Switching from conventional to novel antipsychotic drugs: results of a prospective naturalistic study

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Received 18 April 2001; received in revised form 10 July 2001; accepted 13 July 2001

Abstract

Objective: We examined the long-term consequences of switching patients from conventional to novel antipsychotic drugs, from a patient’s perspective. Methods: In a prospective, single-blinded, naturalistic study, a cohort of subjects (n = 150) with schizophrenia or schizo-affective disorder (DSM-IV) were switched from conventional neuroleptic drugs to either risperidone (n = 50), olanzepine (n = 50) or quetiapine (n = 50), and monitored for a period of 2 to 6 years. The ensuing natural history of transitions in treatments was charted, and the outcomes including symptoms, side effects, subjective tolerability of drugs and their impact on quality of life were documented with standardized rating scales. Results: Majority (85%) of the subjects benefited from a switch to the novel antipsychotic drugs, though some preferred to return to their original neuroleptic (8%), and others eventually required clozapine (7%) therapy. Novel antipsychotic drugs were significantly tolerated better, and had a positive impact on treatment- adherence, psychosocial functioning and quality of life. Among the novel drugs, risperidone was significantly better in improving negative symptoms, while olanzepine was particularly well tolerated and effective against comorbid anxiety and depressive symptoms. Patients treated with quetiapine reported fewer side effects, and showed a significantly greater improvement in neurocognitive deficits. Conclusion: Novel antipsychotics emerged as the drug of choice in view of their overall effectiveness, though conventional neuroleptics and clozapine will continue to have a limited but distinct role in the management of schizophrenia. The challenge for clinicians lies in matching a patient’s clinical and biochemical profile with that of a drug’s pharmacological actions, in order to achieve optimum outcomes. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: Schizophrenia; Neuroleptics; Atypical antipsychotic drugs; Subjective tolerability; Outcomes; Quality of life

1. Introduction

Novel antipsychotic drugs have a superiority over conventional neuroleptics in terms of improved subjective tolerability and a potential to enhance patients’ quality of life in schizophrenia (Voruganti et al., 2000). Numerous clinical trials sponsored by phar-
maceutical industries have not only evaluated the benefits of novel compounds over conventional drugs, but also attempted to establish the relative virtues of one drug over another (Geddes et al., 2000; Revicki, 2000; Stranuiland and Taylor, 2000; Worrel et al., 2000; Chakos et al., 2001; Harvey and Keefe, 2001). However, the studies appraised in many of these reviews included industry-sponsored clinical trials that were originally designed and conducted to meet regulatory requirements, gain formulary approvals, or facilitate marketing strategies, and may not be entirely useful in guiding clinicians toward choosing a right drug for the right patient. From a patient’s perspective, improving symptoms, avoiding side effects and enhancing psychosocial adjustment are the key therapeutic priorities, and it is the clinicians’ task to find a drug that can facilitate the attainment of these goals (Awad et al., 1995). Novel antipsychotic drugs seem to possess certain strengths that can turn this ideal into a reality.

The availability of several novel antipsychotic drugs within a relatively short time span has provided a greater choice of therapeutic options on one hand, but also created some confusion with regard to a method of choosing between individual drugs. Conventional antipsychotic drugs are often avoided to minimize the risk of side effects, and clozapine is reserved for the treatment-refractory cases. This leaves three novel antipsychotic drugs — risperidone, olanzepine and quetiapine — as the choices for initiating or maintaining antipsychotic drug therapy in schizophrenia (Stahl, 1999). Currently, there are no evidence-based guidelines available to help clinicians as to which drug is likely to be the most beneficial for a given patient. The present study was aimed at examining the potential benefits of switching patients from conventional to the novel antipsychotic drugs, and documents the distinct therapeutic roles of individual antipsychotic drugs in an unselected, clinically heterogeneous schizophrenic population. The specific research questions addressed were as follows:

1. Should all the subjects receiving maintenance treatment with conventional neuroleptic medications be routinely considered for a switch to one of the novel antipsychotic drugs?
2. Does the relative superiority of novel antipsychotic drugs perceived in clinical practice and cross-sectional surveys prove to be sustainable over a longer period of time during follow-up?
3. Can a niche be found for individual antipsychotic medications, in terms of identifying subgroups of schizophrenic patients that could be benefited from one specific drug more than the others?

