Hospital Resource Use by Patients with Schizophrenia: Reduction After Conversion from Oral Treatment to Risperidone Long-Acting Injection

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Larry Arshoff, MSc
Study Support

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Disclosure: Dr David Koczerginski

<table>
<thead>
<tr>
<th>Role</th>
<th>Companies</th>
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<tbody>
<tr>
<td>Advisory board or similar committee</td>
<td>Astra Zeneca, Eli Lilly, Pfizer</td>
</tr>
<tr>
<td>Clinical trials or studies</td>
<td>Astra Zeneca, Eli Lilly, Janssen Ortho, GSK</td>
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<tr>
<td>Speaker honorarium</td>
<td>Astra Zeneca, Eli Lilly, Janssen Ortho, Lundbeck</td>
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Background

Schizophrenia is a complex, chronic and disabling neurological disorder characterized by delusions, hallucinations, disturbances in thinking and withdrawal from social activity

Onset of illness usually occurs in late adolescence or early adulthood

Relapses of acute episodes can occur throughout the lifespan, and functioning is often significantly affected

Clinically, improved functioning and outcomes are linked to continuous antipsychotic treatment and regular follow-up and support\(^1\)

\(^{1}\) Addington et al.2005
Non-adherence to medication remains one of the major barriers to the management of schizophrenia\textsuperscript{2,3}

Estimates on non-adherence to antipsychotic treatments range from 40 to 90\%\textsuperscript{4-7}

Non- and partial adherence contributes to relapse, hospitalization and poor patient outcomes\textsuperscript{8}

– \textbf{\sim 80\%} of patients relapse within a year after antipsychotic medication non-adherence\textsuperscript{9}

Relapse of psychosis is the leading cause of hospitalization for patients with Schizophrenia

The largest direct cost of Schizophrenia is hospitalizations\textsuperscript{10}

* More than three-quarters of direct costs associated with Schizophrenia are due to frequent and prolonged hospitalization or residential care\textsuperscript{11, 12}

Long-acting injectable antipsychotics may play an important role in reducing the risk of relapse by promoting treatment adherence

\textsuperscript{(10) Farahi et al. 2007; (11) Goeree et al. 2005; (12) Davies and Drummond 1994}
Objective

To evaluate the incremental cost of providing Risperidone long-acting injection (RLAI) treatment for patients with Schizophrenia in an injection clinic (medication and clinical staffing) compared to savings in resource use associated with relapse prevention (reduction in relapses, emergency room [ER] visits and hospitalizations)
Hypothesis

RLAI treatment of patients with Schizophrenia in an injection clinic would reduce number of relapses, ER visits and hospitalizations at Brampton Civic Hospital, thereby reducing hospital costs and improving clinical management.
**Methods**

**Study Design:** Retrospective chart review - assess the within-patient impact on relapses and hospital resource use of conversion from oral antipsychotic therapy to RLAI.

**Data Collected:** Date of birth, gender, date of initial diagnosis, dates of oral antipsychotic and RLAI initiation, date & time of each ER presentation/discharge and date & time of each admission/discharge from the hospital mental health unit.
Eligibility Criteria

≥18 years of age

Diagnosis of Schizophrenia according to DSM-IV criteria

RLAI treatment duration of at least 1 year

Diagnosed at least 1 year prior, and treated with an oral antipsychotic during this period
Patient Demographics

25 eligible patients identified and enrolled

<table>
<thead>
<tr>
<th>Average Age</th>
<th>Gender</th>
<th>Average years since diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 years</td>
<td>88 % Male</td>
<td>11 years</td>
</tr>
<tr>
<td></td>
<td>12 % Female</td>
<td></td>
</tr>
</tbody>
</table>
Results

25 eligible patients identified and enrolled

During the RLAI treatment period vs the oral treatment period, all measures were significantly lower:
- number of ER visits and hospitalizations
- total and average length of stay in the ER and in MHU

Patient age and the number of years since diagnosis did not have a significant impact on these differences

Females overall had numerically higher utilization and length of stay than males, but the difference was not statistically significant
Reduction in Total Annual ER Visits and Hospital Admissions

