Heart Team For TAVI
Who and How?

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Disclosure

Edwards Lifesciences

Consultant
Training / proctoring activities
The beauty and strength of TAVI has been to reinforce the relationship between interventionalists and surgeons.

**But it is not enough!**

A dedicated *multidisciplinary team* (Heart Team) is crucial to ensure a successful program.
A new era of partnership
for patient screening, completion of the procedure and assessment of the results

The Heart Team

- General Practitioner
- Referring Cardiologist
- Anesthesiologist
- Radiologist
- Patient’s relatives
- Patient!
- Echocardiographist
- Cardiac surgeon
- Nurses
- Technicians
- Geriatrician
- Other Specialists
- Interventional Cardiologist
Selection of TAVI patients

Referring Physician
Detection of AS

Organigram to AVR

Referring Cardiologist: ECHO
Confirmation of AS, severity, clinical /psychological status, comorbidities
Which possible therapeutic option?
Discussion with patient and relatives

Likely AVR
Cardiac surgeon

Likely TAVI
Interventionist

Multidisciplinary cardiac and non cardiac evaluation

HEART TEAM ASSESSMENT

AVR
AVR better

Medical

TAVI confirmed

TAVI
Three questions that the HEART TEAM must answer:

1- Is TAVI an acceptable option for the patient?
   Recommendations, Risk / Benefit

2- Is the anatomy suitable?
   (Need to decrease the risk of complications)

3- What is the safest approach?
   Transfemoral ? Transapical? Trans-aortic (Edwards)
   Transfemoral ? Axillary ? (Corevalve)
Is TAVI an acceptable option?

**TAVI Clinical Indications**

**NEW EUROPEAN GUIDELINES (ESC 2012)**

Severe aortic stenosis in symptomatic patients

1) High surgical risk patients:
   - Log Euroscore > 20%, STS Score > 10%

2) Patients with contra-indication to surgery
   - Porcelain aorta, thorax distortion, irradiation, LIMA etc..

3) Patient frailty

Consensus:
   - TAVI should not be performed in patients at intermediate risk
   - TAVI should not be performed if life expectancy < 1 year (comorbidities)
   - The good clinical sense is primordial (over Scores “numbers”) in patient selection
**ASSESSMENT of FRAILTY**  
*Geriatrician, Anesthesiologist*

### Fried Frailty Index

#### Fried Phenotype of Frailty

<table>
<thead>
<tr>
<th>Condition</th>
<th>Requirement</th>
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<tbody>
<tr>
<td>Weight Loss</td>
<td>&gt; 10 lbs in last year</td>
</tr>
<tr>
<td>Grip strength</td>
<td>Lower in females by gender/height</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>Males &lt; 383 kcal/week</td>
</tr>
<tr>
<td></td>
<td>Females &lt; 270 kcal/week</td>
</tr>
</tbody>
</table>

Frailty: ≥ 3 criteria  
Intermediate/prefrail: 1 or 2 criteria

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Relatively poor quantification  
Good clinical sense remains essential!
High Risk Frailty

Scope of TAVI In 2012

Anatomic Suitability
Potential Benefit

TAVI Spot

Low / Intermediate risk

80%

Hih Risk
Inoperable
Too Sick
Is the anatomy suitable for TAVI?

An essential multidisciplinary approach

**Echocardiography**

Aortic valve anatomy, calcium distribution, thrombus, vegetations

Annulus size measurement

**Angio**  
**MSCT**
Is the anatomy suitable for TAVI?

An essential multidisciplinary approach

**Echocardiography**
- Aortic valve
  - anatomy, calcium distribution, thrombus, vegetations
  - Annulus size measurement
- Left ventricle
  - hypertrophy, thrombus, bulging septum, LV function

