

45th Anniversary of Children's Cardiac Center Motol

What Do I Need for Decision Making?



- Perspective of a Congenital
Heart Surgeon

Sometimes it is not easy to decide...



Decision making is a complex process...

Knowledge

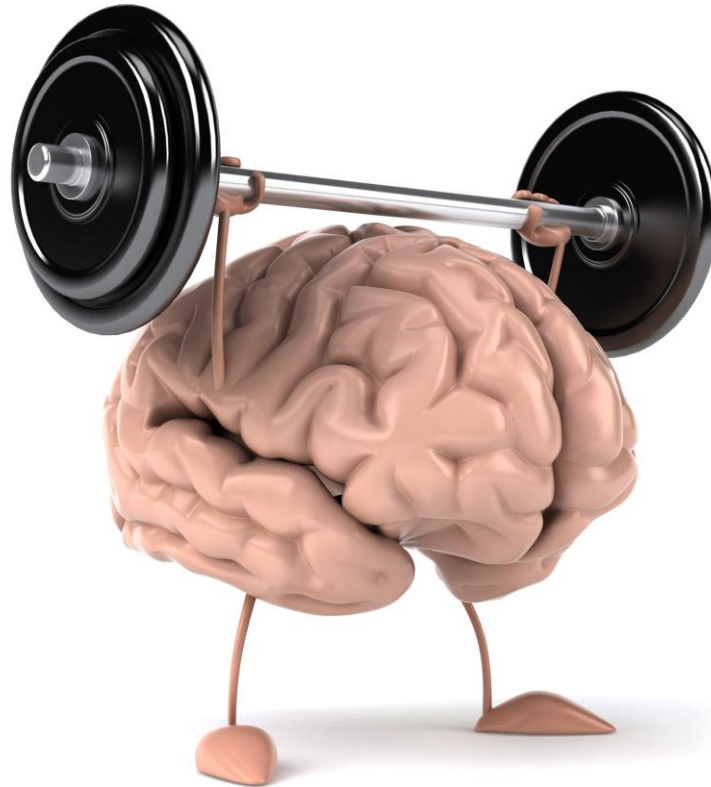
Courage



"Gut feeling"



