Hospital payment and DRGs in Germany

The G-DRG system

Dr. med. Wilm Quentin, MSc HPPF
Department of Health Care Management (MiG)
Berlin University of Technology
European Observatory on Health Systems and Policies
WHO Collaborating Centre for Health Systems, Research and Management
## Hospital facts (Data year 2012)

<table>
<thead>
<tr>
<th>Size and type of ownership</th>
<th>Hospitals overall</th>
<th>Beds</th>
<th>Beds per 100 000 inhabitants</th>
<th>Occupancy</th>
<th>Cases</th>
<th>Cases per 100 000 inhabitants</th>
<th>ALOS*</th>
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<tbody>
<tr>
<td></td>
<td>Number (Share in %)</td>
<td>Number (Share in %)</td>
<td>Number</td>
<td>[%]</td>
<td>Number (Share in %)</td>
<td>Number</td>
<td>Days</td>
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<td>Hospital size in beds</td>
<td>2 017 (100)</td>
<td>501 475 (100)</td>
<td>624</td>
<td>77.4</td>
<td>18 620 442 (100)</td>
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<td>256</td>
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<td>100 - 149</td>
<td>260</td>
<td>31 768</td>
<td>40</td>
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<td>150 - 199</td>
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<td>31 707</td>
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<td>1 166 329</td>
<td>1 450</td>
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<td>200 - 299</td>
<td>282</td>
<td>69 351</td>
<td>86</td>
<td>63.2</td>
<td>2 527 629</td>
<td>3 143</td>
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<td>69 665</td>
<td>87</td>
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<td>62 223</td>
<td>77</td>
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<td>500 - 599</td>
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<td>48 998</td>
<td>61</td>
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<td>2 475</td>
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<td>48 347</td>
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<td>63.2</td>
<td>1 814 064</td>
<td>2 256</td>
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<tr>
<td>&gt; 800</td>
<td>93</td>
<td>113 077</td>
<td>141</td>
<td>63.2</td>
<td>4 410 556</td>
<td>5 485</td>
<td>7.5</td>
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<tr>
<td>Public hospitals</td>
<td>601 (29.8)</td>
<td>240 180 (47.9)</td>
<td>299</td>
<td>78.9</td>
<td>9 088 869 (48.8)</td>
<td>11 303</td>
<td>7.6</td>
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<td>under private law</td>
<td>354</td>
<td>136 344</td>
<td>170</td>
<td>77.2</td>
<td>5 341 551</td>
<td>6 643</td>
<td>7.2</td>
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<td>under public law</td>
<td>247</td>
<td>103 836</td>
<td>129</td>
<td>81.2</td>
<td>3 747 318</td>
<td>4 660</td>
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<td>- legally dependent</td>
<td>108</td>
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<tr>
<td>- legally independent</td>
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<td>69 492</td>
<td>86</td>
<td>81.3</td>
<td>2 598 626</td>
<td>3 232</td>
<td>8.0</td>
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<tr>
<td>Non-profit hospitals</td>
<td>719 (35.6)</td>
<td>171 276 (34.2)</td>
<td>213</td>
<td>75.9</td>
<td>6 408 575 (34.4)</td>
<td>7 970</td>
<td>7.4</td>
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<tr>
<td>Private hospitals</td>
<td>697 (34.6)</td>
<td>90 019 (18.0)</td>
<td>112</td>
<td>76.1</td>
<td>3 112 659 (16.7)</td>
<td>3 871</td>
<td>8.0</td>
</tr>
</tbody>
</table>
Hospital beds per 100,000 inhabitants

- Germany
- Czech Republic
- Austria
- Poland
- Slovenia
- Slovakia
- EU
Range of activities and services in hospital sector

- **Pre-hospital care** (GPs, Specialists)
  - Referral by GP or specialist

- **Hospital Treatment**
  - Inpatient care
  - Day-surgery

- **Post-hospital care** (GPs, Specialists, Rehabilitation)
  - Discharge to GP, specialist or rehabilitation

