Original Research Reports

Time to Consultation-Liaison Psychiatry Service Referral as a Predictor of Length of Stay

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Objectives: *The aim of this study was to determine the relationship between the time to referral (TTR) to psychiatric consultation and the length of stay (LOS) after adjusting for medical comorbity.* **Methods:** *Using a naturalistic study design, we collected and analyzed inpatient consultation-liaison psychiatry service data over a 12-month period from 2 Canadian hospital sites. Data collected included demographic characteristics, referral characteristics, Charlson Comorbidity Index to measure medical comorbidity severity, psychiatric diagnoses, type of psychiatric intervention, and time variables, namely TTR and LOS. We modeled the relationship LOS and TTR after adjusting for Charlson Index using a 3-component finite mixture of exponential regression models.* **Results:** *A total of 814 patients were included. The median LOS was 12 days (interquartile range : 4–28 days). Median TTR was 3 days (interquartile range: 1,9), and median Charlson Index was 5 (interquartile range 3,6). Bivariate analysis indicated a strong positive correlation among LOS and TTR (Spearman correlation: 0.77, p < 0.0001) and Charlson Index(Spearman correlation: 0.34, p < 0.0001), respectively. After controlling for Charlson Index, we observe that TTR was significantly associated with LOS in each of the 3 components of the mixture of exponential regression models. Persons with longer TTR have longer expected LOS. Graphical summaries suggest that the mixture of exponential regression model provides a good fit to these LOS response data.* **Conclusions:** *Patients with longer TTR had significantly longer LOS. The association between TTR and LOS holds after controlling for severity of medical comorbidity. Our results support the role of integrated and proactive consultation-liaison psychiatry programs aimed at reducing TTR to improve LOS outcomes.*

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INTRODUCTION

The current health care environment's increased focus on quality of care has resulted in a need for consultation-liaison psychiatry services (CLPs) to better demonstrate their effectiveness in mental health care for medical and surgical patients. The Institute for Health care Improvement's "Triple Aim" summarizes the importance of improving quality of patient care in the domains of patient experience, health of populations, and cost of health care, and highlights the need

for CLPs to demonstrate quality of care in these domains.[1] Given that the prevalence of psychiatric disorders in general hospital ranges from 20–40%,[2] data on CLP care outcomes are needed to justify resources and access to CLP services within general hospital settings.

A recognized outcome measure for CLP service quality is length of hospital stay. Previous studies have explored the association between length of stay (LOS) and timing of CLP referral in hospital. In a systematic review of studies measuring CLP effectiveness, Wood and Wand[3] identified 5 studies examining the relationship between LOS and timing of referral to CLP. A total of 4 studies in the systemic review demonstrated a positive correlation between the time of referral to CLP service and LOS.[4–8] However, these studies had several limitations. A total of 2 studies used retrospective study designs.[5,9] Furthermore, these studies did not use formal measures to assess medical comorbidity confounders, specifically the degree and severity of medical comorbidity. Studies examining the effect of CLP consultation as compared with no consultation have demonstrated that medical illness severity is associated with longer LOS in medical inpatients.[10] Consideration of the effect of medical illness severity and comorbidity is critical given the emergence of proactive CLP models to reduce time to consultation. In a study by Desan et al., a proactive CLP model resulted in reduced LOS compared to a CLP usual care model.[11] However, this study did not account for medical illness severity or comorbidity in its analysis.

To our knowledge, no studies have investigated the effect of timing of referral to CLP service (TTR) on LOS using formal measures to assess medical illness comorbidity. Therefore, the aim of the present study was to investigate the influence of TTR on LOS with considerations of potential confounders (such as medical illness severity). Based on earlier studies, we hypothesized that earlier CLP service referral would be a significant predictor of shorter LOS.

METHODS

Study Design

This prospective, naturalistic study involved patients referred to the University Health Network Centre for Mental Health CLP Service between February 1, 2014 and February 1, 2015. The UHN Centre for Mental Health CLP Service consists of 2 general hospital inpatient CLP services providing inpatient consultation and follow-up care at 2 general hospitals, the Toronto General Hospital and Toronto Western Hospital. Together, the CLP services provide care for a total of 684 general hospital inpatient beds. A total of 253 beds were medical floor beds, 256 were surgical beds, 91 were intensive-care unit beds (used for surgical or medical patients), and an additional 81 beds were used for both types of patients. The teams on these services consist of staff CLP, psychiatry residents, medical students, psychosomatic medicine fellows, and on some services, nurses. Data are routinely collected at consultation for quality of care, reporting to the institution's quality-of-care committee. Data for this naturalistic study used the institution's quality-of-care data. The study was reviewed by the University Health Network Research Ethics Board, and given its focus on quality improvement, the study was exempted from full ethics review.

Measures and Data Collection

CLP team members collected data using standardized data collection sheets, and data were recorded only after CLP staff psychiatrists reviewed each assessment and treatment plan. All new team members received an orientation to the data collection sheets before collecting data. Data collection were completed after the patient had been seen by the CLP team member and CLP staff psychiatrist, who verified the data. The patient data collected included demographic information (such as patient age and gender), reason for referral, referring clinical service, time of CLP referral, and psychiatric diagnoses. Psychiatric diagnoses were made by 1 CLP team member at the conclusion of the consultation, and all diagnoses made by CLP trainees were verified by a CLP with a minimum of 5 years clinical experience. All psychiatric diagnoses followed the Diagnostic and Statistical Manual 5 criteria. Our CLP hospital quality database categorized psychiatric disorders into the following categories: major depression, bipolar disorder, other mood disorders, anxiety disorders (included obsessive compulsive disorder, posttraumatic stress disorder, and acute stress disorder), psychotic disorders, somatic symptom–related disorders, eating disorders, alcohol use disorder, other substance use disorders, delirium, dementia, personality disorder, and adjustment disorder.