Such data would obviously facilitate clinicians’ decision making process, prevent potential distress to patients caused by an improper choice of medication, improve treatment adherence (compliance) and minimize the overall costs to the health care system.

2. Study design and subjects

The purpose of the study was to assess the effectiveness of novel antipsychotic drugs in a naturalistic treatment setting reflective of a real life clinical practice. The study setting, subjects’ selection, and the treatment allocation strategy were, thus, quite different from that of a conventional clinical trial. A description of the study setting, referral base and recruitment strategy were provided in an earlier publication (Voruganti et al., 2000).

The study was confined to subjects diagnosed with schizophrenia or a schizo-affective disorder (DSM IV) that were confirmed by SCID administration. Subjects of either sex between the ages 18 and 45, with a diagnosis of schizophrenia, who had been receiving maintenance treatment with conventional antipsychotic drugs, were considered for the study. Subjects with other axis I disorders such as affective disorder, substance abuse and/or mental retardation (IQ of less than 70 established by formal intelligence testing), or established cases of treatment-refractory forms of illness were excluded. Subjects who were acutely ill exhibiting aggressive or unpredictable behaviour were also excluded from the study. Screening and assessment process began after the subjects received a letter of information and signed a consent form that was approved by an institutional review board.

The medications under study gained approval from the federal regulatory agency (therapeutic products program) and became available for routine clinical use in Canada at the following dates: risperidone in 1993, olanzepine in 1996 and quetiapine in 1998. After the
introduction of each new drug, the first 50 subjects
that were consecutively switched from conventional
drugs to each of the novel medications were identi-
fied, forming three cohorts of subjects—risperidone
\( n = 50 \), olanzepine \( n = 50 \) and quetiapine \( n = 50 \).
Antipsychotic drugs received by the subjects prior to
the inclusion in the study were as follows: chlorpro-
mazine \( n = 5 \), fluphenazine \( n = 12 \), flupenthixol
\( n = 24 \), haloperidol \( n = 37 \), methotrimeprazine
\( n = 9 \), perphenazine \( n = 9 \), pimozide \( n = 5 \), pipo-
thiazine \( n = 16 \), trifluperazine \( n = 14 \) and others
\( n = 19 \). Twenty-eight subjects were receiving depot
antipsychotic medications. Subjects were considered
for a switch to the novel antipsychotic drugs based on
the following empirically established criteria:

(i) inadequate control of symptoms and continu-
ing distress resulting from the previous
antipsychotic drug,

(ii) subjective reports of side effects and intoler-
ance, and

(iii) clinicians’ concerns about the risk for adverse
effects, especially emerging tardive dyskine-
sia.

The criteria were set after conducting a quick
informal survey of a number of practicing psychia-
trists, asking them to state the reasons why they would
consider switching a subject, who had been receiving
a neuroleptic, to a novel antipsychotic medication.
The choice of novel antipsychotic drug, dose, and
the pace of increase took place at the discretion of the
treating clinicians. There was no randomization or a
specific treatment allocation plan. An empirical “over-
lap strategy”, consisting of a gradual reduction in the
dosage of conventional drugs and a simultaneous in-
crease in the novel antipsychotic drug dose over a 2-
to 3-week period, was employed to ensure a smooth
transition in treatment (there were no formal switch-
ing strategies or published guidelines available at the
time of initiation of the study). Medications were
tried, one at a time, in adequate doses (risperidone
2–8 mg, olanzepine 15–40 mg, and quetiapine 200–
800 mg) for a period of time ranging between 8 and
12 weeks. Subjects who were benefited from the
switch were continued on the same medication and
the maintenance dose was optimized. Those who ei-
ther did not respond at all during this time period, or
were unable to tolerate a drug were switched again to
one of the other two remaining antipsychotics. Achiev-
ing clinical stability (from a clinician’s perspective)
and subjective satisfaction (from a patient’s perspec-
tive) were the ultimate goals, and trying each drug in
an optimal dose for an adequate length of time, was the
guiding principle. For those subjects who remained
unstable after a trial of all the three novel drugs,
initiating clozapine or switching back to the original
neuroleptic drug, remained as potential therapeutic
options. Each subject, thus, has had a chance of under-
going one to four medication switches during the quest
for the right drug.

