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- Member of ISPOR (International society for outcomes research and pharmacoeconomy)
- Focuses on medical marketing, outcomes research and health economy projects for pharmaceutical industry and medical societies
PHARMACOECONOMIC INSIGHT IN CURRENT HYPERTENSION TREATMENT

Jana Skoupá, MD
Prague 14.5.2011
Presentation outline

• **Epidemiology**
  – Allocated resources

• **Aspects to consider in HT treatment**
  – Efficacy/effectiveness
  – Adherence
  – Co-morbidities

• **Economic outcomes of treatment**
CVD diseases mortality across Europe

- Europe: 48% of all death (4.3 Million)
- EU-Europe (27 Member States): 42% (2 Mil)

- CHD – Europe: one of five
  - 20% male - 22% female

- Stroke – Europe: one of six to one of ten
  - 11% male – 17% female
Death rates in selected countries

Source: European Cardiovascular Disease Statistics (2008)
Death rates in selected countries

**Source:** European Cardiovascular Disease Statistics (2008)
Mortality decrease


- **Reduction by almost 50 %:** UK, Ireland, Finland, Czech
- **Reduction by 20 – 30 %:** Majority of Europe
- **Reduction by app. 10 %:** Latvia (men), Poland (women)

*Source: Rayner M et al; Europ J of Cardiovascular Prevention and Rehabilitation 2009*
CV morbidity

• MONICA Project – most valid data set
• Differences in incidence across Europe
  – Warsaw three times higher then Catalonia
• Incidence CHD falling in most European regions, but...
  – Karelia – decrease per year by 6.5%
  – Increase in Kaunas (Lithuania) by 1.2%

Source: Rayner M et al; Europ J of Cardiovascular Prevention and Rehabilitation 2009
### CVD and DALY loss

<table>
<thead>
<tr>
<th>Groups of causes</th>
<th>Disease burden</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DALYs (millions)</td>
<td>Proportion from all causes (%)</td>
<td></td>
</tr>
<tr>
<td><strong>Selected noncommunicable diseases</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>34.42</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Neuropsychiatric conditions</td>
<td>29.37</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Cancer (malignant neoplasms)</td>
<td>17.03</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Digestive diseases</td>
<td>7.12</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Respiratory diseases</td>
<td>6.84</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Sense organ diseases</td>
<td>6.34</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal diseases</td>
<td>5.75</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>2.32</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Oral conditions</td>
<td>1.02</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>All noncommunicable diseases</strong></td>
<td>115.34</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td><strong>All causes</strong></td>
<td>150.32</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Singh 2008

DALY = disability life years loss
Economic costs – EU in € Mil.

Source: European Cardiovascular Disease Statistics (2008)
Total HC costs CV per inhabitant (€) (selected EU countries)

Source: European Cardiovascular Disease Statistics (2008)
High blood pressure (HBP)

• HBP attributable to CV disease worldwide
  – 54 % stroke
  – 47 % ischemic HD
  – 75 % hypertensive disease
  – 25 % other CV disease

• In Europe and Central Asia HBP accounts for
  – 35,0 % death (vs. 13,5% total world)
  – 19,6% DALY (vs. 6,0 % total world)
Do you have or have you ever had any health problem with hypertension? (% of positive answers)

Hypertension as proportion of any chronic treatment (%)

[Charts showing data for different countries, with red bars highlighting specific comparisons.]
Scope of problem

• Variation in prevalence CEE (BG, RO)
• Efficacy (effectiveness) of BP lowering
  – Preventing stroke and/or CVD
  – Co-morbidities
• Under-diagnosis/under-treatment
  – Almost 50 % of HYP are not treated
  – Up to 60 % of treated do not reach targets
• Adherence and persistence on treatment
  – About 25 % of patients do not even file medication
  – 16-67 % still file their medication after 1 Y of treatment

Dyakova M. Croat Med J. 2008
Dorobantu M. International Journal of Hypertension 2010
British Heart Foundation 2004
Jackevicius CA. Circulation 2008
Meredith P. European Heart Journal Supplements 2004
Efficacy/effectiveness

• BP lowering potential similar
  – One drug SBP by 9 mmHg, DBP by 5 mmHg*
• Annual costs (€) per outcome (lowering BP):

*summary results from 119 randomized placebo-controlled comparisons (-placebo)
Market shares of major AH classes worldwide - 2001

Global anti-hypertensives market segmented by class, 2002 (USD sales)

- ACEI: 29%
- CCB: 26%
- ARB: 20%
- BB: 12%
- diuretics: 5%
- centrally acting agents: 2%
- alfa-blockers: 6%
Co-morbidities

• „Early“ or „late“ initiation of irbesartan (vs. standard treatment) in HT diabetics type 2 and renal disease (microalbuminuria)
  – Markow transition model
  – Time horizon 25 years

Palmer AJ Diabetes Care 2004
Underdiagnosis/undertreatment

- Unsatisfactory controlled: 26%
- Satisfactory controlled: 29%
- Unknown - untreated: 27%
- Known - untreated: 18%
Persistance on AH treatment

## Value in CEA

<table>
<thead>
<tr>
<th>Disease</th>
<th>Surrogate marker</th>
<th>Hard endpoint</th>
<th>Humanistic outcome</th>
<th>Economic outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>Blood pressure</td>
<td>Renal failure, Stroke, MI, CV death</td>
<td>QoL</td>
<td>cost/↓ mmHg, cost/event prevention, cost/LYG, cost/QALY</td>
</tr>
</tbody>
</table>
Lowering BP reduces hard endpoint

<table>
<thead>
<tr>
<th>Blood pressure reduction in persons with average blood pressure&lt;sup&gt;a&lt;/sup&gt;</th>
<th>One drug</th>
<th>Two drugs</th>
<th>Three drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate reduction in systolic blood pressure (mmHg)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>9.0</td>
<td>17.2</td>
<td>24.7</td>
</tr>
<tr>
<td>Approximate reduction in diastolic blood pressure (mmHg)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.7</td>
<td>8.9</td>
<td>12.6</td>
</tr>
<tr>
<td>Corresponding reduction in:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke (%)</td>
<td>32</td>
<td>52</td>
<td>65</td>
</tr>
<tr>
<td>Ischaemic heart disease events (%)</td>
<td>20</td>
<td>34</td>
<td>45</td>
</tr>
</tbody>
</table>

<sup>a</sup> 150 systolic and 90 diastolic, about the average level in persons having a first myocardial infarction or stroke in the age range 50–69 years (Figures 5–8); blood pressure reductions from Table 33.  
<sup>b</sup> Based on the additive model shown in Table 34 but adjusted for the fact that the first and second drugs lower the ‘initial’ blood pressure for subsequent drugs and therefore the reduction in blood pressure they produce.

Costs of hospitalization in Czech Republic:
Stroke: app. 2 400 €
Myocardial infarction: app 4 000 €

Annual mean AH treatment: 32 €

Law M. HTA 2003
Role of GP in diagnosis and treatment of CV diseases

- GP: 26
- Specialist: 3
- Others: 71

Narayanan S. ISPOR Orlando 2009
Summary and conclusions

• CEE suffers of high HT prevalence and CV mortality vs. Western Europe
• HC cost dedicated to CV diseases are low compared to Western Europe
• Annual treatment costs are low as generics available (including „golden standard“ – ACEI and ARB)
• Effective early treatment is cost-effective as it delays complications
• GPs are decisive for standard of care in each country
Thank you for your attention!

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