The Heart team 2.0
Where we will be in 2030?

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Potential conflicts of interest

Speaker's name: J Zamorano

☑ I have the following potential conflicts of interest to declare:

Receipt of grants / research support:
Abbott.
Edwards.
Trends in Structural Heart Disease

SHD procedure volume

<table>
<thead>
<tr>
<th>Year</th>
<th>Mitral Valve</th>
<th>Mitral Clips</th>
<th>LAA closure</th>
<th>TAVI</th>
<th>ASD/VSD/PFO closure</th>
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<tr>
<td>2013</td>
<td>550</td>
<td></td>
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<td>2014</td>
<td>700</td>
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<tr>
<td>2015</td>
<td>1,100</td>
<td></td>
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<td>500</td>
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<td></td>
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<td>2017</td>
<td>2,450</td>
<td></td>
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<tr>
<td>2019</td>
<td>6,450</td>
<td></td>
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<td>2,500</td>
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</table>

Is this enough? Is this what the patient need?
By 2020, doctors will face

200x

the amount of medical data and facts that a human can possibly process.¹

And it will get worse. The volume of medical data doubles every two years.²

81% of physicians can’t even spare 5 hours per month to keep up.²
The AI Revolution

Figure 1: Journal articles mentioning “deep learning” or “deep neural network”
The Goal: More Precise Care

Prevention → Medical treatment → Early intervention

Ideal health → Risk factors → Disease

Transitions from Health to Disease
Precision Medicine in Cardiology: = precise Heart team
Precise heart team = Maximum benefit

Response surface

Best regimen

Maximum benefit

Regimen

Benefit

Precision participant descriptor

Predictive factors
The Heart Team 2030.
Envisioning the future of health technology

- 3D Printing devices
- Genetics and Epigenetics
- Personalized Medicine
- Stem cell treatments
How Wearable Health Technology Can Revolutionize Care

Early detection of symptoms. Early Management

Underlying Causes. Early diagnosis-TREATMENT
Heart team of the future

Adapted from Anthony Chang, Exponential Medicine 2017
New Technologies: 3D Printing

Interventional procedures... tomorrow

*Systems integrated into innovative clinical solutions to address key unmet needs*

- Hardware integration
- Streamlined workflow
- Common user interface
- IT integration

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**Integrated systems**

- On-board imaging/monitoring with improved anatomical and functional information to optimize therapy delivery
- Procedure-specific application support

**Leading to procedure innovation**

*Imaging and intelligence at the tip of a catheter*
Unsolved issues ??? Consequences of Having Information at Our Fingertips

Increasing Facts per Decision

What? When & where?

Science
333:776,2011
Philantropic Responsibilities
Actions fostering social welfare and improving population quality life.

Ethical Responsibilities
Being ethical. Obligation to do what is Good and fair.

Legal Responsibilities
Follow the current legislation "Play according the game rules = guidelines"

Economic Responsibilities
Sustainable.

The pyramid of Heart team VALID today...and tomorrow
Heart Team 2030: Managing quality?

• Measure
• Measure
• Measure
What to measure:

• Patient outcomes
• Activity
• Time-efficiency
• Cost-efficiency
Conclusion

- **Proper data mining** will be crucial to assist on personalized treatment decisions.
- **Imaging and automation** will continue to increase its role in the treatment of coronary and structural cardiac disease.
- **Virtual screens and virtual support** will change the room layouts and procedure management.
Conclusions. Heart stream 2030

Pros
- Conventional test cannot identify ALL factors of the disease
- Help to find different profiles, and assess different capacities from the traditional ones
- Desacralize the cut off values: Not valid “All the same”
- Avoid prepared answers for “numbers and not for patients”
- Better atmosphere for the “Precision Medicine, Precise Heart team”

Cons
HEART TEAM 2030. Don’t forget the people!

Clinical Transformation – Process Improvement

- **Processes**
  - Guidelines
  - Protocols
  - Measurements and comparisons

- **Technology**
  - Enabling tools

- **People**
  - Involvement
  - Motivated and result-oriented team.
  - Change management

Ranking first in all seven metrics equals 100.