The length of follow-up period varied between 2
and 6 years, and subjects were monitored at monthly
intervals as a part of the clinic protocol, but there was
flexibility for more frequent visits, especially during
the transitions in treatment.

3. Methods

The battery of rating scales were part of a standard
protocol employed for assessing all the subjects
referred to the schizophrenia treatment program.
Instruments were chosen to evaluate and quantify a
range of clinical outcomes, and aimed at capturing the
impact of antipsychotic drug therapy from the clini-
cians’ as well as patients’ perspectives. The battery
included various clinician-rated symptoms and side
effects rating scales, as well as self-rated side effects,
tolerability and quality of life scales that were filled
out by the subjects. Symptom severity was established
with the positive and negative syndromes scale
(PANSS); side effects were quantified with the drug
attitude inventory (DAI), Liverpool University neuro-
leptic side effects rating scale (LUNSERS), Simpson–
Angus extra-pyramidal side effects rating scale (SAS),
Barnes akathisia scale (BAS), and abnormal involun-
tary movements scale (AIMS); and psychosocial
functioning and quality of life were evaluated with
the sickness impact profile (SIP)-modified version,
global assessment scale of functioning (GAF), and
quality of life scale (QLS). Descriptions of these
instruments were provided in an earlier report (Vor-
uganti et al., 2000). The rating scales were adminis-
tered at a baseline (before the switch to a novel
antipsychotic agent), and repeated at 6-monthly inter-
vals during maintenance treatment and follow-up. Treatment adherence history was documented on each visit through pill counts, medication diaries and corroboration from the significant others, and treatment adherence index was calculated as the percentage of prescribed doses ingested during the 72-h period prior to the clinic visit (Weidan et al., 1995). Outcome evaluations were carried out by four trained raters blinded to the treatment history of the subjects, while the subjects and their treating clinicians were aware of various transitions in treatment and the eventual drug of choice for the maintenance therapy.

4. Data analysis

Data from the serial administration of various rating scales were tabulated, and scores from the baseline (before the switch) and the last follow-up visit were used for further analysis. Scores from individual items on the positive and negative syndromes scale (PANSS) were summed to form five symptom clusters—positive, negative, excited, depressed and cognitive, with a view to gain a better understanding on the differential effects of novel antipsychotic drugs (Kay, 1991). Based on the scores obtained on the drug attitude inventory, subjects that received a negative total score on the DAI were defined as “dysphoric responders”, and the number of dysphoric responders in each of the medication groups were identified to derive a percentage. In the case of treatment adherence, data from all the follow-up visits were pooled, and the mean adherence rates were used as the overall index of treatment adherence.

Since there were numerous outcome variables involved, a multivariate analysis of variance (MANOVA) was performed initially to examine any significant differences between the groups and to rule out the effects of random error. After it was established that the groups differed significantly, univariate interactions were investigated for each of the outcome variables. Baseline scores (before the switch) and scores from the last follow-up visit were subjected to repeated measures analysis of variance, with the scores from various rating scales as the dependent variables, and the time (baseline vs. follow up) and group membership (risperidone, olanzepine and quetiapine) as the factors. Changes were considered significant if Pillai trace showed the probability of type I error of $\alpha < 0.05$. Within group and between group differences for the three novel antipsychotic drugs were examined with Tukey post hoc tests, with significance level set at $p < 0.05$. For the categorical variables, chi-square tests were performed. Statistical analysis was carried out with the SPSS [v 10.2] software.

5. Results

Results are presented under two sections—the natural history of transitions in treatment during the follow-up period, and the outcomes for each of the medication groups at the end of the follow-up period.