The Common Sense Remains Crucial

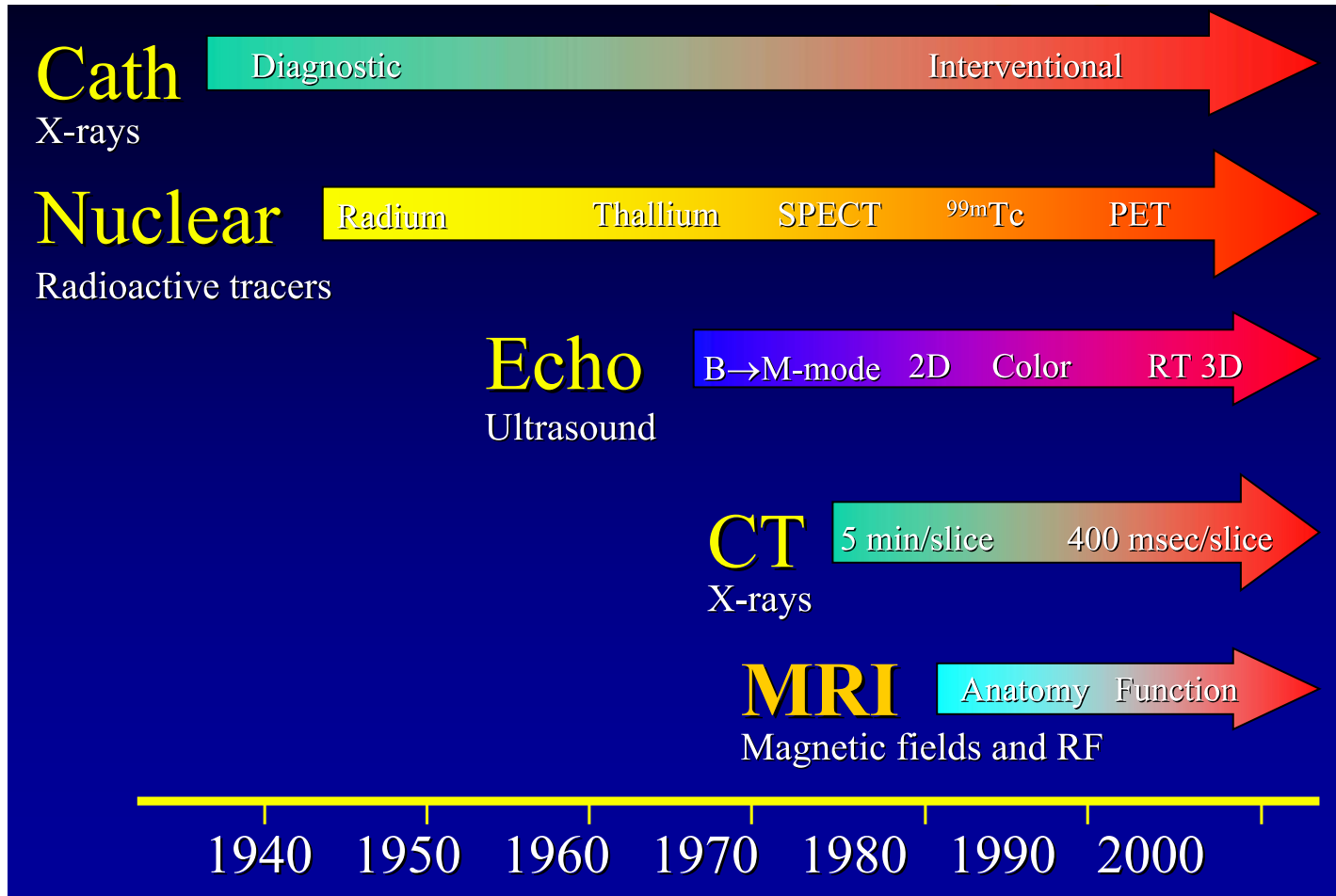


**It's better to have own mind than
only to just copy some latest trends**

The Diagnostic Supply in CHD Is Very Various



Evolution of Imaging in CHD



