Primary angioplasty
Thrombectomy and choice of stents

Adam de Belder
Sussex Cardiac Centre
Brighton UK

ACI 2011
No conflicts of interest
Myocardial blush grade, EF and mortality

Zijlstra et al

### Table 4: Enzymatic Infarct Size, LVEF, and Mortality

<table>
<thead>
<tr>
<th>Myocardial Blush Grade</th>
<th>Trend Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>LDH&lt;sub&gt;Q&lt;/sub&gt;&lt;sub&gt;72&lt;/sub&gt;</td>
<td>757±582</td>
</tr>
<tr>
<td>LVEF, %</td>
<td>50±10</td>
</tr>
<tr>
<td>Mortality, %</td>
<td>3</td>
</tr>
</tbody>
</table>

LDH<sub>Q</sub><sub>72</sub> indicates enzymatic infarct size from serial lactate dehydrogenase measurements up to 72 hours after angioplasty. LVEF was measured by predischarge radionuclide ventriculography; total mortality was assessed after a follow-up of 1.9±1.7 years.
IT SEEMS LOGICAL TO ARGUE THAT ANY PROCEDURE THAT LEADS TO OPTIMAL MYOCARDIAL BLUSH GRADE SHOULD BE STRONGLY CONSIDERED.
### Meta Analysis of 21 Trials

#### Summary:
- **3721 Patients**
- **Only 9 Studies >100 patients**
- **Blush Better**
- **Distal Embolism worse**
- **Mortality no different**

#### Details:

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>OR (random) 95% CI</th>
<th>Weight</th>
<th>OR (random) 95% CI</th>
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<tbody>
<tr>
<td>DISTAL PROTECTION</td>
<td></td>
<td></td>
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<tr>
<td>ASPARAGUS</td>
<td>5/172</td>
<td>7/158</td>
<td>0.60 (0.21-2.20)</td>
<td>14.43</td>
<td>0.60 (0.21-2.20)</td>
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<tr>
<td>DIPLOMAT</td>
<td>0/22</td>
<td>3/280</td>
<td>1.28 (0.51-3.21)</td>
<td>1.97</td>
<td>1.28 (0.51-3.21)</td>
</tr>
<tr>
<td>EMERALD</td>
<td>5/246</td>
<td>7/224</td>
<td>0.70 (0.22-2.24)</td>
<td>14.33</td>
<td>0.70 (0.22-2.24)</td>
</tr>
<tr>
<td>PENTSIAAR</td>
<td>4/70</td>
<td>4/79</td>
<td>1.00 (0.24-4.17)</td>
<td>3.66</td>
<td>1.00 (0.24-4.17)</td>
</tr>
<tr>
<td>PROMISE</td>
<td>2/100</td>
<td>3/100</td>
<td>0.68 (0.11-4.54)</td>
<td>6.00</td>
<td>0.68 (0.11-4.54)</td>
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<tr>
<td>LIFLOX</td>
<td>0/51</td>
<td>2/49</td>
<td>0.18 (0.01-3.04)</td>
<td>2.10</td>
<td>0.18 (0.01-3.04)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>15/272</td>
<td>24/650</td>
<td>0.62 (0.16-1.28)</td>
<td>48.65</td>
<td>0.62 (0.16-1.28)</td>
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</tbody>
</table>

Test for heterogeneity: $\chi^2 = 12.77$, df = 5 ($P = .04$), $I^2 = 0$

Test for overall effect: $Z = 1.21$ ($P = .22$)