Of the 150 subjects consecutively switched to the novel antipsychotics, 135 remained in the study, and 15 subjects withdrew their consent, discontinued their medications, or were lost for follow-up. The timing of the drop outs were as follows: seven within the first 2 weeks, three between 2 and 6 weeks, and five between 6 and 12 weeks. The cumulative number of drop outs in each medication group and the stated reasons for medication discontinuation were as follows: risperidone (2)—feeling excitable/agitated, sleepy, or impaired sexual function; olanzepine (4)—withdrawal dyskinesia, weight gain, hair loss and emergence of obsessional symptoms; quetiapine (9)—disturbed sleep and weird dreams, postural hypotension, or an acute exacerbation of psychotic symptoms. The remaining 135 subjects underwent the following transitions in treatment during the follow-up period: 81 (60%) subjects were stabilized and satisfied with the first chosen novel antipsychotic, 22 (16.2%) subjects were tried on two antipsychotic drugs, and 12 (8.8%) required a trial of all the three drugs before finding a suitable antipsychotic drug and achieving clinical stability. At 1 year follow-up, eight (6%) subjects were noted to have tried all the three novel antipsychotics unsuccessfully, and returned to receive a conventional drug; and nine (7%) were initiated on clozapine therapy. Of the 118 subjects stabilized on novel antipsychotic drugs, the following proportions of subjects remained on maintenance treatment with each of the drugs: risperidone (82%), olanzepine (86%) and quetiapine (62%). The relatively lower proportion of subjects stabilized on quetiapine was due to a higher number of initial drop outs that were partly attributable
to a lack of adequate experience with the dosage and scheduling of the drug. The original prescribing guidelines recommended lower therapeutic doses, and also the significance of twice a day dosing were not obvious in the beginning.

Socio-demographic and clinical characteristics of the five medication groups are summarized in Table 1. Treatment refractory subjects, i.e. the minority of patients who returned to using neuroleptics or clozapine, were significantly older, chronically ill, less educated and less independent. There were no significant differences, however, in the clinical and socio-demographic profiles of subjects who were successfully switched to risperidone, olanzepine or quetiapine.

Changes observed in the severity and pattern of symptoms, side effects, subjective tolerability, treatment adherence and quality of life ratings during the follow-up period are presented in Table 2, and the salient features are summarized here. There was an overall improvement on all outcome parameters, across all the medication groups after the switch. This is confirmed by multivariate analysis of variance (MANOVA) which revealed significant effects within the groups [Pillai’s trace = 0.975, $F(28, 196) = 265.335$, $p < 0.001$], between the groups [Pillai’s trace = 1.189, $F(28, 196) = 10.265$, $p < 0.001$] as well as for the interaction between the time and group membership [Pillai’s trace = 1.1396, $F(28, 196) = 16.18$, $p < 0.001$].

On the PANSS, there was a significant lowering of mean total scores with all of the novel medications; and some trends emerged on examining the differential improvement in various symptom clusters. There was a greater improvement in the negative symptoms score on risperidone [$F(2, 114) = 32.78$, $p < 0.05$], the anxiety and depressive symptoms score on olanzepine [$F(2, 114) = 48.54$, $p < 0.05$], and the cognitive symptoms score on quetiapine [$F(2, 114) = 72.34$, $p < 0.05$]. It should be noted that the “cognitive symptoms”

Table 1

Sample description (n = 135)

