Aim of this study

- Only registry data so far for Germany
- Analysis of AAA outcomes and the volume-outcome relationship in GER on a national level
- Decentralised health care, AAA are treated in >500 hospitals

Methods and patients

- Data from the nationwide Diagnosis Related Group (DRG) statistics (German Federal Statistical Office)
- 2005 - 2013
- Diagnosis of AAA (ICD-10, I71.3, I71.4) PLUS procedure codes for EVAR or OAR
- Hospitals were grouped to quartiles: Q1: 1-5, Q2: 6-14, Q3: 15-30, Q4: >30/yr
- Primary outcome: in-hospital mortality
- Secondary outcomes: complications, use of blood products, and LOS

Patient characteristics of all patients

- Mean age: 71 yrs
- Female sex: 12%
- No volume-relationship for gender, age, co-morbidity

Financial Disclosures

- Collaborator in clinical trials with the T-CAR System (Silkroad)
- Research grants from COOK, MEDISTIM, MEDTRONIC, DFG (unrelated to this talk)
**Volume-outcome relationship for intact/rupt AAA**

- Overall mortality intact AAA: 5.3% after OAR and 1.7% after EVAR, $p<0.005$
- Overall mortality ruptured AAA: 43.2% after OAR and 27.4% after EVAR, $p=0.01$

**Multilevel multivariable regression model, adjusted for sex, age, co-morbidity, EVAR, OAR, symptoms etc.**

- A threshold of at least 50 (may be 75) AAA cases per year is reasonable.

**Blood transfusion in intact/ruptured AAA**

<table>
<thead>
<tr>
<th>Blood Transfusion</th>
<th>Q1 (1-5 cases)</th>
<th>Q2 (6-14 cases)</th>
<th>Q3 (15-30 cases)</th>
<th>Q4 (&gt;30 cases/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact AAA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32%</td>
<td>26%</td>
<td>22%</td>
<td>22%</td>
</tr>
<tr>
<td>Ruptured AAA</td>
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</tr>
<tr>
<td></td>
<td>11%</td>
<td>9%</td>
<td>7%</td>
<td>7%</td>
</tr>
</tbody>
</table>

**Conclusions:**

- In hospital mortality and complication rates following AAA repair are inversely associated with annual hospital volume.
- The use of blood products and the LOS are lower in high volume hospitals.
- A minimum annual case threshold for AAA procedures might improve operative results.

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Thank you very much.

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