**Thrombectomy Devices**

<table>
<thead>
<tr>
<th>Name</th>
<th>Treatment</th>
<th>Control</th>
<th>OR (random) 95% CI</th>
<th>Weight</th>
<th>OR (random) 95% CI</th>
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<tbody>
<tr>
<td>AIA</td>
<td>11/240</td>
<td>2/240</td>
<td>5.72 (1.25-25.07)</td>
<td>8.95</td>
<td>5.72 (1.25-25.07)</td>
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<tr>
<td>Antonucci et al.</td>
<td>0/50</td>
<td>0/50</td>
<td>Not estimable</td>
<td>3.27</td>
<td>2.14 (0.10-25.06)</td>
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<tr>
<td>Beran et al.</td>
<td>2/30</td>
<td>1/31</td>
<td>Not estimable</td>
<td>2.09</td>
<td>0.19 (0.01-4.08)</td>
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<tr>
<td>De Luca et al.</td>
<td>0/38</td>
<td>0/38</td>
<td>Not estimable</td>
<td>2.04</td>
<td>0.19 (0.01-4.08)</td>
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<tr>
<td>Expert Study</td>
<td>0/24</td>
<td>2/26</td>
<td>Not estimable</td>
<td>1.37</td>
<td>0.32 (0.01-8.58)</td>
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<td>Killcre et al.</td>
<td>0/100</td>
<td>5/197</td>
<td>Not estimable</td>
<td>2.12</td>
<td>0.19 (0.01-4.10)</td>
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<td>Lemiere et al.</td>
<td>4/103</td>
<td>4/130</td>
<td>0.99 (0.24-4.07)</td>
<td>5.94</td>
<td>0.99 (0.24-4.07)</td>
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<td>Maricona et al.</td>
<td>3/36</td>
<td>3/45</td>
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<td>NON STOP</td>
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<td>2/131</td>
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<td>5.05</td>
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<td>RENEDIA</td>
<td>5/48</td>
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<td>1.74 (0.39-7.15)</td>
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<tr>
<td>VAMPYRE</td>
<td>1/272</td>
<td>3/74</td>
<td>0.97 (0.01-35.89)</td>
<td>3.22</td>
<td>0.97 (0.01-35.89)</td>
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<tr>
<td>Subtotal (95% CI)</td>
<td>25/704</td>
<td>32/706</td>
<td>1.35 (0.59-2.79)</td>
<td>51.35</td>
<td>1.35 (0.59-2.79)</td>
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</table>

Test for heterogeneity: $\chi^2 = 7.99$, df = 9 ($P = .54$), $I^2 = 0$

Test for overall effect: $Z = 0.50$ ($P = .62$)

Total (95% CI): $100.00 (0.00-1.00)$

**Mortality**

- **Favors Adjunctive devices**: 0.1-0.2, 0.5-1.0, 2-5, 10-20
- **Favors Control**: 0.00-0.05, 0.1-0.2, 0.5-1.0, 2-5, 10-20
Thrombus Aspiration during Primary Percutaneous Coronary Intervention

Tone Sivilas, M.D., Pieter J. Vlaar, M.Sc., Ivan C. van der Horst, M.D., Ph.D., Gilles F.H. Diercks, M.D., Ph.D., Bart J.G.L. de Smet, M.D., Ph.D., Ad F.M. van den Heuvel, M.D., Ph.D., Rutger L. Anthonio, M.D., Ph.D., Gillian A. Jessurun, M.D., Ph.D., Eng-Shiong Tan, M.D., Albert J.H. Suurmeijer, M.D., Ph.D., and Felix Zijlstra, M.D., Ph.D.

Improving Reperfusion in Patients with Myocardial Infarction

George W. Vetrovec, M.D.
Thrombus Aspiration during Primary PCI

- Patients – 1071; Aspiration 535, Standard PCI 536
- Median Door to Balloon/Aspiration (min)
  - Aspiration 28, Balloon 26
- Administration of IIbIIIa: 92.3%/89.9%
- Ending TIMI 3 flow: 86.0%/82.5% p=NS

Myocardial Blush Score
Resolution of ST Segments
Persistent ST Changes

Favored
Improved
Perfusion

Svilaas et al, NEJM 2008, 358; 557-567

..THE ARGUMENT THAT THROMBECTOMY PROLONGS DTB TIMES DOES NOT WASH..
Resolution of ST-Segment Elevation

B Resolution of ST-Segment Elevation

<table>
<thead>
<tr>
<th>Percent of Patients</th>
<th>Thrombus Aspiration</th>
<th>Conventional PCI</th>
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<tr>
<td>&gt;70%</td>
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<tr>
<td>30–70%</td>
<td>37.9</td>
<td></td>
</tr>
<tr>
<td>&lt;30%</td>
<td>17.9</td>
<td></td>
</tr>
<tr>
<td>56.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Svilaas et al. NEJM 2008. 358: 557-567
Rates of Death and MACE based on Myocardial Blush and ST-Segments

Svilaas et al, NEJM 2008, 358; 557-567
TAPAS: Mortality at 1 Year

Thrombus Aspiration before Stenting Reduces Mortality Compared to Conventional PCI

- Conventional PCI
- Thrombus-Aspiration

Mortality (%)

Time (days)

Log-Rank p = 0.040
ATTEMPT: Individual Patient-Level Pooled Analysis Of Prospective Trials of Standard PCI +/- Thrombectomy

