Interventional cardiology – ESC congress 2014

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Conflicts of interest

- Advisory board: AstraZeneca
- Lecture fees: ASPEN, AstraZeneca, The Medicines Company
Interventional cardiology

M. Roffi (Geneva, CH)
Highlight Session 2014 INTERVENTIONAL CARDIOLOGY

- STEMI
  \( \rightarrow \) ATLANTIC
  \( \rightarrow \) CvLPRIT
  \( \rightarrow \) TASTE 1-year

- Stable CAD
  \( \rightarrow \) FAME-2

- Drug-eluting stents
  \( \rightarrow \) SCAAR

- 2014 ESC Myocardial Revascularization GL
- 2014 ESC Non-cardiac surgery GL
ST-elevation

• Acute ECG
Transfer for primary PCI

• Optimize prehospital therapy
ATLANTIC: Ticagrelor in the Catheterisation Laboratory or in the Pre-Hospital Setting

**STEMI planned for P-PCI (N = 1862)**

- **Ticagrelor 180 mg loading dose**
  - Pre-hospital
  - Randomised, double-blind

- **Placebo loading dose**
  - Placebo

- **Placebo loading dose**
  - In-Hospital

- **Ticagrelor 180 mg loading dose**
  - In-Hospital

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**Primary Objectives**

- ≥ 70% ST-segment elevation resolution pre-PCI
- TIMI flow grade 3 at initial angiography

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**Ticagrelor 90 mg/bid 30 days**

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Primary objective

T1 (PrePCI) p=NS
T2 (End of PCI) p=NS
T3 (H1 Post PCI) p=NS
T4 (H6 PostPCI) p=NS
T5 (Before MD) p=NS

Pre Hospital (Pre-treatment)
In Hospital (CathLab)

N=37

VASP: vasodilator-stimulated phosphoprotein
PRI: platelet reactivity index

G. Montalescot, FR, 4025

#esccongress
www.escardio.org/esc2014
1st Co-primary endpoint
No ST-segment resolution (≥70%)

Primary objective

Pre-PCI

86.8% 87.6%

p = NS

2nd Co-primary endpoint
No TIMI 3 flow in infarct-related artery

Primary objective

Pre-PCI

82.6% 83.1%

p = NS

G. Montalescot, FR, 4025
Secondary Endpoint: 30-Day MACE

MACE: death, MI, stent thrombosis, stroke or urgent revascularization

Pre-hospital ticagrelor administration prior to P-PCI in STEMI is safe but does not improve coronary reperfusion

Ticagrelor pre-hospital: 41/906 (4.5%)
Ticagrelor in-hospital: 42/952 (4.4%)
OR: 1.03 (95% CI 0.66, 1.0); p = 0.9056

No difference in bleeding

G. Montalescot, FR, 4025
Anterior STEMI: LAD stenosis
RCA stenosis
The Complete Versus Lesion-Only Primary PCI Trial (CvLPRIT)

- 296 STEMI patients with multivessel disease randomized to infarct-related artery only PCI or complete revascularization during index admission.

- The primary endpoint was the composite of total mortality, recurrent MI, heart failure and ischaemia-driven revascularisation at 12 months.
CvLPRIT: Primary Endpoint (MACE) at 12 Months

Hazard Ratio (95% CI): 0.45 (0.24, 0.84)
P = 0.009

Number at risk:
- Complete: 150 131 129 128 125 108 73
- IRA Only: 146 122 118 116 111 98 68