**Angio**

**MSCT**

**Depressed LVEF**
- Stress Echo
- Staged BAV?
Is the anatomy suitable for TAVI?
An essential multidisciplinary approach

### Echocardiography

**Aortic valve**
- anatomy, calcium distribution, thrombus, vegetations
- Annulus size measurement

**Left ventricle**
- hypertrophy, bulging septum, LV function

**Aorta**
- size, angulation, disease
Is the anatomy suitable for TAVI?

*An essential multidisciplinary approach*

**Echocardiography**

**Aortic valve**
- Anatomy, calcium distribution, thrombus, vegetations

**Angio**
- Coronary arteries associated CAD
- Staged PTCA?
- Distance ostia to annulus

**MSCT**
- 13mm
Is the anatomy suitable for TAVI?

An essential multidisciplinary approach

**Echocardiography**

Aortic valve
- anatomy, calcium distribution, thrombus, vegetations

**Annulus size measurement**

**Angio**
- MSCT
- Associated CAD
- Distance to annulus

**Vascular access**
- Anatomy, tortuositities, minimal diameters, calcification, disease

Left ventricle 13mm

Aorta 13mm 7mm 8.2mm

Coronary arteries 8mm 7mm 6.8mm 8mm

7mm 8.2mm 6.8mm 7mm 7.8mm

7mm
Post-evaluation HEART TEAM Meeting

Radiologist

Anesthesiologist

Research Nurses

ICU Cardiologist

Geriatrician

Echocardiographer

Heart surgeons

Interventional cardiologists

Other specialists if necessary

Any cardiac or non cardiac contra-indication?
Any relative contra-indication?
Any need for staged PTCA or balloon valvuloplasty?
**TAVI suitability: recent concerns**

- Low LVEF with no contractility reserve
- Severely calcified bicuspid valve
- Bulging septum with subvalvular gradient
- Low LM insertion (<10mm)
- Bulky calcified leaflets
- Specific contra-indications to TA approach
The Heart Team during TAVI
Current approaches

- Transaortic
- Axillary
- Transapical
- Transfemoral (80%)
The Heart Team during TAVI

- Transapical

Ideally in HYBRID room

- One Interventional Cardiologist
- Two Cardiac Surgeons

TEE echocardiographer

Anesthesiologists

Nurses dedicated to valve crimping and rapid pacing
Which Heart Team during TAVI Transfemoral

*In 2012: 2 strategies*

- **Conscious Sedation**: 40%
- **General Anesthesia**: 60%

Complications

*TTE*  
**Assessment of results**

*TEE*
TF-TAVI: Edwards: General anesthesia

Room set-up: Maximalist approach

Anesthesiologist 1 & 2

Intubation/Extubation

Online TEE

Jugular vein / radial artery

Cut-down or percutaneous approach

Surgical or percutaneous FA closure

Setting + procedure duration: 2 to 3h

ICU 48h

Discharge: Day 6 to 10

Technician (RVP)
TF-TAVI
Maximalist approach
20 team members
in the Cath-lab
TF-TAVI: Edwards: Conscious sedation

Room set-up: Minimalist approach (Rouen since 2002)

Near by:
- Anesthetist
- Echocardiographer
- Cardiac surgeon
- Local anesthesia
- No TEE
- Percutaneous approach
- Preclosure (ProStar 10F)

Procedure duration: 45 min

ICU < 24h

Discharge Day 3
Rouen TF Edwards
Minimalist approach (100%)
5 persons in cath-lab

Conversion to
G.A.,
Heart Surgery,
Vasc. surgical repair
< 1%
(JACC Interv 2012)
Heart Team: POST-TAVI phase

- In-hospital management
- Compliance to Registries (ideally with a research nurse)
- Organize the follow-up
Need for an optimal training program

- Staff and Team preparation
- Equipment, imaging modalities
- Valve crimping
- Patient Screening
- Rapid ventricular pacing
- Use of large sheath and delivery systems
- Pre-implantation valvotomy
- Valve positioning and delivery
- Management of cardiac / non-cardiac complications
• Simulators
• Didactic
• Cases review
• Hands on
• Live cases
On site-proctoring

- Organized by both companies
- Clinical assistance for the first cases
- After review of all screening data
- Ideally ≥ 2 cases/day (pre-selected cases)
- Same 2 operators (main + assistant)
Conclusions

- Building a solid and enthusiastic Heart Team is crucial for any center planning to start a program of TAVI.

- An outstanding cooperative work is required for patient selection, completion of the procedure, management of complications, post-TAVI care and follow-up.

- Optimal training and personal preparation of each member of the Heart Team are the key for safe and successful TAVI procedures.
Training is the KEY!

- Acquiring basic, then advanced device specific skills
- Acquiring knowledge of valve disease (clinical, catheterization techniques, imaging)
- Working in a sterile environment
- Understanding the equipment
- Anticipating and treating complications
Need for an optimal training of the whole Heart Team

Valve crimping

Specific training of nurses by the company’s clinical specialists

Assistance for the first 10 cases (Edwards)