Late Results Of The DREAM And OVER RCTs Did Not Show The Same Late Survival Benefit For Open Repair As EVAR1: Possible Reasons And Should EVAR Be The Treatment Of Choice For All Anatomically Suitable AAA Patients

don behalf of the DREAM-trial collaborators
Jan D Blankensteijn

The VA Open Versus Endovascular Repair (OVER) Trial

Disclosure
Speaker name:
Jan D. Blankensteijn

- I have no potential conflicts of interest to report
### Overall Survival

<table>
<thead>
<tr>
<th>TRIALS</th>
<th>EVAR</th>
<th>dream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Government funded, multicenter RCT, comparing Open vs Endo</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Netherlands, Belgium, United Kingdom</td>
<td></td>
</tr>
<tr>
<td>N centers</td>
<td>30 + 4</td>
<td>37</td>
</tr>
<tr>
<td>N randomized</td>
<td>652</td>
<td>2282</td>
</tr>
<tr>
<td>Database freeze</td>
<td>Jan 2016</td>
<td>Jun 2015</td>
</tr>
<tr>
<td>Follow-up</td>
<td>12 – 15 years</td>
<td></td>
</tr>
<tr>
<td>Person-years FU</td>
<td>3145</td>
<td>9968</td>
</tr>
</tbody>
</table>

### Possible Reason

--- Should EVAR Be The Treatment Of Choice For All Anatomically Suitable AAA Patients?

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Facts are meaningless...
...you can use facts to prove anything that's even remotely true

Should EVAR Be The Treatment Of Choice For All Anatomically Suitable AAA Patients?

- Should EVAR Be The Treatment Of Choice For All Anatomically Suitable AAA Patients?

Meta-analysis of individual-patient data from EVAR-1, DREAM, OVER and ACE trials comparing outcomes of endovascular or open repair for abdominal aortic aneurysm over 5 years

EVAR: 16 operative deaths (1.2%)
Open: 40 operative deaths (3.0%)

Operative mortality (30 days)

Favours EVAR
Favours open repair

SAC ENLARGEMENT by time period

Liberalization of anatomic characteristics suitable for EVAR has occurred over time
- aortic neck diameter
- aortic neck angle
- common iliac artery diameter
Factors all associated with sac enlargement

Algorithm for unruptured AAA

Expected publication date 19 December 2018

EVAR: x.4
Total mortality by time period from randomisation

- **Favours EVAR**
- **Favours open repair**

### 0-6 months
- EVAR: 481 deaths (35%)
- Open: 482 deaths (35%)

### 6m-4 years
- EVAR: 244 deaths (18%)
- Open: 229 deaths (16%)

### >4 years
- EVAR: 151 deaths (14%)
- Open: 180 deaths (13%)

**HR 0.6**

Overall Survival

**EVAR-1, DREAM, OVER, ACE trials combined**

**Catch up mortality**

- EVAR: 481 deaths (35%)
- Open: 482 deaths (35%)

**EVAR: 46 deaths (3.3%)**
- Open: 73 deaths (5.3%)

**EVAR: 191 deaths (14%)**
- Open: 180 deaths (13%)

**HR 0.6**

Are there any sub-groups who do not gain the early survival advantage from EVAR?

- Aneurysm morphology
- Age, sex, BMI, DM
- Renal dysfunction
- Coronary or peripheral arterial disease

Explain catch up mortality

Moderate renal dysfunction at baseline (eGFR <60 ml/min/1.73m²)

- **eGFR<60**
- **eGFR≥60**

### 0-6 months
- EVAR: 46 deaths (3.2%)
- Open: 73 deaths (5.3%)

### 6m-4 years
- EVAR: 244 deaths (18%)
- Open: 229 deaths (16%)

### >4 years
- EVAR: 151 deaths (14%)
- Open: 180 deaths (13%)

**HR 0.6**

Previous angina or myocardial infarction at baseline

- No early survival benefit from EVAR
- **No early survival benefit from EVAR**

Does any subgroup ever do better with open repair?
Does any subgroup ever do better with open repair?

<table>
<thead>
<tr>
<th>Time period</th>
<th>Subgroup</th>
<th>No.</th>
<th>HR</th>
<th>95% CI</th>
<th>Hazard ratio</th>
<th>Interaction p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 months</td>
<td>ABPI&lt;0.9</td>
<td>380</td>
<td></td>
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<td>1.00 (0.76, 1.29)</td>
<td>0.143</td>
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<tr>
<td></td>
<td>ABPI≥0.9</td>
<td>380</td>
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<td>1.00 (0.80, 1.28)</td>
<td>0.143</td>
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<tr>
<td>6m-4 years</td>
<td>ABPI&lt;0.9</td>
<td>778</td>
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<td></td>
<td>1.00 (0.90, 1.10)</td>
<td>0.715</td>
</tr>
<tr>
<td></td>
<td>ABPI≥0.9</td>
<td>778</td>
<td></td>
<td></td>
<td>1.00 (0.80, 1.24)</td>
<td>0.715</td>
</tr>
<tr>
<td>&gt;4 years</td>
<td>ABPI&lt;0.9</td>
<td>380</td>
<td></td>
<td></td>
<td>1.00 (0.80, 1.21)</td>
<td>0.022</td>
</tr>
<tr>
<td></td>
<td>ABPI≥0.9</td>
<td>380</td>
<td></td>
<td></td>
<td>1.00 (0.80, 1.21)</td>
<td>0.022</td>
</tr>
</tbody>
</table>

**Interaction p-value**

- 0.143
- 0.022
- 0.715

**HR=1.7 for ABPI<0.9**

EVAR IS The Treatment Of Choice For All Anatomically Suitable AAA Patients, BUT:

- Early (< 6 months)
  - Previous angina/MI: no survival benefit of EVAR
  - Mod. renal dysfunction: less survival benefit of EVAR
- Mid (6 months-4 years)
  - PAD (ABI<0.9): better survival after Open
- Very late (>8 years)
  - Overall mortality: late survival benefit after Open