subgroups and the first to estimate its clinical significance. Specifically, using the logarithm of the LOS as our main outcome, we also estimated, in terms of days, the reduction in the LOS that could be expected for any given timing of the first CLP intervention. This approach is a necessary step to convince stakeholders that CLP interventions could be cost-effective. Other strengths are the inclusion of consecutive in-patients who met a consultation-liaison psychiatrist for the first time, the use of the date of the consultation and not the date of the request for a consultation and adjustment for disease severity. The severity of the disease was the only covariate for which the statistical adjustment resulted in a substantial reduction in the association between earlier interventions and a shorter LOS.

Some limitations should also be acknowledged. First, owing to the cross-sectional design of this study, no causal conclusions could be drawn. Second, variables such as socioeconomic status were not considered. Third, we did not use structured clinical interviews to assess psychiatric diagnoses and suicide risk assessment was not systematically recorded. Fourth, the readmission rates of the patients were not available. Although no previous study investigating the association between the timing of CLP interventions and LOS has taken into account this last parameter, it has been suggested as an important point to consider in future studies,<sup>15</sup> as shorter LOS have been associated with higher readmission rates.<sup>18</sup>

## Implications and future research

Our results suggest that earlier CLP interventions in general hospitals are associated with substantially shorter LOS, notably in patients with LOS <30 days. This association remained significant after adjustment for disease severity and, although the magnitude of the association varied, it remained significant across subgroups, except in patients with psychotic disorders, who are generally referred earlier. These results provide indirect evidence for the cost-effectiveness of CLP interventions. Further studies should assess ways of improving the timeliness of psychiatric interventions and the clinical- and cost-effectiveness of such timely psychiatric interventions.