Highly specialized care on in-and outpatient basis (e.g. Cystic fibrosis)
Hospital payment and capacity planning

- The Hospital Financing Act (KHG) of 1972 introduced the “principle of duality”
  1. State governments plan hospital capacities and finance investments
  2. Sickness funds reimburse operating costs

\begin{itemize}
  \item Tax payers
  \item Patients
  \item States
  \item Hospital services
  \item Hospitals
  \item Sickness funds
  \item Private insurance
\end{itemize}

- Taxes
- Infrastructure investments
- Contributions
- premiums
- Operating costs
Infrastructure investments


Leber & Scheller-Kreinsen (2012)
Operating costs

- Sickness funds negotiate activity based DRG budgets every year with every “planned” Hospital

Casemix X Base rate + Supplementary fees + Surcharges = Hospital budget

- Budget over-run adjustment (hospital pays back):
  - 65% (standard DRGs), 25% (drugs, medical, polytrauma and burns DRGs), Negotiations for certain DRGs (those that are difficult to predict)

- Budget under-run adjustment (hospital receives compensation):
  - 20% (standard DRGs)
Aims of DRG introduction in Germany

- Facilitating precise and transparent measurement of the case mix and the level of services delivered by hospitals
- Achieving more appropriate and fairer allocation of resources
- Increasing efficiency and quality of service delivery through improved documentation of internal processes and increased managerial capacity
- Containing costs through LOS and bed capacity reductions
Tasks and stakeholders of G-DRGs

**Health Policy**
- Ministry of Health (federal, state)

**Administration**
- Self-Administration (DKG, GKV, PKV)
- Other Institutions (HTA, quality)
- InEK (German DRG Institute)
- DIMDI (German Institute of Medical Information and Documentation)

**Consultation**
- Variety of Institutions (Professional medical associations, industry groups)

**G-DRG System**
- Goals and monitoring
- Forming a legal framework
- Contribution of expertise
- Technical management

**Development**
DRG system building blocks

1. Patient classification system
   - Diagnoses
   - Procedures
   - Severity
   - Frequency of revisions

2. Data collection
   - Demographic data
   - Clinical data
   - Cost data
   - Sample size, regularity of updates

3. Price setting
   - Cost weights
   - Base rate(s)
   - Prices/tariffs
   - Average vs. “best”

4. Actual hospital payment
   - Volume limits
   - Outliers
   - High cost cases
   - Quality
   - Innovations
   - Negotiations
From AR-DRGs to G-DRGs

1. Import

- Patient classification system
  - Diagnoses
  - Procedures
  - Severity
  - Frequency of revisions

- Case data
  - (demographic and clinical characteristics)

- Implausibility of major diagnosis, medical procedures, demographic characteristics etc.

- Transplantation, ventilation, etc.

- MDC assignment based on major diagnosis

- Pre-MDC

- Pre-MDC process

- MDC 1
- MDC 2
- MDC 3
- ...
- ...
- ...
- MDC 23

- Major diagnosis
  - + at least one surgical procedure
  - + no surgical procedure, but one other procedure being essential for the respective MDC
  - + no (essential) procedure for the respective MDC

- Surgical Partition
- Other Partition
- Medical Partition

- Basis DRGs
  - (G-DRG Version 2010: n=594, including 6 Error DRGs)

- n=294
  - No significant differences in resource consumption
  - unsplit DRGs (n=294)

- n=300
  - Co-morbidity, medical procedures, age, clinical severity, complication, cause of hospital discharge
  - split DRGs (n=906)

- Significant differences in resource consumption
G-DRGs 2003-2014

- Early years: Major revisions to increase precision
- Later years: development has stabilized

