

Long Acting Injectable versus Oral Antipsychotics in Reducing Hospitalization Outcomes in Schizophrenia: A Mirror-Image Study

Karan Chawla*

Peterborough Regional Health Centre, 1 Hospital Dr,
Peterborough, ON, K9J 7C6, Canada

Michelle Bell

Peterborough Regional Health Centre, 1 Hospital Dr,
Peterborough, ON, K9J 7C6, Canada

Bharat Chawla

Peterborough Regional Health Centre, 1 Hospital Dr, Peterborough, ON, K9J 7C6, Canada

ABSTRACT: Objective: The primary objective of this study was to assess the difference of hospitalization rates when switching patients with schizophrenia from oral antipsychotics to Long Acting Injectable (LAI) antipsychotic medications. **Methods:** A single centre mirror image design study of 44 patients was conducted in a community centre hospital. Data surrounding hospitalization was collected 12 months before and 12 months after switching from oral to LAI. **Results:** There was a 91% reduction in ward admissions and an 80% reduction in ER visits when switched to LAI ($p < 0.001$). Of the 44 patients, 32 were admitted at least once whilst on oral therapy; after switching to LAI, only 5 patients were admitted. The total number of days spent on the ward on oral therapy was 1347 days, versus 59 days on LAI. After switching to LAI from oral therapy, mean length of stay in hospital per patient decreased by 30 days ($p < 0.001$). Cost benefit analysis showed a net savings of \$805,798.80 for 44 patients over the course of one year.

INTRODUCTION

Schizophrenia is a serious mental illness, characterized by delusions, hallucinations, disorganized speech and behavior, and other symptoms that can cause major dysfunction. It affects approximately 1% of the Canadian population with an onset in early adulthood (Public Health Agency of Canada, 2017). It has a profound and chronic effect on an individual's ability to function in all aspects of life-social, education, career, family, self-care, and relationships. The burden of the illness includes discrimination from others and self-stigma, including loss of hope, low self-esteem and poor quality of life (Brohan, Elgie, Sartorius, & Thornicroft, 2010). Vjg" fkgucug" cmuq" kpewtu" ukipkŁecpv" Łpcpekci" equv" dqvj" directly and indirectly on the health care system. The total direct cost of schizophrenia has been estimated at \$2.35 billion per year, 0.3% of GDP while the indirect costs are estimated at upwards of \$2 billion yearly (Goeree et al., 2005). Schizophrenia has been estimated to account for 1-3% of total healthcare expenditure (Phanthunane, Vos, Whiteford, & Bertram, 2011). Overall, 79%

of the direct costs of schizophrenia result from hospitalization or other residential care (Chue, 2007).

Effective early treatment can prevent debilitating symptoms and allow patients to lead productive lives. For acute and chronic phases of schizophrenia, antipsychotic therapy is the pillar of disease and symptom management. However, lack of compliance and poor medication adherence is a major issue. Non-adherence can jeopardize disease management and lead to poor outcomes such as relapses, greater use of emergency resources, suicide attempts and greater rates of substance abuse, hospital admissions, and a decrease in quality of life. These outcomes are associated with high medical and non-medical costs, as well as productivity loss. Rehospitalization is frequently the most expensive healthcare cost component for schizophrenic patients (Lafeuille, 2013).

Long Acting Injectable (LAI) formulations of antipsychotic medications were developed to improve non-adherence and reduce relapse incidence among patients with schizophrenia. LAI treatment requires patients to visit clinics to receive treatment every 2 to 4 weeks, eliminating the need for daily oral antipsychotic administration. They provide the advantage of immediate awareness of non-adherence. If a patient misses a scheduled appointment the physicians, nurses, caregivers and

*Correspondence regarding this article should be directed to: karanchaw@hotmail.com

family become aware. The blood levels do not decline as rapidly as oral antipsychotics giving the healthcare team a chance to intervene before an exacerbation of symptoms occurs (Kane, Kishimoto, & Correll, 2013). Comparatively in oral therapy, non-adherence medical intervention occurs.

The rate of LAI use from published outpatient studies is as low at 6.3% in Canada, compared with 15% to 80% worldwide (Manchanda, 2013). In a qualitative study by Iyer et al., (2003) physicians reported the use of LAIs was a last resort for their patients. Other reasons for non-use included lack of knowledge or experience surrounding LAIs, as well as concerns about the initial costs of the medication. Although LAIs, especially the more



Figure 1. Hospitalizations (ER and Ward).