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## Supplementary material

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## References

- Hansen MS, Fink P, Frydenberg M, Oxhøj M, Søndergaard L, Munk-Jørgensen P. Mental disorders among internal medical inpatients: prevalence, detection, and treatment status. *J Psychosom Res* 2001; **50**: 199–204.
- Bourgeois JA, Kremen WS, Servis ME, Wegelin JA, Hales RE. The impact of psychiatric diagnosis on length of stay in a university medical center in the managed care era. *Psychosomatics* 2005; **46**: 431–9.
- Levenson JL, Hamen RM, Rossiten LF. Relation of psychopathology in general medical inpatients to use and cost of services. *Am J Psychiatry* 1990; **147**: 1498–503.
- Billings EG, McNary WS, Rees MH. Financial importance of general hospital psychiatry to hospital administrator. *Hospitals* 1937; **11**: 40–4.
- Levitan SJ, Kornfeld DS. Clinical and cost benefits of liaison psychiatry. *Am J Psychiatry* 1981; **138**: 790–3.
- Strain JJ, Lyons JS, Hammer JS, Fahs M, Lebovits A, Paddison PL, et al. Cost offset from a psychiatric consultation-liaison intervention with elderly hip fracture patients. *Am J Psychiatry* 1991; **148**: 1044–9.
- Levenson JL, Hamer R, Rossiter L. Psychosocial interventions in chronic medical illness. An overview of outcome research. *Gen Hosp Psychiatry* 1992; **14** (suppl 6): 43S–9S.
- Desan PH, Zimbrea PC, Weinstein AJ, Bozzo JE, Sledge WH. Proactive psychiatric consultation services reduce length of stay for admissions to an inpatient medical team. *Psychosomatics* 2011; **52**: 513–20.
- Sledge WH, Gueorguieva R, Desan P, Bozzo JE, Dorset J, Lee HB. Multidisciplinary proactive psychiatric consultation service: impact on length of stay for medical inpatients. *Psychother Psychosom* 2015; **84**: 208–16.
- Wood R, Wand APF. The effectiveness of consultation-liaison psychiatry in the general hospital setting: a systematic review. *J Psychosom Res* 2014; **76**: 175–92.
- Lyons JS, Hammer JS, Strain JJ, Fulop G. The timing of psychiatric consultation in the general hospital and length of hospital stay. *Gen Hosp Psychiatry* 1986; **8**: 159–62.
- Kishi Y, Meller WH, Kathol RG, Swigart SE. Factors affecting the relationship between the timing of psychiatric consultation and general hospital length of stay. *Psychosomatics* 2004; **45**: 470–6.
- Handrinos D, McKenzie D, Smith GC. Timing of referral to a consultation-liaison psychiatry unit. *Psychosomatics* 1998; **39**: 311–7.
- Ormont MA, Weisman HW, Heller SS, Najara JE, Shindledecker RD. The timing of psychiatric consultation requests: utilization, liaison, and diagnostic considerations. *Psychosomatics* 1997; **38**: 38–44.
- Wood R, Wand APF, Hunt GE. Relationship between timeliness of contact and length of stay in older and younger patients of a consultation-liaison psychiatry service. *BJPsych Bull* 2015; **39**: 128–33.
- Sockalingam S, Alzahrani A, Meaney C, Styra R, Tan A, Hawa R, et al. Time to consultation-liaison psychiatry service referral as a predictor of length of stay. *Psychosomatics* 2016; **57**: 264–72.
- Davis P, Milne B, Parker K, Hider P, Lay-Yee R, Cumming J, et al. Efficiency, effectiveness, equity (E3): evaluating hospital performance in three dimensions. *Health Policy* 2013; **112**: 19–27.
- Carey K, Lin MY. Hospital length of stay and readmission: an early investigation. *Med Care Res Rev* 2014; **71**: 99–111.
- Consoli SM. Critères d'évaluation et aspects médico-économiques. In *Psychiatrie de Liaison* (eds C Lemogne, P Cole, S Consoli, F Limosin). Lavoisier, 2018.
- Hales RE, Polly S, Orman D. An evaluation of patients who received an organic mental disorder diagnosis on a psychiatric consultation-liaison service. *Gen Hosp Psychiatry* 1989; **11**: 88–94.
- Daumit GL, Pronovost PJ, Anthony CB, Guallar E, Steinwachs DM, Ford DE. Adverse events during medical and surgical hospitalizations for persons with schizophrenia. *Arch Gen Psychiatry* 2006; **63**: 267–72.
- Aoki T, Sato T, Hosaka T. Role of consultation-liaison psychiatry toward shortening of length of stay for medically ill patients with depression. *Int J Psychiatry Clin Pract* 2004; **8**: 71–6.
- Todorov L, Vulser H, Pirracchio R, Thauvin I, Radtchenko A, Vidal J, et al. Suicide attempts by jumping and length of stay in general hospital: a retrospective study of 225 patients. *J Psychosom Res* 2019; **119**: 34–41.
- Andreas S, Schulz H, Volkert J, Dehoust M, Sehner S, Suling A, et al. Prevalence of mental disorders in elderly people: the European MentDis\_ICF65+ study. *Br J Psychiatry* 2017; **210**: 125–31.



## psychiatry in history

### Plus ça change, plus c'est la même chose

Stephen Wilson 

The stigma attached to mental health problems is well-known and attempts to diminish it have been made by both the Royal College of Psychiatrists and members of the Royal Family in recent times. It must also be a commonplace observation among professionals that this stigma is inclined to rub off.

Jean-Étienne Dominique Esquirol (1772–1840) was a favourite student of Philippe Pinel. He founded a private asylum and later succeeded Pinel at the Salpêtrière Hospital. He is credited with extending the humane reforms introduced in Paris to the French provinces, insisting on the importance of physician-led institutions, pioneering the formal teaching of psychiatry and emphasising the role of the state in providing mental healthcare. But this very successful man, René Semelaigne tells us in his book *Les Grandes Aliénistes Français* (1894), nursed a secret sadness:

"Those whom he had taken under his care, or whose relatives he had treated, avoided him in public. To know a doctor who treated the mentally ill, to speak with him, seemed for many people an admission that they had had recourse to his ministrations. Esquirol's tender, sensitive heart suffered in this way. "Fatal profession," he would write, "People do themselves credit by not recognising me; above all those whose secrets I hold, treat me as a pariah, and have need of darkness or to be behind closed doors in order to shake my hand."

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