<table>
<thead>
<tr>
<th></th>
<th>CAPDs*a (n = 8)</th>
<th>Risperidone (n = 43)</th>
<th>Olanzepine (n = 44)</th>
<th>Quetiapine (n = 31)</th>
<th>Clozapine (n = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Socio-demographic data</strong></td>
<td></td>
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<tr>
<td>1 Age (mean, years)</td>
<td>43.05 (10.43)*</td>
<td>31.2 (9.7)</td>
<td>32.7 (8.2)</td>
<td>33.4 (6.3)</td>
<td>44.1 (11.03)*</td>
</tr>
<tr>
<td>2 Sex (male/female)</td>
<td>5 (62.5%); 29 (67.4%); 3 (37.5%); 14 (32.6%); 3 (36%)</td>
<td>28 (64%); 16 (36%); 11 (35.5%); 3 (33.3%)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3 Education (number of years)</td>
<td>8.3 (1.4)*</td>
<td>13.2 (2.7)</td>
<td>11.8 (3.4)</td>
<td>10.2 (2.2)</td>
<td>8.2 (1.5)*</td>
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<tr>
<td>4 Occupational status</td>
<td></td>
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<tr>
<td>a Employed</td>
<td>1 (12.5%)</td>
<td>7 (16%)</td>
<td>5 (12%)</td>
<td>1 (3.2%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>b Sheltered work</td>
<td>2 (25%)</td>
<td>8 (18%)</td>
<td>7 (16%)</td>
<td>5 (16.2%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>c Unemployed</td>
<td>5 (62.5%); 28 (66%); 3 (272%)</td>
<td>32 (72%); 25 (80.6%); 5 (55.5%)</td>
<td></td>
<td></td>
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<tr>
<td>5 Marital status</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>a Married/common law relation</td>
<td>2 (25%)</td>
<td>34 (79%); 36 (82%)</td>
<td>27 (87.1%); 7 (77.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b Single/separated/divorced</td>
<td>6 (75%)</td>
<td>31 (45%)</td>
<td>19 (40%)</td>
<td>16 (51.6%); 6 (66.6%)</td>
<td></td>
</tr>
<tr>
<td>6 Living arrangement</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>a Independent living</td>
<td>1 (12.5%); 19 (45%)</td>
<td>17 (39%); 9 (21%)</td>
<td>6 (19.3%); 0 (0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b Shared accommodation</td>
<td>6 (75%); 13 (30%)</td>
<td>19 (40%); 16 (51.6%)</td>
<td>6 (66.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c Family/parental home</td>
<td>1 (12.5%); 11 (25%)</td>
<td>9 (21%); 6 (19.3%)</td>
<td>0 (0%)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Clinical characteristics</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1 Duration of illness (years)</td>
<td>15.2 (8.2)</td>
<td>9.4 (6.5)</td>
<td>11.8 (6.7)</td>
<td>12.6 (6.74)</td>
<td>12.4 (10.23)</td>
</tr>
<tr>
<td>2 Number of hospitalizations</td>
<td>9.4 (3.3)*</td>
<td>3.2 (3.1)</td>
<td>3.8 (3.2)</td>
<td>4.6 (2.1)</td>
<td>8.2 (2.4)*</td>
</tr>
<tr>
<td><strong>Treatment characteristics</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 Mean duration of treatment with the antipsychotic drug (years)</td>
<td>2.5 (0.9)b</td>
<td>3.5 (1.5)</td>
<td>3.1 (0.61)</td>
<td>2.2 (0.4)</td>
<td>2.4 (1.2)</td>
</tr>
<tr>
<td>2 Antipsychotic drug dosage (mg)</td>
<td>445 (210)c</td>
<td>4.41 (1.96)</td>
<td>20.89 (7.88)</td>
<td>607 (181.32)</td>
<td>478 (139)</td>
</tr>
</tbody>
</table>

*a CAPDs = Conventional antipsychotic drugs (neuroleptics).
b Refers to the most recent and well-tolerated drug.
c Chlorpromazine equivalents.
* Statistically significant, $p < 0.05$. 
construct used in this analysis was originally conceived by Kay (1990), and not be considered synonymous with the variety of formal neuropsychological and neurocognitive measures used nowadays.

On the self-rated side effects scale LUNSERS, the total scores were significantly lower among the quetiapine group, indicative of a lower cumulative prevalence of side effects with this drug \( F(2, 114) = 12.84, p < 0.05 \). The clinician-rated side effects scales indicated a uniform improvement in extrapyramidal side effects and akathisia scores after a switch to the novel drugs. The DAI scores indicative of the subjective tolerability of a drug, uniformly improved after a switch to novel drugs, and the negative subjective response scores were marginally lower in the olanzapine group. The benefits of improved tolerability were reflected in higher treatment adherence rates after a switch to the novel drugs. Scores on various psycho-social functioning and quality of life scales also improved uniformly across all medication groups after the switch, and there were no significant differences between individual novel antipsychotics.

### 6. Discussion

The present article is the second in a series of naturalistic studies aimed at examining the effectiveness of novel antipsychotic drugs in managing schizophrenia in routine clinical practice. Naturalistic
studies have several limitations, but they could also offer new insights. While controlled clinical trials tell us more about a drug, naturalistic studies provide valuable information about the interaction between the drug, the illness, and the patient in real life. Data from naturalistic studies are thus useful in dealing with patients’ and clinicians’ concerns, rather than addressing the needs of the manufacturers or fulfilling the stipulations of the regulatory agencies.