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<thead>
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<td>824</td>
<td>878</td>
<td>954</td>
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<td>1200</td>
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<td>Base-DRGs</td>
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<td>471</td>
<td>614</td>
<td>578</td>
<td>604</td>
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<td>353</td>
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<td>7</td>
<td>8</td>
<td>9</td>
<td>9</td>
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<td>Inpatient</td>
<td>664</td>
<td>824</td>
<td>878</td>
<td>952</td>
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<td>1195</td>
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<td>DRGs total</td>
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<td>806</td>
<td>845</td>
<td>912</td>
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<td>1154</td>
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<td>Day care</td>
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<td>0</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>DRGs total</td>
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<td></td>
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<td></td>
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<tr>
<td>- valuated</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>- unvaluated</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
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<tr>
<td>R² all cases</td>
<td>0.4556</td>
<td>0.5577</td>
<td>0.6388</td>
<td>0.6805</td>
<td>0.7209</td>
<td>0.7443</td>
<td>0.754</td>
<td>0.7671</td>
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<tr>
<td>R² inlier</td>
<td>0.6211</td>
<td>0.7022</td>
<td>0.7796</td>
<td>0.7884</td>
<td>0.8166</td>
<td>0.843</td>
<td>0.844</td>
<td>0.8533</td>
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</table>
Data collection process

**Data collection process**

- **InEK**
  - Development of case fee catalogue annually
  - Checking data content

- **Data Centre**
  - Collecting datasets
  - Checking case and cost data technically
  - Anonymising data

- **DIMDI**
  - Development and update of classification base (ICD-10 GM and OPS codes)

- **Sickness funds**
  - Checking data via their medical review board
  - Paying hospital

- **Hospitals**
  - Case-related performance and hospital-specific structural data from every hospital (§21 KHEntgG) until March 31
  - Case-related cost data from a sample of hospitals until March 31

- **Federal Statistical Office**
  - Publication of data

**Data collection**

- Demographic data
- Clinical data
- Cost data
- Sample size, regularity of updates
Verifications and controls

• Medical Review Boards
  – Review of about 12% of all cases (hospital bills)
  – In 2010: 45% of these bills exhibited irregularities
  – Audited bills (all audited cases) on average €730 to €940 higher than justified.

• InEK
  – Medical plausibility check
  – Economic plausibility check
  – Medico-economic coherence
Cost data collection

- Early years: increase in sample size and representativeness
- Later years: better data quality
- Continuing problem: underrepresentation of certain providers (e.g. private)

<table>
<thead>
<tr>
<th>Year (G-DRG system)</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2008</th>
<th>2010</th>
<th>2012</th>
<th>2014</th>
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<td>Hospitals participating in cost data collection</td>
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<td>144</td>
<td>148</td>
<td>214</td>
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<td>247</td>
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<td>0</td>
<td>0</td>
<td>28</td>
<td>28</td>
<td>4</td>
<td>3</td>
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<tr>
<td>- actual</td>
<td>116</td>
<td>144</td>
<td>148</td>
<td>214</td>
<td>221</td>
<td>225</td>
<td>245</td>
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<td>- included university hospitals</td>
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<td>10</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>- number of cases available for calculation</td>
<td>633 577</td>
<td>2 825 650</td>
<td>2 909 784</td>
<td>3 531 760</td>
<td>3 900 098</td>
<td>4 539 763</td>
<td>4 466 493</td>
<td>4 283 577</td>
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<tr>
<td>- number of cases used for calculation after data checks</td>
<td>494 325</td>
<td>2 395 410</td>
<td>2 283 874</td>
<td>2 851 819</td>
<td>2 811 669</td>
<td>3 257 497</td>
<td>3 359 492</td>
<td>3 534 247</td>
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</table>
Cost accounting in hospitals

Patient level costing

- Standardised cost accounting approach in hospitals (voluntarily) participating in the data sample

→ Example: DRG I03A
(Hip revision or replacement with cc)

