COUNTRY REPORT

ANNUAL REVIEW CLINIC: A CHRONIC DISEASE MANAGEMENT MODEL OF CARE FOR SCHIZOPHRENIA AND DELUSIONAL DISORDER IN SINGAPORE

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Abstract

Objective: **Schizophrenia and delusional disorders are recognised as chronic mental conditions. During this time, the clinical course may fluctuate and co-morbidities may set in. Individuals with these conditions often lack insight and have high rates of default. We report the need to develop a chronic disease model of care to cater to this unique group of individuals in Singapore.** *Methods:* **The Ministry of Health in Singapore recently funded the Institute of Mental Health to develop a model of psychiatric care for individuals with schizophrenia and delusional disorders. Crucial to the success was the development of an information technology (IT) enabled platform to track and monitor the clinical status of this group of individuals. On a yearly interval, patients undergo a comprehensive review and needs analysis of their psychiatric and medical needs in the Annual Review Clinic (ARC). Clinical ratings and metabolic parameters of every patient were obtained, and every patient was assigned a case-tracker or case manager to monitor their engagement with the relevant services.** *Results:* **In the first year of operations, ARC reviewed 1525 patients with schizophrenia and delusional disorders. The median GAS score for the cohort seen was 75 (slight impairment in functioning). The median CGI-S score was 2 (borderline mentally ill). 48.5% of reviewed patients were classified as overweight and above with BMI ≥ 25. After the needs analysis, 100 patients received referrals to primary healthcare services for medical conditions that were recently diagnosed or for which they have defaulted medical treatment.** *Conclusions:* **In the first year of this program, a snapshot of the clinical status of the outpatient population was obtained and we also identified a high prevalence of obesity among the patients. Through this program, we can continuously monitor the health status of every patient and monitor for developing trends so as to plan the necessary interventions.** *ASEAN Journal of Psychiatry, Vol. 14 (1): January – June 2013: XX XX.*

Introduction

Schizophrenia is a chronic mental disorder that afflicts approximately 0.7% of the population [1]. The peak age of onset of schizophrenia in Singapore lies within the range of 16 to 25, and almost all patients went on to require lifelong antipsychotic medications with up to 42% of patients did not adhere to their medications [2,3]. There are numerous challenges in managing patients with schizophrenia as the course of the schizophrenic illness is plagued with multiple relapses, incomplete remissions, impaired cognitive, psychosocial and vocational functioning. Increasingly, it has been found that patients with schizophrenia are at increased risk of metabolic disorders and premature cardiovascular mortality as a result of disease and medication related factors [4]. The Institute of Mental Health (IMH) is the largest provider of mental healthcare for this group of patients and frequently encounters the above challenges. One of the main gaps identified was a lack of a centralised system to monitor the physical and mental health of each patient and the health status of the collective group of patients.

In 2010, the IMH launched the integrated patient assessment and continuous engagement (iPACE) program, which sought to develop a structured and seamless continuum model of care for patients with schizophrenia and delusional disorder. The iPACE aims to enhance the current care delivery framework for patients with schizophrenia and delusional disorders through an integrated mental health care system with the following objectives: (i) to ensure appropriate level of care through a comprehensive needs and risk assessment, (ii) to ensure compliance of treatment through case management and case tracking, (iii) to ensure integration between the IMH and community partners through right-siting, (v) to develop a robust information technology (IT) system that facilitates achievement of the above objectives, enable information sharing among members of the multidisciplinary team, and serve as a mental health registry in the longer term.

Methods

Annual Review Clinic

The Annual Review Clinic (ARC) is the main outpatient service in the iPACE program charged with initiating and accomplishing most of the objectives in the outpatient setting. This multidisciplinary clinic was officially started in April 2010 and comprised of doctors, advance practice nurses (APN), case managers, pharmacists and administrators. On top of the specific objectives listed under the iPACE program, the ARC aims to comprehensively review all patients with schizophrenia and delusional disorder annually, assess patients for co-morbidities, adherence to pharmacotherapy and side effects to medications. A snapshot of the overall clinical status of the patient is also captured via clinical scales such as the Global Assessment Scale (GAS) and Clinical Global Impression – Severity (CGI-S) [5,6]. One of the ARC objectives is to link patients up with available hospital and community resources such as vocational training and employment opportunities, financial assistance, continued medical care for acute and chronic medical ailments. Patients are also offered screening for fasting lipids and glucose to evaluate overall metabolic risks and identify those with metabolic disorders requiring lifestyle or medical intervention. After the review, patients are categorised into 2 levels of care. Those requiring higher level of care, either because of clinical or risk related reasons, will be seen by a psychiatrist and case manager for further management. The other group who require normal level of care will have their clinic attendance monitored by a case-tracker. Patients who fail to turn up for their appointments will be flagged to the case manager or case-tracker and appropriate actions taken to ensure they receive follow up care. Subsequently, with the clinical repository, we would be able to identify the individual patient whose health is deteriorating and observe for trends on which to focus further interventive efforts.

