Real-World Utilization Pattern of Biologics in Rheumatoid Arthritis: A Population-Based Study

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Background
In November 2011, CDE completed a pilot project which aimed to re-evaluate the currently reimbursed biologics for rheumatoid arthritis (RA), and to establish the evidence-based revision rules of reimbursed items covered by National Health Insurance.

OBJECTIVES
➢ To capture the utilization and prescription pattern of reimbursed biologics in adult RA patients using real world data.

METHODS
➢ Biologics Etanercept, adalimumab and rituximab were reimbursed for RA before 2011 (Table1).
➢ For utilization pattern
1. All records with etanercept, adalimumab and rituximab were identified.
2. Then the records were further separated into RA and non-RA usage, according to the diagnosis codes (ICD-9-CM code 714).
➢ For prescription pattern
1. Only adult RA patients (age≥18) with at least two claims of biologics were enrolled.
2. Considering the first reimbursed biologic for RA implemented in March 2003, patients who biologics in 2003 were further deleted to avoid unknown medication history.
➢ Statistics Kaplan-Meier analyses to assess biologics switching over time and medication possession rates to evaluate medication compliance

RESULTS
➢ Utilization pattern was summarized in Figure 1 and Figure 2.
1. The expenditure of biologics for RA patients increased rapidly in the past decade and came to NTS 1.37 billion in 2010.
2. Among 5,142 patients treated by biologics in 2010, 88% received etanercept or adalimumab, and 12% received rituximab.
➢ Prescription pattern was presented in Figure 3 and Table 2.
1. Rituximab was not reported due to lack of long-term data (reimbursed for RA since November 2008).
2. A total of 3,928 and 1,508 patients initiated by etanercept and adalimumab were analyzed.
3. About 34% of etanercept subjects appeared switching over 85 months and 27% of adalimumab subjects applied second biologics over 45 months.
4. The mean durations of continuous prescription were 29 months and 14 months, and the medication possession rates were 78% and 93%, respectively.

CONCLUSIONS
➢ Under current reimbursement rules, the persistence and compliance of biologic for RA patients were satisfactory.
➢ However, the increasing numbers of patients and biological alternatives might intensify the financial pressure on NHI.

Table 1 Current Reimbursed Biologics for RA by NHI Taiwan

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Starting date</th>
<th>Reimbursement criteria</th>
<th>Annual NTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumor necrosis factor-α inhibitors</td>
<td>etanercept</td>
<td>March 2003</td>
<td>DMARD-IR TNF-IR</td>
<td>436,592</td>
</tr>
<tr>
<td></td>
<td>adalimumab</td>
<td>September 2004</td>
<td>DMARD-IR TNF-IR</td>
<td>416,130</td>
</tr>
<tr>
<td></td>
<td>golimumab</td>
<td>January 2012</td>
<td>DMARD-IR TNF-IR</td>
<td>391,800</td>
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<tr>
<td>T-cell costimulatory blocking agent</td>
<td>abatacept</td>
<td>June 2012</td>
<td>DMARD-IR TNF-IR</td>
<td>301,672</td>
</tr>
<tr>
<td>B-cell depleting agents</td>
<td>rituximab</td>
<td>November 2008</td>
<td>For TNF-IR only</td>
<td>155,548</td>
</tr>
<tr>
<td>Interleukin-6 receptor antagonists</td>
<td>tocilizumab</td>
<td>May 2012</td>
<td>For TNF-IR only</td>
<td>181,974</td>
</tr>
</tbody>
</table>

DMARD-IR indicated inadequate response to disease-modifying anti-rheumatic drugs; TNF-IR indicated inadequate response to tumor necrosis factor-alpha inhibitors. In Taiwan, DMARD-IR was defined as patients with active RA who had failed at least two non-biologic DMARD.

Figure 1 Annual expenditure of reimbursed biologics for RA

Figure 2 Number of RA patients using reimbursed biologics

Figure 3 Time to switch the initial biologic for RA

Table 2 Prescription pattern of biologics for RA

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Kaplan-Meier estimates</th>
<th>Switch to</th>
<th>MPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>etanercept</td>
<td>3,928</td>
<td>66%</td>
<td>etanercept</td>
<td>78%</td>
</tr>
<tr>
<td>adalimumab</td>
<td>1,508</td>
<td>73%</td>
<td>etanercept</td>
<td>93%</td>
</tr>
</tbody>
</table>

MPR= medication possession rates