<table>
<thead>
<tr>
<th>Cost-Centre Groups</th>
<th>Hospital units with beds</th>
<th>Diagnostic and treatment areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>01: Normal ward</td>
<td>654 1744 80</td>
<td>23 32 286 109</td>
</tr>
<tr>
<td>02: Intensive care unit</td>
<td>152 360 10</td>
<td>30 2 85 5</td>
</tr>
<tr>
<td>03: Dialysis unit</td>
<td>623 ---- 401</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>04: Operating room</td>
<td>356 ---- 236</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>05: Anaesthesia</td>
<td>385 ---- 236</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>06: Maternity room</td>
<td>2 ---- ----</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>07: Cardiac diagnostics/ therapy</td>
<td>3 ---- 2</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>08: Endoscopic diagnostics/ therapy</td>
<td>46 ---- 67</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>09: Radiology</td>
<td>18 ---- 110</td>
<td>---- ---- ---- ----</td>
</tr>
<tr>
<td>10: Laboratories</td>
<td>36 2 271</td>
<td>---- ---- ---- ----</td>
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<td>11: Other diagnostic and therapeutic areas</td>
<td>1 ---- ----</td>
<td>---- ---- ---- ----</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Labour</th>
<th>Material</th>
<th>Infrastructure</th>
<th>Total</th>
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<tbody>
<tr>
<td>Labour</td>
<td>1890</td>
<td>2106</td>
<td>1180</td>
<td>4120</td>
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<tr>
<td>Material</td>
<td>261</td>
<td>424</td>
<td>1283</td>
<td>1968</td>
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<tr>
<td>Infrastructure</td>
<td>836</td>
<td>836</td>
<td>699</td>
<td>2361</td>
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<tr>
<td>Total</td>
<td>4120</td>
<td>4120</td>
<td>1180</td>
<td>9420</td>
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</table>
Cost weight calculation

- Calculation of average costs of inlier cases in each DRG
- DRG cost weight = average costs of DRG inlier cases / reference value (i.e. average costs of all inpatients in Germany)
  \[ \text{Cost weight} = \frac{\text{average costs of all inpatients in Germany}}{\text{reference value}} \]
  \[ \Rightarrow \text{Cost weight} = 1 \Rightarrow \text{Average costs of all inpatients in Germany} \]
Actual hospital payment

- Payment example: Normal birth without cc in Berlin in 2010

<table>
<thead>
<tr>
<th>Relative cost weight</th>
<th>Base rate</th>
<th>Payment</th>
</tr>
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<tbody>
<tr>
<td>0.541</td>
<td>2927.5 €</td>
<td>1584 €</td>
</tr>
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</table>

Relative cost weight

- Patient characteristics
  - Gender, Age, Diagnoses, Severity

- Treatment options
  - Procedures, Technologies, Intensity

Base rate

- Hospital individual until 2009; Uniform statewide from 2010

G-DRG payment

Volume limits
Outliers
High cost cases
Quality
Innovations
Negotiations
Actual hospital payment II: details

Relative cost weight +
LOS adjustment +
Supplementary fees =
Base rate =
G-DRG payment

<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of cost weights: min.-max. (rounded)</td>
<td>0.12-29.71</td>
<td>0.11-48.27</td>
<td>0.12-57.63</td>
<td>0.12-65.70</td>
<td>0.11-68.97</td>
<td>0.13-73.76</td>
<td>0.14-65.34</td>
<td>0.14-64.14</td>
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<tr>
<td>Supplementary fees</td>
<td>0</td>
<td>26</td>
<td>71</td>
<td>83</td>
<td>115</td>
<td>143</td>
<td>150</td>
<td>159</td>
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<tr>
<td>- valuated</td>
<td>0</td>
<td>1</td>
<td>35</td>
<td>41</td>
<td>64</td>
<td>81</td>
<td>82</td>
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<td>25</td>
<td>36</td>
<td>42</td>
<td>51</td>
<td>62</td>
<td>64</td>
<td>64</td>
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</tbody>
</table>
Ten years of G-DRGs