330 Potentially relevant citations identified and screened for retrieval

316 Citations excluded due to irrelevance to the systematic search

14 Potentially appropriate RCT

Two trials excluded due to comparison between two thrombectomy devices

12 RCT selected from MEDLINE search

Five trials selected from TCT and EuroPCR websites search

17 RCT selected for ATTEMPT study

Five PI of 5 RCT not agreed to participate the ATTEMPT study
One RCT excluded due to not provided requested data

11 RCT entered the ATTEMPT study

PRIMARY ENDPOINT: ALL-CAUSE MORTALITY
ATTEMPT: Included Trials

MANUAL ASPIRATION
- DIVER CE
- PRONTO
- EXPORT

NON-MANUAL THROMBECTOMY
- ANGIOJET
- X-SIZER
- RESCUE
- TVAC

Included Trials:
- REMEDIA
- De Luca
- PIHRATE
- DEAR-MI
- EXPORT
- EXPIRA
- TAPAS
- Antoniucci
- X-AMINE ST
- Kaltoft
- VAMPIRE

2,686 Patients

Median Follow-Up Available for ATTEMPT Study: 365 Days
(significantly extended compared to published median FU of included trials: 135 days)
ATTEMPT: Primary Endpoint – Mortality

Cumulative Survival

Time to Death (days)

Thrombectomy
Standard PCI

p = 0.049

Absolute Risk Reduction: 1.6%
Relative Risk Reduction: 29%
ATTEMPT: Secondary Endpoints

- MI: OR 0.72 (0.47-1.10); P = 0.13
- TVR: OR 0.87 (0.67-1.13); P = 0.27
- Death or MI: OR 0.70 (0.52-0.93); P = 0.02
- MACE: OR 0.80 (0.65-0.98); P = 0.03

Thrombectomy Better vs. Standard PCI Better
ATTEMPT: Impact of Type of Thrombectomy Device on Mortality

NON-MANUAL THROMBECTOMY TRIALS

Cumulative Survival

Thrombectomy Standard PCI

p = 0.482

MANUAL ASPIRATION TRIALS

Cumulative Survival

Thrombectomy

Standard PCI

p = 0.011

Estimated # of Patients to Treat to Save 1 Life: 34
Which Device for Thrombectomy?

**Figure 3** Incidence of mortality with similar type adjunctive thrombectomy devices grouped together.

Comparison of AngioJet Rheolytic Thrombectomy Before Direct Infarct Artery Stenting With Direct Stenting Alone in Patients With Acute Myocardial Infarction

The JETSTENT Trial

Angela Migliorini, MD,* Amerigo Stabile, MD,† Alfredo E. Rodriguez, MD, PhD,‡ Caterina Gandolfo, MD,† Alfredo M. Rodriguez Granillo, MD,‡ Renato Valenti, MD,* Guido Parodi, MD, PhD,* Franz-Josef Neumann, MD,§ Antonio Colombo, MD,¶ David Antoniucci, MD,* on behalf of the JETSTENT Trial Investigators

Florence, Milan, and Palermo, Italy; Buenos Aires, Argentina; and Bad Krozingen, Germany

Conclusions

Although the primary efficacy end points were not met, the results of this study support the use of RT before Infarct artery stenting in patients with acute myocardial infarction and evidence of coronary thrombus. (AngioJet Rheolytic Thrombectomy Before Direct Infarct Artery Stenting In Patients Undergoing Primary PCI for Acute Myocardial Infarction [JETSTENT]; NCT00275990) (J Am Coll Cardiol 2010;56:000–0) © 2010 by the American College of Cardiology Foundation
Freedom From MACE

Log-rank test
p = 0.009

Event - Free Survival (%)

85.2 ± 2.3
75.0 ± 3.1

Time (days)

Patient at risk
RT 241 236 232 190 192 176
DS 225 220 206 175 173 160

J Am Coll Cardiol 2010;56:000–0
Are there non-believers?

- ...oh yes
Thrombectomy: beneficial (if ever) only in highly selected patients

Prof. Imad Sheiban

University of Turin, Turin, Italy
Can we believe this impact on survival?

Guess not:

• *stents were never proven capable of improving survival in STEMI*;
• *it usually takes much >1000 pts to prove mortality benefit in STEMI (e.g. GISSI enrolled 16000 pts to prove thrombolysis was better than placebo).*
Active thrombectomy is too expensive and not risk-beneficial and thus should be discouraged in most cases.

Manual thrombectomy can be attempted in selected cases with large thrombus burden in proximal lesions where lack of support or risk of dissection are not major issues.

