Human Health benefits and burdens of the schizophrenia health care pathway in Belgium:
a holistic approach towards paliperidone palmitate long-acting injectable antipsychotic

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Session: Using LCM to create shared value through healthcare and pharmaceutical supply chains

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Including the benefit of a health care pathway

• Benefit in Disability-Adjusted Life Years (DALYs) or Quality-Adjusted Life Years (QALYs)

• Burden in DALYs

-> We choose DALYs, same units

R = Resources
E = Ecosystems
H = Human Health
T = Treatment
Case study: long-acting injectable antipsychotics

• Disease area: schizophrenia
  – Patients suffer from hallucinations, delusions
  – Symptoms suppressed by medication
  – Adherence to medication remains a challenge

• Comparison of 3 treatment regimens for schizophrenia
  – Paliperidone palmitate 1-monthly injectable (PP1M)
  – Paliperidone palmitate 3-monthly injectable (PP3M)
  – Treatment Interruption (TI)

• Focus on Belgian market/population
Functional unit: the treatment of 1000 patients for 1 year

- Includes full health care pathway

- Primary data from:
  - Janssen Pharmaceutica (sites in Belgium and Ireland)
  - 5 psychiatric hospitals, 3 general hospitals
  - Specialized ambulant care unit
  - Ghent University Geography dept. for transport distances

-> To calculate the burden
Markov model to map patient benefit

Disability: 0.588

Disability: 0.778
Predicted hospitalization prevalence per month:

- Treatment Interruption
- PP1M
- PP3M

Treatment prevents hospitalization
Quantification of benefit and burden

1000 patients 1-year time horizon

Markov model

PATIENT CONSUMPTION PROFILE

# Patients per health state

# Medication # GP visits # Psychiatrist visits # Ambulant care visits # General hospital bed days # Psychiatric hospital bed days

LIFE CYCLE INVENTORY (LCI)

LIFE CYCLE IMPACT ASSESSMENT (LCIA)

Patient disability per health state

Benefit: Patients Disability-Adjusted Life Years avoided

Burden: Environmental Disability-Adjusted Life Years

COMPARISON AND AGGREGATION OF BENEFIT AND BURDEN FOR PP1M, PP3M AND TREATMENT INTERRUPTION
Results: burden of medication (PP1M)

For 1000 patients for 1 year

Impact Assessment method: ReCiPe v1.11, EndPoint, Hierarchist
Results: burden of health care providers (PP1M)

For 1000 patients for 1 year

Impact Assessment method: ReCiPe v1.11, EndPoint, Hierarchist
Results: total burden of PP1M

For 1000 patients for 1 year

Impact Assessment method: ReCiPe v1.11, EndPoint, Hierarchist
Results: burden compared by treatment

For 1000 patients for 1 year

Disability-Adjusted Life Years (DALY) for 1000 patients for 1 year
### Results: human health benefit and burden

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Environmental Health burden (DALY)</th>
<th>Increment</th>
<th>Patient Health (DALY)</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>TI</td>
<td>0.95</td>
<td></td>
<td>973</td>
<td></td>
</tr>
<tr>
<td>PP1M</td>
<td>0.58</td>
<td>-0.37 (-39%)</td>
<td>904</td>
<td>-69 (-7%)</td>
</tr>
<tr>
<td>PP3M</td>
<td>0.47</td>
<td>-0.48 (-51%)</td>
<td>885</td>
<td>-88 (-9%)</td>
</tr>
</tbody>
</table>

- Patient health benefit outweighs burden
  - Factor 184 for PP1M
  - Factor 180 for PP3M
Conclusions

- GP and psychiatrist visits (car transport) and psychiatric hospitals (energy use) cause highest burden
- Hospitals are most resource intensive
- Treatment reduces environmental Human Health burden
  - Burden medication
  - Burden hospitals
- New methodology: patient health benefit may outweigh environmental burden in health care
Thank you!

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