Results

Outcomes of the ARC: The first year

In its first year of operations from April 2010 to March 2011, audited data from the ARC saw an attendance of 1525 patients of which 99 were identified as requiring higher level intervention (Table 1). A total of 100 patients were referred to primary healthcare services for medical conditions that were recently diagnosed or for which they have defaulted medical treatment.

Table 1. Description of clinical sample

	N=1525
Age in years, mean (SD)	52.1 (10.6)
Gender, n(%)	
Male	795 (52.1)
Female	730 (47.9)
Ethnicity, n(%)	
Chinese	1256 (82.4)
Malay	163 (10.7)
Indian	81 (5.3)
Others	25 (1.6)
Diagnosis, n(%)	
Schizophrenia	1425 (93.4)
Schizoaffective disorder	70 (4.6)
Delusional disorder	4 (0.3)
Others	26 (1.7)
CGI-S[*], median (IQR)	2 (1)
GAS[#], mean (SD)	73.1 (13.2)

[*]Clinical Global Impression – Severity; [#]Global Assessment Scale

The median GAS score for the cohort seen was 75 (slight impairment in functioning). The median CGI-S score was 2 (borderline mentally ill). 23.8% of patients reported having some form of employment, including part-time employment. 31.3% of reviewed patients were classified as overweight ($25 \leq BMI < 30$) and 17.2% as obese ($BMI \geq 30$). The prevalence of

obesity among the patients was higher than the 10.8% reported in the Singapore National Health Survey in 2010. When the patient sample was stratified by gender, 13.9% of males and 22.2% of females had a BMI ≥ 30. While the trend towards patients being more obese was similar to that of Caucasian populations, the overall rates of obesity in the Singaporean sample were lower [7,8,9].

The team piloted a checklist to capture comprehensive information on reviewed patients, and worked to create an ARC module in the iPACE IT system. We took this opportunity to examine the validity of the electronic database for diagnoses of schizophrenia and delusional disorder and report an accuracy of 98.3% with 26 (1.7%) of the attendees were wrongly classified. This compares favourably to other validation studies reported for electronic diagnostic databases.

Discussion

Role of Information Technology

With the large patient population and voluminous amount of data, it becomes necessary to harness IT to achieve the ARC objectives for improved patient outcomes. Prior to this, it was a manual process to identify eligible patients for the ARC, document their clinical parameters, and track their follow up appointments. Clinicians have to rely on a manual checklist of items to evaluate eligible patients, and administrative staff downstream has to enter the data into a database. Such laborious processes are prone to errors and subsequent lapses in care.

The iPACE system enables configuration of criteria to identify suitable patient for ARC based on the electronic database diagnoses. In addition, with enhancement done to the IT system, patients' weight and height, and basic parameter information taken from the machines, will be interfaced and captured in the iPACE system directly for the clinical team to view. During consultation, the clinician would be prompted by the iPACE system that a particular

patient is due for his annual review and an online ARC module would open for the clinician to complete. The iPACE system will also be integrated with the other available clinical IT applications that stores laboratory results, prescription and hospitalisation information from within IMH and outside IMH. Based on pre-determined criteria, the iPACE system will route the patients to the case trackers or case managers accordingly, thus removing the need for manual data entry and manual routing process flow. Data can then be extracted from the iPACE system for evaluative or research purposes.

Conclusion

Schizophrenia and delusional disorders are complex chronic mental disorders that require long term multidisciplinary treatments, monitoring of health states and side effects of treatments. In its first year, the ARC has obtained a snapshot of the mental and physical health status of a large group of outpatients receiving treatment at the IMH. Of significance, we have shown a high prevalence of obesity in patients with schizophrenia and delusional disorders. This is important as obesity is associated with various cardio-metabolic morbidity and mortality, and is potentially modifiable [4]. Currently, the ARC is in its second year of operations where patients will be reviewed a second time and longitudinal trends can then be observed. In addition, we propose the iPACE IT system as a model on how IT can be harnessed and integrated into clinical care for the betterment of patient outcomes.

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