Most cases of STEMI can be managed with a highly selective use of manual thrombectomy, keeping balloon and stenting as the procedural workhorses.
ACC/ AHA Guidelines:
Size of Treatment Effect
Strength of Recommendation

- **Class I:** Benefit >>> Risk: ‘Should’
- **Class IIa:** Benefit >> Risk: ‘is reasonable’
- **Class IIb:** Benefit >= Risk: ‘may be considered’
- **Class III:** Risk >= Benefit: ‘Should not..’
2009 ACC/AHA STEMI Guideline Update: Aspiration for Rx of STEMI

- **New** Class IIa, Level of Evidence B recommendation for the use of aspiration thrombectomy for STEMI.
  - IIA - Treatment benefits >> Risk, “It is reasonable to perform.”
  - B – Data from several non-randomized or a single randomized study.
  - This recommendation does NOT apply to mechanical thrombectomy (e.g., Angiojet)

- ACC/AHA guidelines cite:
  - 2 randomized clinical trials: TAPAS & EXPIRA
  - A meta-analysis by Bavry et al
  - A large pooled analysis of randomized trials: ATTEMPT
## Primary PCI: Adjunctive Therapies

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>LOE</th>
</tr>
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<tbody>
<tr>
<td><strong>Antiplatelet co-therapy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aspirin</td>
<td>I</td>
<td>B</td>
</tr>
<tr>
<td>NSAID and COX-2 selective inhibitors</td>
<td>III</td>
<td>B</td>
</tr>
<tr>
<td>clopidogrel loading dose</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>GPIIb/IIIa antagonist</td>
<td></td>
<td></td>
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<tr>
<td>abciximab</td>
<td>IIa</td>
<td>A</td>
</tr>
<tr>
<td>tirofiban</td>
<td>IIb</td>
<td>B</td>
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<tr>
<td>eptifibatide</td>
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<td>C</td>
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<td><strong>Antithrombin co-therapy</strong></td>
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<tr>
<td>heparin</td>
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<td>C</td>
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<tr>
<td>bivalirudin</td>
<td>IIa</td>
<td>B</td>
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<tr>
<td>fondaparinux</td>
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<td>B</td>
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<tr>
<td>thrombus aspiration</td>
<td>IIb</td>
<td>E</td>
</tr>
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</table>

*www.escardio.org*
OPTIMIZED TIP DESIGN

Soft tip for increased deliverability

Forward-facing short tip for effective particle capture
The trial that needs to be done is:

*Routine* thrombectomy

Vs

*Selective operator-choice* thrombectomy
Which stent for STEMI?

Deciding on a DES

Considerations in AMI

DES vs BMS

Compliance

Stent Thrombosis

Restenosis

Surgery

Bleeding Risk
Is there a problem?
Delayed arterial healing after DES in STEMI

Human pathology study showed greater delayed arterial healing, with persistent fibrin deposition and uncovered 1st generation DES struts, in STEMI lesions compared to stable lesions.

Nakazawa and Virmani et al. Circulation 2008;118:1138-45
Is there a problem?
OCT study Thorax Center
Incomplete strut apposition & strut coverage

Gonzalo et al. ESC 2009 Abstract
Primary Endpoint (TVF*) Through 360 Days

1st Endpoint at 1 Year Follow-Up

49% ↓

P = 0.0036

*Defined as ischemia driven TVR, recurrent MI, or target vessel-related cardiac death.
Clinical Outcomes Through 360 Days

- **MACE**: SES 5.9, BMS 14.6, $P < 0.001$
- **Death**: SES 2.2, BMS 2.2, $P = \text{NS}$
- **MI**: SES 1.1, BMS 1.4, $P = \text{NS}$
- **TLR**: SES 3.7, BMS 12.6, $P < 0.0001$
- **TVR**: SES 5.6, BMS 13.4, $P < 0.001$
- **TVF**: SES 7.3, BMS 14.3, $P = 0.004$

Primary Endpoint*: Defined as ischemia driven TVR, recurrent MI, or target vessel-related cardiac death.

*Defined as ischemia driven TVR, recurrent MI, or target vessel-related cardiac death.
ARC Definite/Probable Stent Thrombosis at 4 Years

**TYPHOON 4 yr FU**

- **Early (0 to 30 days)**
  - BMS (n=250):
    - 9 (3.6%)
  - CYPHER (n=251):
    - 6 (2.4%)

- **Very Late (> 1yr)**
  - BMS (n=250):
    - 3 (1.2%)
  - CYPHER (n=251):
    - 5 (2.0%

\[ P = 0.83 \]

No late (>30 days to 1 yr) definite/probable stent thrombosis.