AH Gershlick, UK, 4023
## CvLPRIT: Individual Endpoints at 12 Months

### Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>IRA only (N=146)</th>
<th>Complete Revascularisation (N=150)</th>
<th>HR (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time to First Event</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MACE N= (%)</td>
<td>31 (21.2)</td>
<td>15 (10.0)</td>
<td>0.45 (0.24, 0.84)</td>
<td>0.009</td>
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<tr>
<td>Components N= (%)</td>
<td></td>
<td></td>
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<tr>
<td>All-cause mortality</td>
<td>6 (4.1)</td>
<td>2 (1.3)</td>
<td>0.32 (0.06, 1.60)</td>
<td>0.14</td>
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<tr>
<td>Recurrent MI</td>
<td>4 (2.7)</td>
<td>2 (1.3)</td>
<td>0.48 (0.09, 2.62)</td>
<td>0.39</td>
</tr>
<tr>
<td>Heart failure</td>
<td>9 (6.2)</td>
<td>4 (2.7)</td>
<td>0.43 (0.13, 1.39)</td>
<td>0.14</td>
</tr>
<tr>
<td>Repeat Revascularisation</td>
<td>12 (8.2)</td>
<td>7 (4.7)</td>
<td>0.55 (0.22, 1.39)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**COMPLETE:** ~4000 STEMI patients with multivessel disease randomised to full **staged** revascularization or optimal medical treatment.

AH Gershlick, UK, 4023
Acute myocardial infarction: coronary thrombus

Platelets

Coagulation

E Falk 1983 and 1985
Thrombus aspiration
TASTE: 1-Year All-Cause Mortality

HR up to 30 days 0.94 (0.72 - 1.22), P=0.63

HR up to 1 year 0.94 (0.78 - 1.15), P=0.57

No benefit in any subgroups
No benefit in terms of MI or stent thrombosis

N=7244

B. Lagerqvist, SE, 5909
TASTE: 1-Year All-Cause Mortality

Findings recently confirmed in the TOAST trial

HR up to 30 days 0.94 (0.72 - 1.22), P=0.63

HR up to 1 year 0.94 (0.78 – 1.15), P=0.57

N=7244
Intracoronary pressure (FFR)

Figure 2. Rest (A) and hyperemic (B) Fractional Flow Reserve measurement in case A
FAME-2: Fractional Flow Reserve–Guided PCI for Stable Coronary Disease

Stable CAD patients scheduled for 1, 2 or 3 vessel DES-PCI
N = 1220

FFR in all target lesions

Randomized Trial
At least 1 stenosis with FFR ≤ 0.80 (n=888)

PCI + MT  MT

73%

Registry
When all FFR > 0.80 (n=332)

MT

27%

Primary endpoint: all cause death, MI, unplanned hospitalization with urgent revascularisation at 2 years

B De Bruyne, BE, 5690
FAME 2 Primary Endpoint

PCI+MT vs. MT: HR 0.39 (95% CI 0.26-0.57) P<0.001

B De Bruyne, BE, 5690
In stable CAD FFR-guided PCI as compared with optimal medical treatment improved the outcome. Patients with FFR-negative lesions had a favorable outcome with medical therapy alone.
Stents

- Bare metal
- First generation DES (Sirolimus, placitaxel)
- New generation DES (sirolimus, zotarolimus, everolimus)
SCAAR Registry: Cumulative Risk of Stent Thrombosis in BMS, New- and Old-Generation DES

Stents implanted 1st Jan 2007 to 8th Jan 2014

- BMS
- Old DES
- New DES

Cumulative risk of ST (%)

- o-DES vs BMS: adjusted RR 1.81, p<0.001
- o-DES vs BMS: unadjusted RR 2.22, p<0.001
- n-DES vs BMS: adjusted RR 1.17, p=ns
- n-DES vs BMS: unadjusted RR 1.14, p=ns

N=177488 Consecutive stent implantations performed in all Swedish centers

o-DES=old generation drug eluting stents, n-DES=new generation drug eluting stents, BMS=bare metal stents

B. Lagerkvist, SE, 23
2014 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Developed with the special contribution of the European Association of Percutaneous Cardiovascular Interventions (EAPCI)