General Considerations Prior to Diagnostic

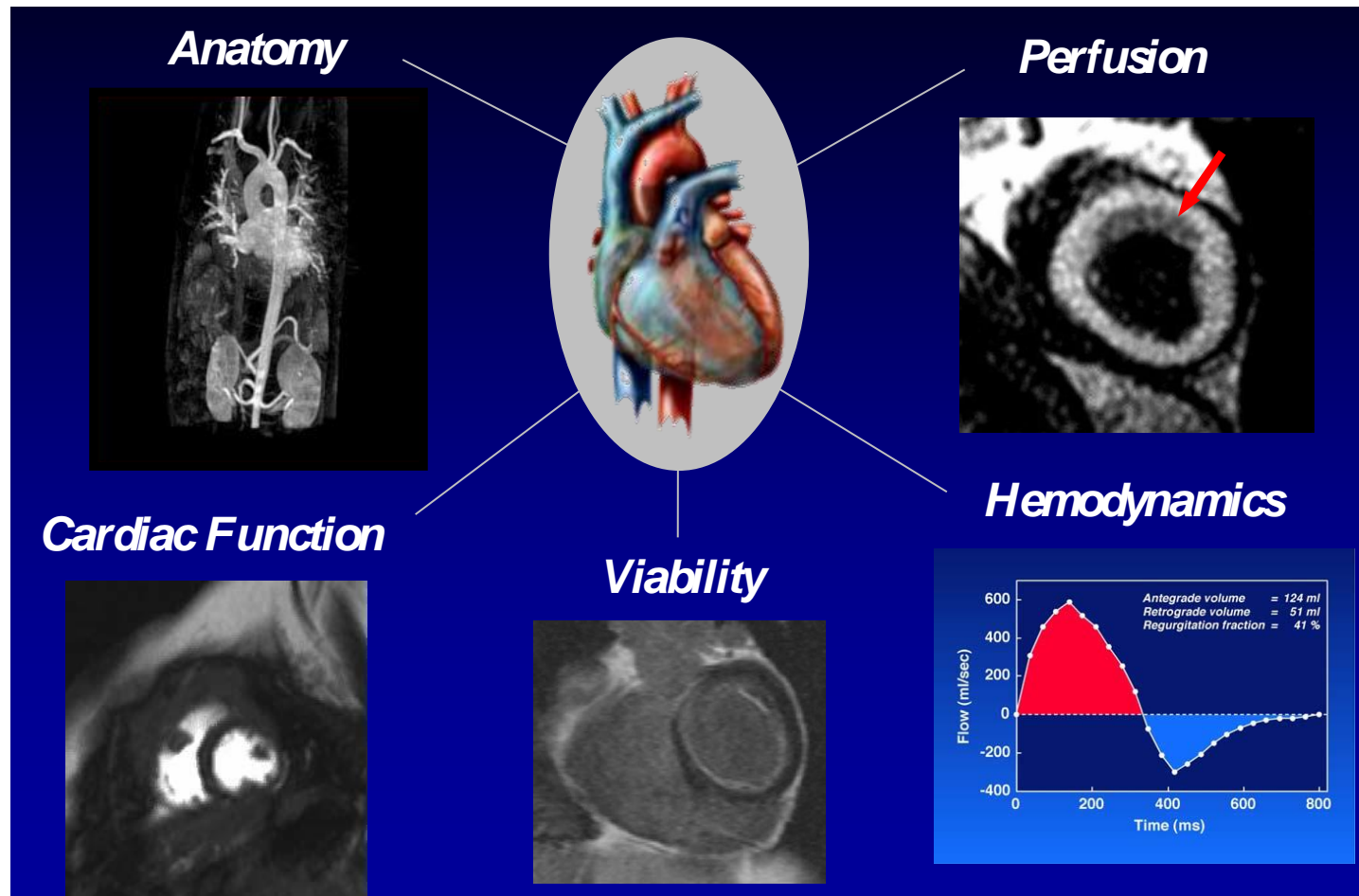
- + Risk stratification
- + Cost and benefit
- + Overutilization
- + Unnecessary test
- + Exposure to radiation
- + Overdiagnosis leads to overtreatment