ARC/Dublin definitions. Hierarchical events.
Death/MI/TVR at 8 Months

- **Abc + BMS (MACE)**
- **SHDB Tir + SES (MACE)**

- **Probability of Events (%)**
  - 32%
  - 18%

- **Time after Initial Procedure (days)**

- **HR 0.53 [95% CI: 0.28-0.92]**

- **p = 0.043**

Reference:
JAMA 2005: 293, 2109-2117
Stent Thrombosis at 5 years
ARC definite, probable, possible.

Hazard Ratio 1.13 [95% CI: 0.44-2.9]; p=0.78

Days after Randomization

Probability of ARC Stent Thrombosis (%)

Tirofiban-SES
Abciximab-BMS

8% 7%
HORIZONS AMI

Harmonizing Outcomes with Revascularization and Stents in AMI

3602 pts with STEMI

3006 pts eligible for stent rand.

R 3:1

Randomized

TAXUS DES N=2257

18 Withdraw
16 Lost to FU

EXPRESS BMS N=749

7 Withdraw
13 Lost to FU

1 year FU N=2223 (98.5%)

13 month angiographic FU 942
12 Withdraw
54 Lost to FU

2 year FU N=2157 (95.6%)

N=729 (97.3%)

UFH + GPI (n=1802)
Bivalirudin (n=1800)

93.1% of all stented pts were randomized
Primary Efficacy Endpoint: Ischemic TLR

HR [95%CI] = 0.58 [0.44, 0.76]  
P < 0.001

Number at risk
TAXUS DES 2257 2105 2041 1949 1618
EXPRESS BMS 749 677 654 611 507
Primary Efficacy Endpoint: Ischemic TLR

- TAXUS DES (n=2257)
- EXPRESS BMS (n=749)

- 13 mo angio FU

- 1-yr HR [95%CI] = 0.60 [0.43, 0.84]  
  p = 0.002

- HR [95%CI] = 0.58 [0.44, 0.76]  
  P < 0.001

<table>
<thead>
<tr>
<th>Months</th>
<th>TAXUS DES</th>
<th>EXPRESS BMS</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>2257</td>
<td>749</td>
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<tr>
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<td>2105</td>
<td>677</td>
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<td>6</td>
<td>2041</td>
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<td>9</td>
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<td></td>
</tr>
<tr>
<td>24</td>
<td>1818</td>
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</tbody>
</table>
Two-Year Cardiac Mortality

HR [95%CI] = 0.83 [0.52, 1.33]

p = 0.43

<table>
<thead>
<tr>
<th>Number at risk</th>
<th>TAXUS DES</th>
<th>EXPRESS BMS</th>
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<tr>
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<td>3</td>
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<td>6</td>
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<td>9</td>
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<tr>
<td>24</td>
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</table>
Use of Drug-Eluting Stents in Acute Myocardial Infarction
A Systematic Review and Meta-Analysis

Somjot S. Brar, MD, Martin B. Leon, MD, Gregg W. Stone, MD, Roxana Mehran, MD, Jeffrey W. Moses, MD, Simejjeet K. Brar, BS, George Dangas, MD, PhD
New York, New York

Objectives
The primary aim of the analysis was to compare outcomes by stent type for death, myocardial infarction (MI), target vessel revascularization (TVR), and stent thrombosis in randomized trials of ST-segment elevation myocardial infarction (STEMI). A secondary analysis was performed among registry studies.

Background
It is not known whether there are differences in outcomes between drug-eluting stents (DES) and bare-metal stents (BMS) for STEMI.

Methods
We searched MEDLINE, EMBASE, the Cochrane Library, and Internet sources for articles comparing outcomes between DES and BMS among patients with STEMI between January 2000 and October 2008. Randomized controlled trials and registries including patients 18 years of age and older receiving a DES or BMS were included. We extracted variables related to the study design, setting, participants, and clinical endpoints.

Results
Thirteen randomized trials were identified (N = 7,352). Compared with BMS, DES significantly reduced TVR (relative risk [RR]: 0.44; 95% confidence interval [CI]: 0.36 to 0.56), without increasing death (RR: 0.89; 95% CI: 0.70 to 1.14), MI (RR: 0.82; 95% CI: 0.64 to 1.05), or stent thrombosis (RR: 0.97; 95% CI: 0.73 to 1.28). These observations were durable over 2 years. Among 18 registries (N = 26,521), DES significantly reduced TVR (RR: 0.54; 95% CI: 0.40 to 0.74) without an increase in MI (RR: 0.87, 95% CI: 0.62 to 1.23). Death was significantly lower in the DES group within 1 year of the index percutaneous coronary intervention, but there were no differences within 2 years (p = 0.45).