Authors/Task Force members: Stephan Windecker* (ESC Chairperson) (Switzerland), Philippe Kolh* (EACTS Chairperson) (Belgium), Fernando Alfonso (Spain), Jean-Philippe Collet (France), Jochen Cremer (Germany), Volkmar Falk (Switzerland), Gerasimos Filippatos (Greece), Christian Hamm (Germany), Stuart J. Head (The Netherlands), Peter Jüni (Switzerland), A. Pieter Kappetein (The Netherlands), Adnan Kastrati (Germany), Juhani Knuuti (Finland), Ulf Landmesser (Switzerland), Günther Laufer (Austria), Franz-Josef Neumann (Germany), Dimitrios J. Richter (Greece), Patrick Schauerte (Germany), Miguel Sousa Uva (Portugal), Giulio G. Stefanini (Switzerland), David Paul Taggart (UK), Lucia Torracca (Italy), Marco Valgimigli (Italy), William Wijns (Belgium), and Adam Witkowski (Poland).
2014 ESC Myocardial Revascularisation Guidelines

PCI vs. CABG in low-surgical risk

- PCI is an alternative to CABG
  - 1- or 2-vessel CAD with proximal LAD
  - Left main CAD with low/intermediate disease complexity (SS <32)
  - 3-vessel CAD with low disease complexity (SS score ≤22)
- PCI is not recommended
  - Left main CAD with high disease complexity (SS >32)
  - 3-vessel CAD with intermediate to high disease complexity (SS>22)
- CABG is preferred over PCI in diabetic patients with multivessel disease

STEMI

- DES Class IA indication (over BMS)
- Thrombus aspiration only in selected patients
- Staged revascularization emphasized

DAPT 6 months for DES or shorter if high bleeding risk

S. Windecker, CH, 1117
2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management

The Joint Task Force on non-cardiac surgery: cardiovascular assessment and management of the European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA)

Authors/Task Force Members: Steen Dalby Kristensen* (Chairperson) (Denmark), Juhani Knuuti* (Chairperson) (Finland), Antti Saraste (Finland), Stefan Anker (Germany), Hans Erik Bøtker (Denmark), Stefan De Hert (Belgium), Ian Ford (UK), Jose Ramón Gonzalez-Juanatey (Spain), Bulent Gorenek (Turkey), Guy Robert Heyndrickx (Belgium), Andreas Hoeft (Germany), Kurt Huber (Austria), Bernard Iung (France), Keld Per Kjeldsen (Denmark), Dan Longrois (France), Thomas F. Lüscher (Switzerland), Luc Pierard (Belgium), Stuart Pocock (UK), Susanna Price (UK), Marco Roffi (Switzerland), Per Anton Sirnes (Norway), Miguel Sousa-Uva (Portugal), Vasilis Voudris (Greece), Christian Funck-Brentano (France).
What is new in these Guidelines?

- A multi-disciplinary expert team should be consulted for pre-operative evaluation of patients with known or high risk of cardiac disease undergoing high-risk non-cardiac surgery.

- The surgical risk assessment, which depends on the type of procedure, has been updated.

- The patient risk assessment now includes not only Lee score but also other validated risk scores such as NSQIP and recommendations on biomarkers (BNP and Troponins).

- Pre-operative initiation of beta-blockers is not recommended in all patients but may be considered in patients scheduled for high-risk surgery and who have clinical risk factors, or who has known ischemic heart disease or myocardial ischaemia.
What is new in these Guidelines?

- Recommendations on the use of aspirin and P2Y12 inhibitors in patients undergoing non-cardiac surgery is updated.
- Section on management of patients treated with new oral anticoagulants undergoing non-cardiac surgery is included.
- Recommendations on timing of non-cardiac surgery after revascularization is updated.
- The section on specific concomitant diseases has been updated.
- The peri-operative monitoring section has been updated and expanded with help from anesthesia experts.
STEMI

→ No benefit from ticagrelor pretreatment.

→ While immediate complete revascularisation has been shown to be superior to IRA-only PCI in two small RCT, the current recommendation of staged PCI has not been addressed.

→ No role of routine thrombus aspiration.

Stable CAD → Revascularisation of FFR-significant lesions is superior to optimal medical treatment.

DES → Long-term safety of newer generation DES is superior to first generation DES and comparable to BMS.