* Rate of ER visits during RLAI treatment period was 6.21 (95% CI; 2.7, 14.1) times lower than during oral treatment period ($p<0.0001$)

** Rate of hospitalization during RLAI treatment period was 8.5 (95% CI; 3.5, 20.4) times lower than during oral treatment period ($p<0.0001$)
Reduction in ER Length of Stay

* Average annual length of stay in ER was 1.03 (95%CI; 0.50, 1.55) days longer during oral treatment compared with RLAI treatment period ($p=0.0001$)
Reduction in Hospitalization Length of Stay

* Average total annual hospital length of stay during oral treatment period was 32.0 (95% CI; 16.2, 47.9) days longer than during RLAI period ($p<0.0001$)

** Average duration of hospitalization per visit was 7.4 (95% CI; 7.9, 20.2) days longer during oral treatment than RLAI treatment period ($p<0.0001$)
## Annual Healthcare System Costs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Oral Treatment</th>
<th>RLAI Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual cost of ER/patient</td>
<td>$ 960</td>
<td>$ 80</td>
</tr>
<tr>
<td></td>
<td>(1.2 visits x $900)</td>
<td>(0.4 visits x $900)</td>
</tr>
<tr>
<td>Average annual in-patient hospital cost/patient</td>
<td>$24,290</td>
<td>$1,820</td>
</tr>
<tr>
<td></td>
<td>(34.7 days x $700)</td>
<td>(2.6 days x $700)</td>
</tr>
<tr>
<td>Average annual cost of medication &amp; administration</td>
<td>$682</td>
<td>$6,677</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(medication - $6,105, injection clinic - $572)</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$25,932</td>
<td>$8,577</td>
</tr>
</tbody>
</table>
## Healthcare System Cost Savings with RLAI

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Oral Treatment</th>
<th>RLAI Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average total annual cost /patient</td>
<td>$25,932</td>
<td>$8,577</td>
</tr>
<tr>
<td>Average annual savings /patient with RLAI</td>
<td>$17,355</td>
<td></td>
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<tr>
<td>Annual savings for 25 patients in study</td>
<td></td>
<td>$433,875</td>
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</table>
Conclusions

This study demonstrated that RLAI treatment use in an injection clinic setting significantly reduced hospital costs and resource use.

- Based on 25 patients studied, annual savings with RLAI conversion were significant:
  
  * Healthcare system savings: $433,875

The substantial savings accruing to the hospital and the healthcare system provide a strong economic rationale for use of RLAI treatment in patients with Schizophrenia.
Discussion

The reduction in hospitalization with RLAI treatment seen in this study is consistent with results from other studies\textsuperscript{13, 14, 15}

The economic impact of RLAI treatment observed in this study provides additional evidence to support cost-effectiveness analyses which have demonstrated the economic benefits of RLAI treatment\textsuperscript{16, 17, 18}

Numerous other costs associated with relapse were not evaluated:11

– human costs of relapse (patient and family stress)
– job losses for the patient
– productivity losses of family members
– cost of illness to society
– cost of police services associated with acute psychosis

In addition, the improvement in wait time in the ER was not evaluated

• (11) Goeree et al. 2004
Limitations

This retrospective chart review was conducted at a single institution and focused on a single treatment strategy — use of RLAI

This study was limited to an assessment of hospital and medication costs for second-generation oral antipsychotic therapy compared with RLAI

The patient sample was small and the study duration was relatively short for Schizophrenia, a chronic and often progressive condition
Key Learning

At WOHS, the inclusion of RLAI into the Ontario Drug Benefit Program (ODSP) has resulted in greater volumes and resource needs for the injection clinic.

Despite the higher cost of injectable treatment (cost of medication and staffing at the outpatient depot clinic), the use of RLAI was associated with substantial savings per treated patient.

Armed with the institution-specific data generated by this chart review, it is possible to make more informed management decisions about resource allocation.
References

5. Kissling et al. 1991 (Guideline for neuroleptic relapse prevention in schizophrenia. Springer Verlag, Berlin; p. 1-6)
8. Acosta et al. 2008 (Schizophrenia Research 107(7): 213-17)
10. Farahi et al. 2007 (CADTH Technology Report Number 91)