Conclusions
The use of DES appears safe and efficacious in randomized trials and registries of patients with STEMI. The DES significantly reduces TVR compared with BMS, without an increase in death, MI, or stent thrombosis within 2 years of the index procedure. (J Am Coll Cardiol 2009;53:1677-89) © 2009 by the American College of Cardiology Foundation
DES in AMI Meta-Analysis

Mortality (RCTs)

Relative Risk
(95% CI)
0.89
(0.70 - 1.14)

I² = 0%

Favors DES  Favors BMS
DES in AMI Meta-Analysis
Myocardial Infarction (RCTs)

- Di Lorenzo et al.
- STRATEGY
- BASKET-AMI
- PASSION
- TYPHOON
- SELECTION
- SESAMI
- Diaz de la Llera et al.
- DEDICATION Stent
- HAAMU-STENT
- MISSION
- HORIZONS-AMI Stent
- MULTISTRATEGY

Overall

Relative Risk (95% CI)
0.82
(0.64 - 1.05)

\( I^2 = 0\% \)
DES in AMI Meta-Analysis

Target Vessel Revascularization (RCTs)

REDUCTION

56%

Relative Risk (95% CI)
0.44
(0.35 - 0.55)

p < 0.001

I² = 26%
DES in AMI Meta-Analysis

Stent Thrombosis (RCTs)

Di Lorenzo et al.
STRATEGY
BASKET-AMI
PASSION
TYPHOON
DEDICATION Stent
HAAMU-STENT
MISSION
SELECTION
Diaz de la Llera et al.
HORIZONS-AMI Stent
MULTISTRATEGY

Overall

Relative Risk (95% CI)
0.97
(0.73 - 1.28)

I² = 0%
Treatment Benefit & Baseline Risk

Control Rate Regression using a Bivariante Multilevel Random-Effects Model

Summary: Benefit of DES is greater in patients at higher risk of restenosis.
DES stents

1\textsuperscript{e} generation (first available, durable polymer, stainless steel)
- Sirolimus eluting (Cypher)
- Paclitaxel eluting (Taxus Express / Liberte)

2\textsuperscript{e} generation (second wave, durable polymer, CoChr, thin struts)
- Zotarolimus eluting (Endeavor / Resolute)
- Everolimus eluting (Xience-V / Promus)

3\textsuperscript{e} generation (biodegradable polymer, abluminal coating)
- Biolimus eluting (Biomatrix)
- Biolimus eluting (Nobori)

CE marked:
- 2002
- 2003 / 2006
- 2005 / 2007
- 2007
- 2008
- 2008
Table 8 Recommendations for the Use of Stents in STEMI

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Class IIa</strong></td>
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<tr>
<td>1. It is reasonable to use a DES as an alternative to a BMS for primary PCI in STEMI (11,105). <em>(Level of Evidence: B)</em></td>
<td>New recommendation</td>
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<td><strong>Class IIIb</strong></td>
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<tr>
<td>2007 PCI Guideline Update, Table 16</td>
<td>1. A DES may be considered for clinical and anatomic settings in which the efficacy/safety profile appears favorable (106–109). <em>(Level of Evidence: B)</em></td>
<td>Modified recommendation (level of evidence changed from C to B).</td>
</tr>
<tr>
<td>1. A DES may be considered for clinical and anatomic settings in which the effectiveness/safety profile appears favorable but has not been fully confirmed by clinical trials. <em>(Level of Evidence: C)</em></td>
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</table>

* Consideration for the use of stents (DES or BMS) in STEMI should include the ability of the patient to comply with prolonged dual-antiplatelet therapy, the bleeding risk in patients undergoing chronic oral anticoagulation, and the possibility that the patient may need surgery during the ensuing year (28).

† For example, small vessels, long lesions, or diabetes mellitus. This recommendation applies to primary and nonprimary PCI patients with STEMI.
Guidelines

- ..not an excuse to not use your developed intellectual capacity to do the best for your patients
Conclusions

Deciding on a DES

Considerations in AMI

- Compliance
- Stent Thrombosis
- Restenosis
- Surgery
- Bleeding Risk

DES vs BMS