LESS FREQUENT DOSING OF ERYTHROPOIESIS STIMULATING AGENTS MAY RESULT IN COST SAVINGS IN EUROPEAN DIALYSIS CENTERS

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Introduction

MERCURIUS is the first comprehensive study to assess the process of anemia management in European dialysis centers. Its objectives are to:

- Describe the operational aspects and costs of associated with the delivery of erythropoiesis stimulating agents (ESAs) in Europe
- Optimize the process of anemia management
- Simulate the impact of different dosing frequencies
Optimizing the Process of Anemia Management

- Acquisition costs of ESAs are only a fraction of the costs to manage anemia
- Less frequent ESA administration may bring operational efficiency gains to the centre
The MERCURIUS Project

MERCURIUS is an impact analysis of processes related to anemia management in patients with chronic kidney disease

Objective 1:
Characterize process of ESA delivery in a dialysis organization

Objective 2:
Evaluate the impact of changing from current ESA dosing frequencies to Q2W dosing using darbepoetin alfa

Important additional benefit:
Opportunity to optimize the process of ESA delivery for the dialysis organization
Variations between centres due to:
- Reimbursement
- Centre organization

Benefits for individual centres:
- Assess and optimize process of anemia management
The ESA Delivery Process

SUPPLIER → Pharmacy → Back Office → Waste Unit → INCINERATOR

Dialysis Unit
# MERCURIUS Data Collection Methodology

<table>
<thead>
<tr>
<th>What?</th>
<th>How?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interviews and observations</strong></td>
<td><strong>Data collection</strong></td>
</tr>
</tbody>
</table>
| • Assess processes and activities involved in the treatment of anemia | • Retrieve data for calculation of cost reductions:  
  – Time savings  
  – Material savings  
  – Collect data on:  
    – ESA orders for 52 wks  
    – Administration of ESAs for 16 weeks  
    – Pricing of materials  
      – Tissues  
      – Disinfectants  
      – Syringe containers | • Assess savings in time if Q2W dosing is used  
• Determine time allocation for overall treatment of anemia  
• Determine impact on time allocation when using less frequent dosing  
• Calculate potential time reductions, if any |
Results

- Eight centers in five European countries supplied data for an average of 175 patients (range 42–707 patients).
- Total number of patients N = 1405
- Total number (%) of patients receiving:
  - epo-alfa 206 (14.7)
  - epo-beta 694 (49.4)
  - darbepoetin alfa 505 (35.9)
Dosing Frequency in Patients with Chronic Renal Disease Receiving ESAs to Treat Anemia

- **TIW**: N = 341 (24%)
- **BIW**: N = 292 (21%)
- **QW**: N = 689 (49%)
- **Q2W**: N = 78 (5%)
- **QM**: N = 5 (< 1%)
Current Cost Per-Patient-Per-Year*

*Actual drug cost not included in the calculation

Pharm: Pharmacy
DU: Dialysis unit
Q2W Cost Per-Patient-Per-Year*

*Actual drug cost not included in the calculation
**TIW Cost Per-Patient-Per-Year**

![Bar chart showing costs by country and category.](chart)

*Actual drug cost not included in the calculation*
## Reduced Usage Of Materials

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Q2W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of syringes</td>
<td>12,420</td>
<td>5,085</td>
</tr>
<tr>
<td>Bottles of disinfectant</td>
<td>59.21</td>
<td>19.62</td>
</tr>
<tr>
<td>Number of disinfectant wipes</td>
<td>13,026</td>
<td>4,316</td>
</tr>
</tbody>
</table>
Mean Costs for Each Process and Estimates of the Percentage Reduction in Costs Obtainable by Using a Fixed Q2W ESA Administration in European Centers

<table>
<thead>
<tr>
<th></th>
<th>Pharmacy labor</th>
<th>Dialysis unit labor</th>
<th>Waste disposal labor</th>
<th>Dialysis unit materials</th>
<th>Waste unit materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean current per-patient-per-year (Euros)</td>
<td>15.69</td>
<td>75.32</td>
<td>0.01</td>
<td>7.62</td>
<td>0.23</td>
</tr>
<tr>
<td>Mean percentage reduction for Q2W dosing</td>
<td>25%</td>
<td>64%</td>
<td>49%</td>
<td>60%</td>
<td>47%</td>
</tr>
</tbody>
</table>
Summary of Results

- There is substantial variation in the time it takes to perform routine ESA delivery activities in European dialysis centers.
- Operational costs vary depending on the ESA dosing regimen.
- Projected costs show reductions for switching a patient population to darbepoetin alfa Q2W dosing.
- Potential beneficial effects that accompany less frequent dosing include:
  - reduction in the potential for incorrect doses
  - less waste from packaging and cooling elements for transport
  - reduction in the risk of accidental needle sticks
Conclusions

- MERCURIUS is the first comprehensive study to assess the process of anemia management in European dialysis centers. It aims are to:
  - Optimize the process of anemia management
  - Simulate the impact of different dosing frequencies
- MERCURIUS results enable a benchmark to be set and information can be shared to optimize best clinical practice with other European dialysis centers
- First results already indicate high variability of operational costs between centers related to differences in environmental and structural factors
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