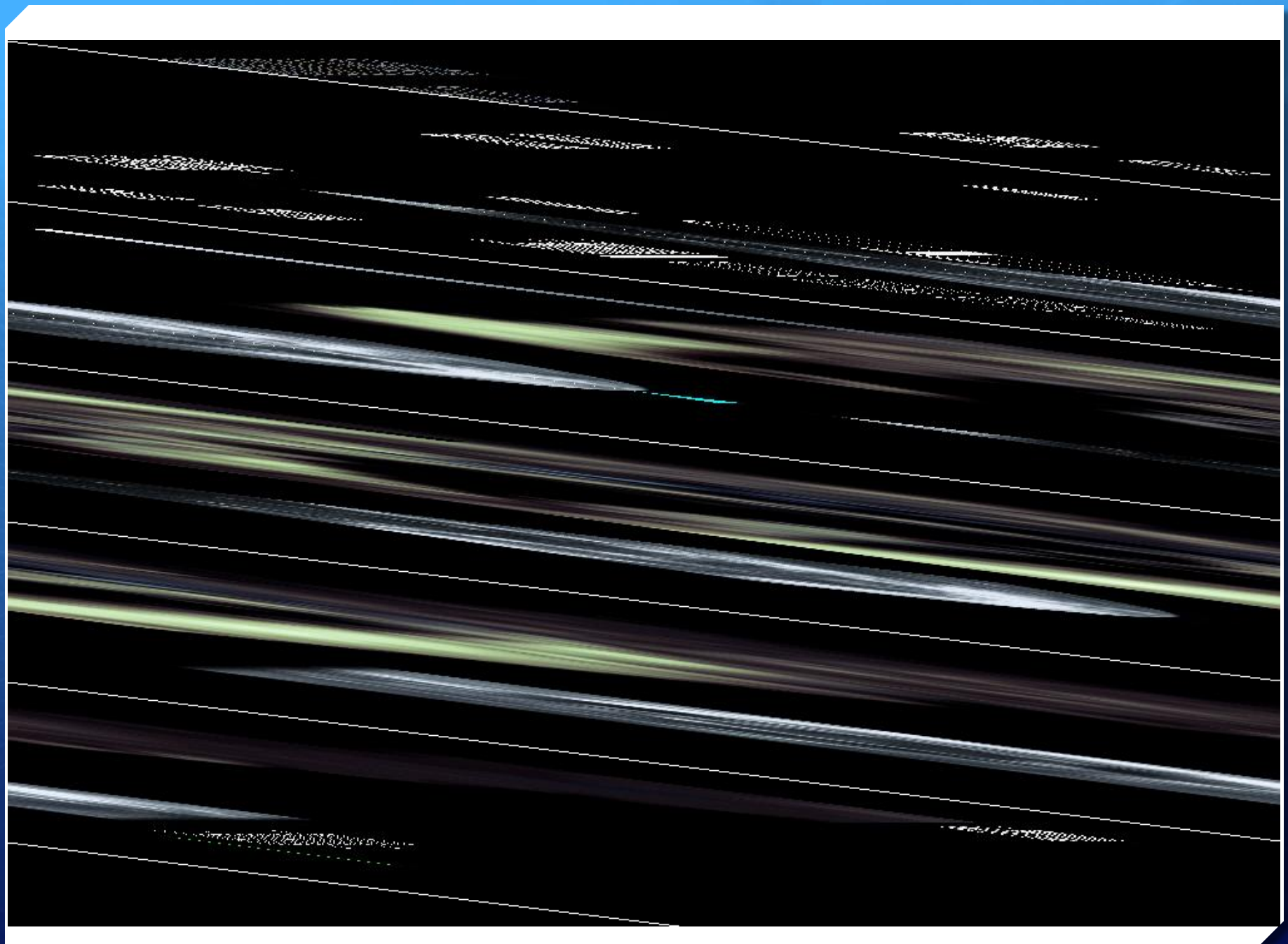


Overutilization and Work Overload

- + Canadian association of radiologists estimates that 30% of imaging is unnecessary in the Canadian health care system
- + Appropriateness criteria
- + Responsibility
- + Cost benefit risk analysis
- + Cost effectiveness