<table>
<thead>
<tr>
<th>1) Phase of preparation</th>
<th>2) Budget-neutral phase</th>
<th>3) Phase of convergence to state-wide base rates</th>
<th>4) Current development and ongoing debates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Budget (2003)</td>
<td>Hospital specific base rate</td>
<td>15% 20% 20% 25% 20% 25%</td>
<td>• Impact of DRGs</td>
</tr>
<tr>
<td>Transformation</td>
<td>State-wide base rate</td>
<td>20% 25%</td>
<td>• Managing hospital volumes</td>
</tr>
<tr>
<td>DRG-Budget (2004)</td>
<td>Hospital specific base rate</td>
<td></td>
<td>• Introduction of DRG-like payment for psychiatric hospitals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Dual Financing or Monistic</td>
</tr>
</tbody>
</table>

- 15% 20% 20% 25% 20% 25% 20%
- 15% 20% 20% 25%
Impact of G-DRGs

Official DRG impact evaluation (IGES 2013):
- Very little (if any) measurable impact (and difficulties to attribute effects to DRG introduction)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Effect</th>
</tr>
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<tbody>
<tr>
<td>Bed numbers</td>
<td>Reduction slower than before DRG introduction</td>
</tr>
<tr>
<td>Average LOS</td>
<td>7.8 days in 2004; 6.8 days in 2010 → reduction similar as before DRG introduction</td>
</tr>
<tr>
<td>Productivity</td>
<td>Relatively strong increase in number of cases (but similar increases were seen in 1990s)</td>
</tr>
<tr>
<td>Costs per case</td>
<td>2.5% increase per annum from 2003 to 2010 (2.0% during 1991 to 2003)</td>
</tr>
<tr>
<td>Quality</td>
<td>Relatively strong (6.5 to 7.8%) reduction of inpatient mortality. (up to 30, 90 and 365 days post-discharge)</td>
</tr>
</tbody>
</table>
Current developments and debates I

Managing hospital volumes

- The strong growth in the number of cases from an already extremely high level (much higher than in most OECD countries) is reason for concern
- Discussions exist to, for example, limit budget increases, increase deductions for budget overruns, discontinue collective contracting, introduce casemix trading...
- New government plans: introduce patients‘ right for a second opinion prior to elective interventions
Introduction of DRG-like payment system for psychiatric hospitals

- Originally psychiatric hospitals (587 hospitals in 2012) were exempt from DRG-based hospital payment
- Budget neutral introduction in 2013 based on voluntary participation of hospitals
- Mandatory introduction planned for 2015

Dual or monistic financing of investments:

- Investment lag due to public dept
- Assumption that monistic financing would make investments easier to schedule due to investment surcharges on top of every DRG
- Capital costing model has been developed by InEK but it remains unclear whether it will be used by the states.
Quality adjustments
• New government plans to introduce payment adjustments based on quality of care.
• Plans include to take into account quantity and quality:
  – No payment reductions for budget overruns in the case of high quality
  – Payment reductions in case of low quality

Selective contracting
• New government plans: strengthen selective contracting (based on quality) for certain elective admissions
• Hospitals want to avoid selective contracting, while insurers aim to expand the potential for selective contracting
• Some experiences have been made in pilot projects
## G-DRG-based hospital payment: Conclusion

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency and improved documentation</td>
<td>No system to reward/penalize hospitals for quality</td>
</tr>
<tr>
<td>Fair (uniform) reimbursement</td>
<td>Minimal (only state-based) adjustment for different input prices</td>
</tr>
<tr>
<td>Precision of DRG system</td>
<td>Increasing complexity with number of DRGs</td>
</tr>
<tr>
<td>Precision of cost weight calculation</td>
<td>Uniform accounting system but no full sample of hospitals</td>
</tr>
<tr>
<td>Transparent methodology of developing and updating the system</td>
<td>Weak instruments to manage hospital volumes</td>
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</tbody>
</table>
Thank you very much for your time and attention!

Slides available on: www.mig.tu-berlin.de

Literature and more information: www.eurodrg.eu

Dr. med Wilm Quentin, MSc HPPF
Department of Health Care Management (MiG)
Berlin University of Technology
European Observatory on Health Systems and Policies
WHO Collaborating Centre for Health Systems, Research and Management