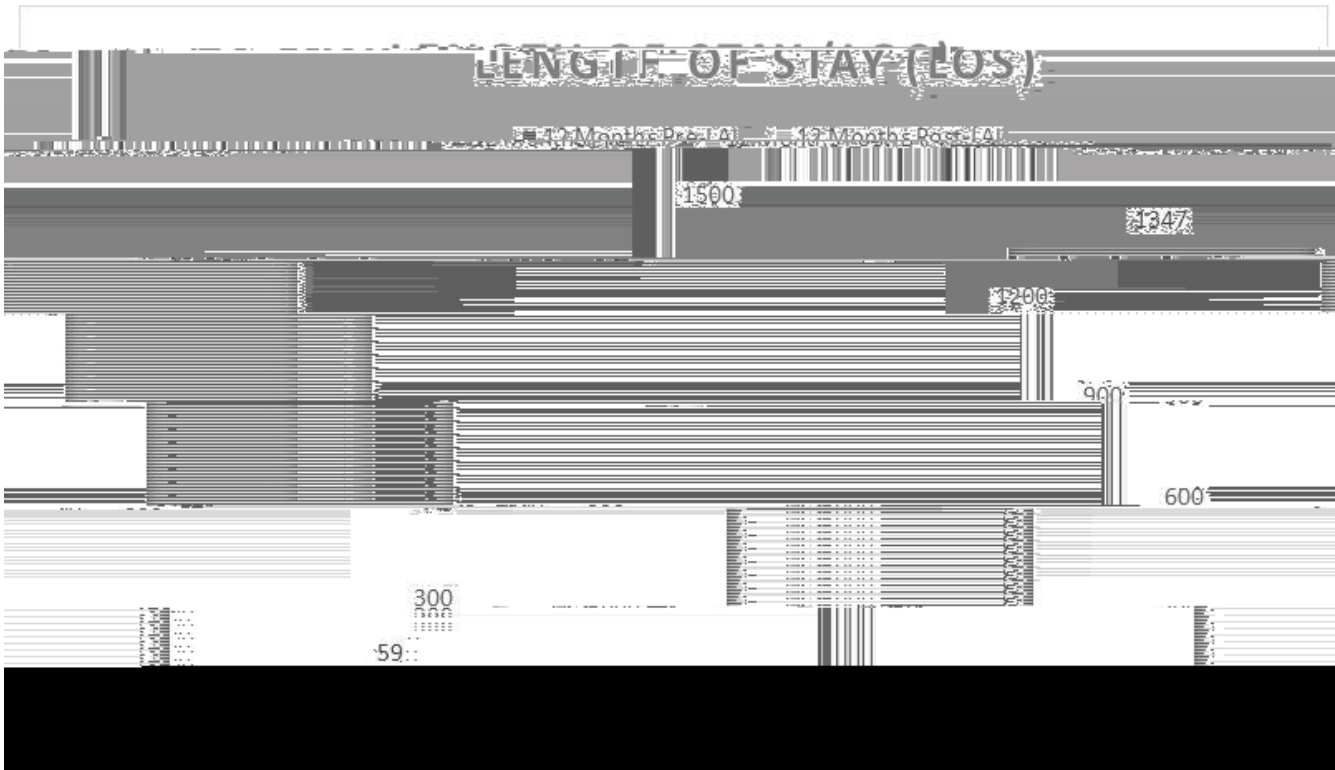


Figure 2. Length of stay on ward.

is approximately \$900 annually. Interviews were conducted with hospital administrative staff at PRHC to determine the cost of ward

LAI is often not used due to their high cost in comparison to oral medications. However, given their enhancement of compliance and subsequent decreases in hospital admission rates several

group assignment (Each patient served as their own control). The spontaneous course of illness or other factors such as changes in hospital policy was not accounted for. The small sample size of this study results in all outcomes, transfer of this study design to a greater sample size is expected to largely support the evidence of this research.

Ideally, a Randomized Controlled Trial (RCT) would be the gold standard. Meta-analysis of previous RCTs examining LAI use. However, the patient population selected for these trials (clinically stable and motivated for treatment) may not be representative of the patient group for whom clinicians would choose LAIs. The study may enhance adherence. Mirror image design studies may be more representative of naturalistic clinical practice and “Real World” patient population.

Patients in the study were started on LAI for different clinical indications including patient or clinical preference, lack of compliance, placement on CTO, and disease severity. These indications were not analyzed or documented in data collection, or this study, improvements on quality of life was not directly studied. However, the decrease in hospitalization does suggest a decrease in severe symptoms and therefore an improvement in quality of life for the patient.

The data was only collected from one hospital thus results are subjects to missing data if patients had visits at other health care facilities; however due to the rural setting of our hospital, our patients are less likely to move between hospitals as they are more likely to do in larger cities and urban centres.

CONCLUSION

Based on the data presented in this study, LAI antipsychotic study demonstrates the strong superiority of LAIs in reducing schizophrenia. Clinically, our results suggest that prompt detection of patients who need support with medications and earlier initiation of LAI could prevent relapses and reduce both indirect and direct costs associated with schizophrenia. Future studies may focus on subjects of all disease severity to determine if starting LAI early. Furthermore, it may be useful to determine what type and what dose of LAIs are most effective in clinical practice.

REFERENCES

- Brohan, E., Elgie, R., Sartorius, N., & Thornicroft, G. (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: The GAMIAN-Europe study. *Schizophr Res*, 122(1-3), 232-238.
- 13mp3027J13T81358, 500a<00440057 01D000332o1KSD0BDV00KOLjPL0
Ejwg." R0" *4229+0" Nqpi/cevki" tkurgtkfpgg" kplgevkap<" GhLece{."
uchgv{." cpf" equw/ghhgevkgpguu" qh" vjg" Ltuv" nqpi/cevki" cv{ rkecn" Ne -1.f04 Twr