Precise Targeting The Disease





14 years old girl
Cervical aorta
Isthmus aneurysm



r: C5506145

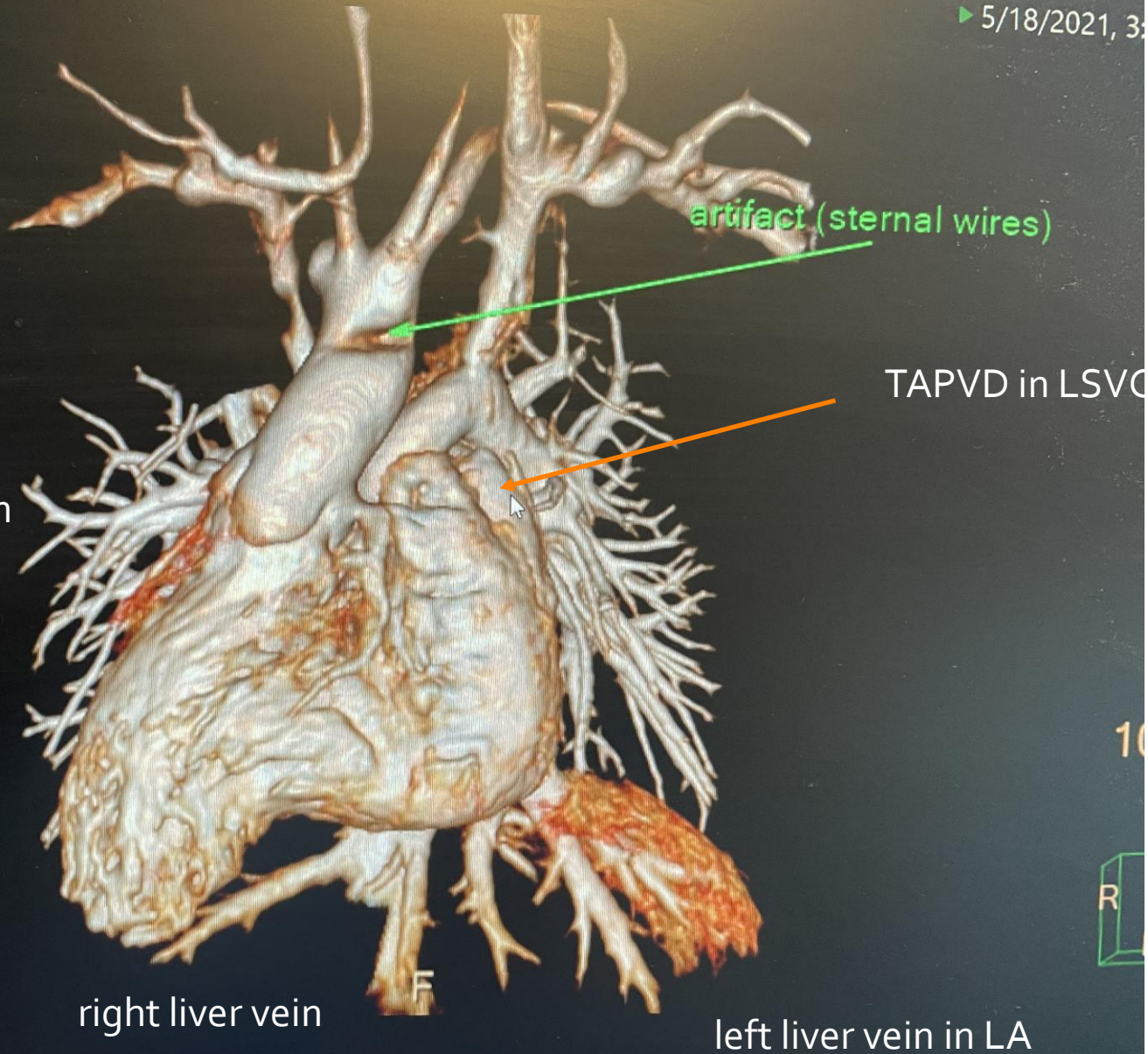
wire artifacts

sternal wire artifacts ▾

1122 Kardiologie/Rhythmologie Int

▶ 5/18/2021, 3

20 years old male
D - TGA
Unbalanced AVSD
Heterotaxy, Dx
TAPVD in LSVC
PS infund., valv.
Anomalous Liver vein
drainage
Stp. Bilateral BDG