The purpose of the present study was not only to document the progress made in the realm of schizophrenia treatment since the introduction of novel antipsychotic drugs, but also to address the continuing difficulties with choosing an appropriate antipsychotic drug in order to achieve optimal clinical stability and patient satisfaction. An overview of the transitions in treatment in our study highlights the fact that the path towards achieving these goals still remains confusing and convoluted in nearly a quarter (24%) of the patient population. The drift towards clozapine was not entirely unexpected in 7% of the cohort, but the choice of returning to conventional neuroleptics (8%) was an unexpected and thought provoking observation (Steel and Johnstone, 2000). Though it was reassuring to note that novel antipsychotic drugs were effective in 75% of our cohort, it remains to be seen as to how many of these subjects will remain treatment-responsive and maintain clinical stability on the same medication, in the long-term. Symptom control and subjective satisfaction in the short-term, relapse prevention in the medium term, and minimizing deterioration in the long-term, remain the goals of effective antipsychotic drug therapy in schizophrenia. The success of novel antipsychotic drugs will be short-lived, unless they have a demonstrable impact on all these fronts.

Three of the specific themes emerging from the results are further discussed. These include the therapeutic superiority of the novel antipsychotic medications compared to the conventional drugs; similarities and differences between individual agents; and identifying potential sub-groups of patients suitable for individual groups of drugs.

Novel medications, as a group, emerged as superior to the conventional drugs in terms of symptom relief, lower side effect liability, better subjective tolerability and improved quality of life. Despite a prudent use of conventional antipsychotic drugs before the switch, majority of subjects did experience significant extrapyramidal side effects (EPS) requiring adjunctive antiparkinsonian drug therapy; and they all improved uniformly after a switch to the newer antipsychotic drugs. There was also a significant improvement in the akathisia scores; and the severity of dyskinetic movements improved in a small number of patients. These observations, based on the follow-up data, are consistent with the results from other comparative evaluation studies (Leucht et al., 1999). The benefits of fewer side effects and improved tolerability are also translated into higher treatment adherence rates and enhanced quality of life in the long-term. These results add further credibility to the notion that novel antipsychotic drugs should be considered as the first line of therapy for schizophrenia and other psychotic disorders.

The differential symptom change associated with specific drugs is of particular interest from a clinical and pharmacological point of view (Reynolds, 2000). Risperidone has had a significant impact on the negative symptoms, while ratings on the anxiety and depressive items improved to a greater extent in the olanzepine group, and quetiapine was especially beneficial in improving cognitive functioning. It is yet to be established if these short-term benefits will translate into more tangible outcomes such as improved occupational and vocational functioning, making novel antipsychotic drugs as clinically superior and economically viable therapeutic options (Rosenheck et al., 2001).

Based on a review of the relative strengths and shortcomings of the novel medications, the following composite picture seem to emerge about each of the individual drugs. Risperidone emerged as a generally effective antipsychotic drug, especially beneficial for schizophrenic patients with prominent negative symptoms. Olanzepine had an edge over the other two agents in terms of relieving comorbid affective symptoms, and emerged as a well-tolerated antipsychotic drug from a consumer perspective. Subjects with anxiety, agitation, depression and dysphoria are thus likely to benefit more from choosing olanzepine. Quetiapine, on the other hand, seems to have a unique therapeutic profile. The drug was not uniformly beneficial to all subjects, but did bring about a significant improvement in cognitive functions in a subgroup of schizophrenic patients. In view of this striking “clozapine-like” activity, the drug could be considered as
a choice for subjects with significant neurocognitive deficits.

7. Conclusions

The study has demonstrated that switching patients from conventional to the novel antipsychotic drugs is a challenging but worthwhile exercise, in the management of schizophrenia. Careful planning, patient/family education, and close monitoring are warranted to ensure smooth transitions in treatment. Flexible, individualized plans for optimizing drug therapy are likely to be more successful, than simplified, “cook-book” switching regimes. Once the switch is successfully accomplished, novel antipsychotic drugs are shown to be uniformly superior to the conventional medications in terms of their sustained therapeutic efficacy, favourable side effect profile, improved subjective tolerability and positive impact on quality of life. Hence, these medications should be considered as drugs of choice for initiation or maintenance of antipsychotic drug therapy in schizophrenia. It is also noted that novel antipsychotic drugs may possess subtle but potentially significant differences in their therapeutic actions and side effect profiles, warranting further long-term comparative evaluations. However, non-randomized, naturalistic investigations such as this study, are not equipped to support claims regarding the superiority of one novel antipsychotic drug over the other.

Acknowledgements

The authors wish to acknowledge the support extended by the staff in the community rehabilitation program (CRP), schizophrenia treatment and research program (STAR) and the Western Ontario therapeutic community hostel (WOTCH). The study is an independent clinical investigation funded by the University of Western Ontario.

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