right liver vein

left liver vein in LA

FS

no: 1

5-18-2021

10

R





3D printer working



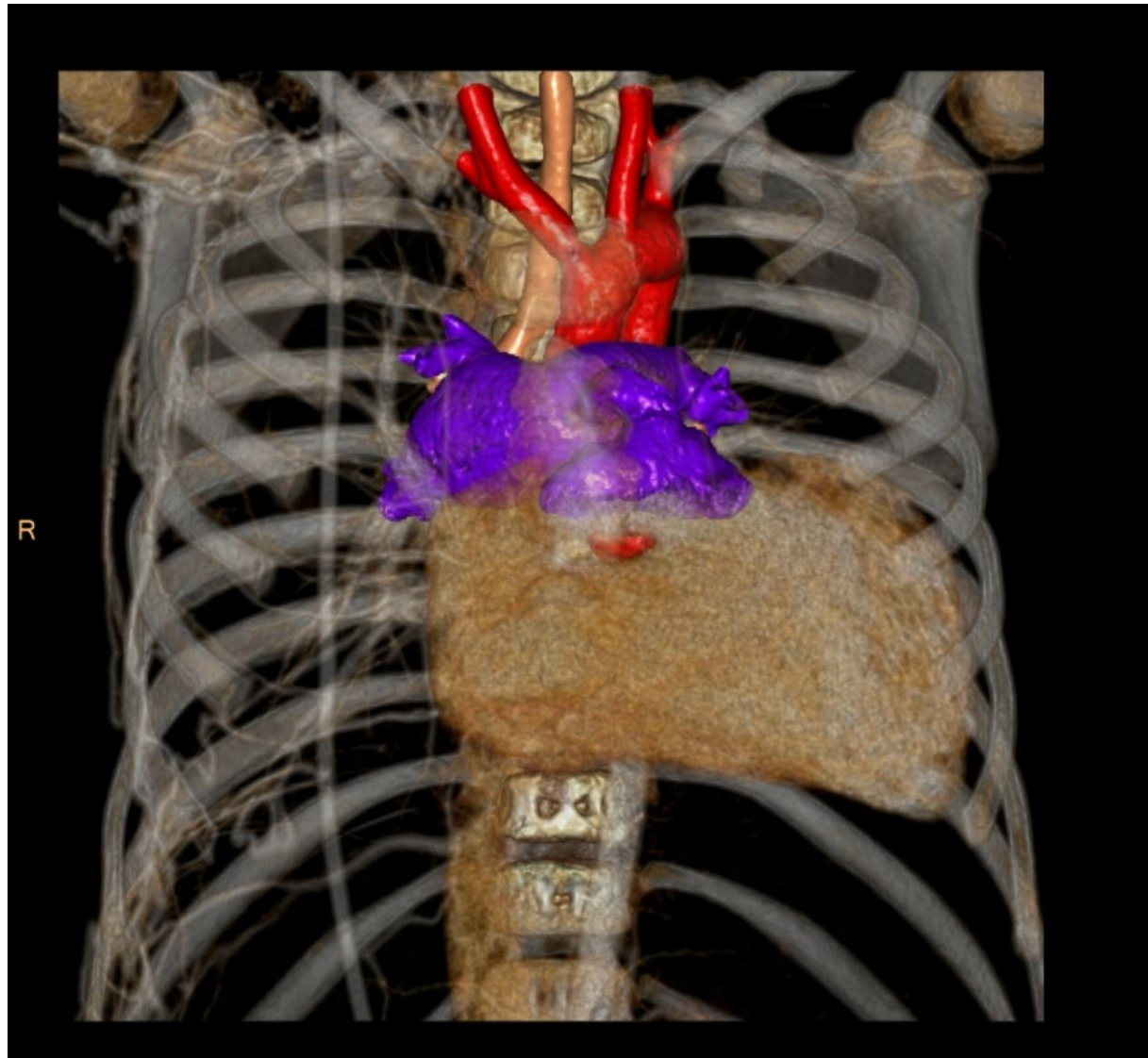
PA+VSD+MAPCAs

Result

DORV, d – TGA, non committed VSD, ASD II, LSVC in CS, RAA

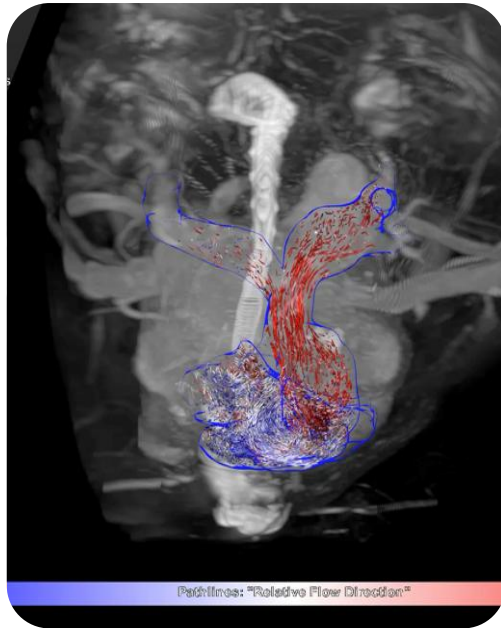


TGA – Bronchial Stenoses Volum Rendering

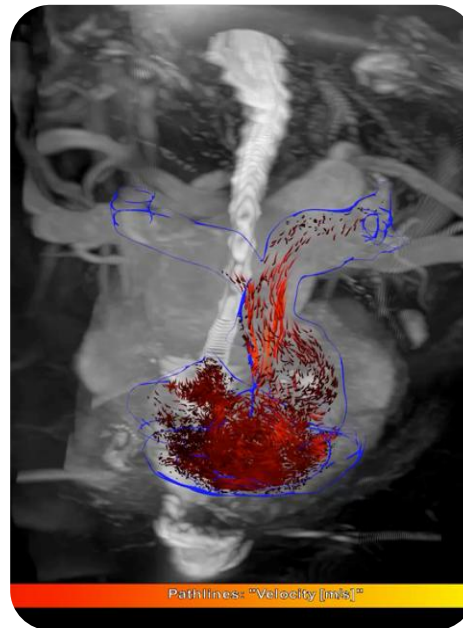


4D-Flow in corrected TOF (Pulmonary Valve Incompetence)

Pathlines – Flow Volume



Pathlines - Velocity



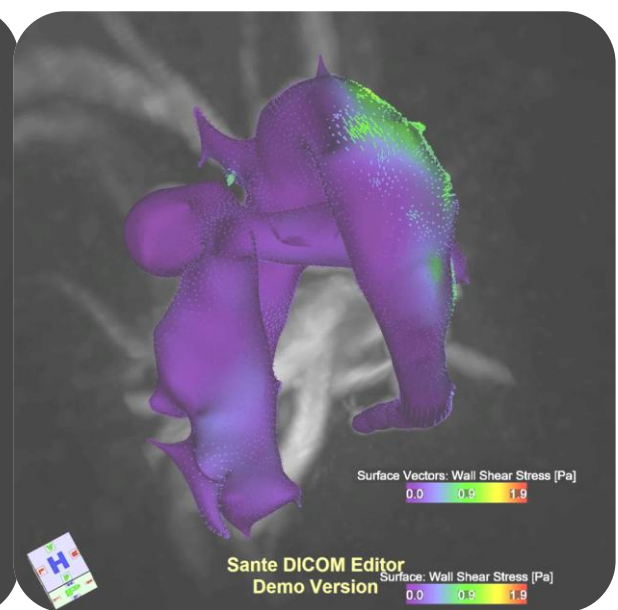
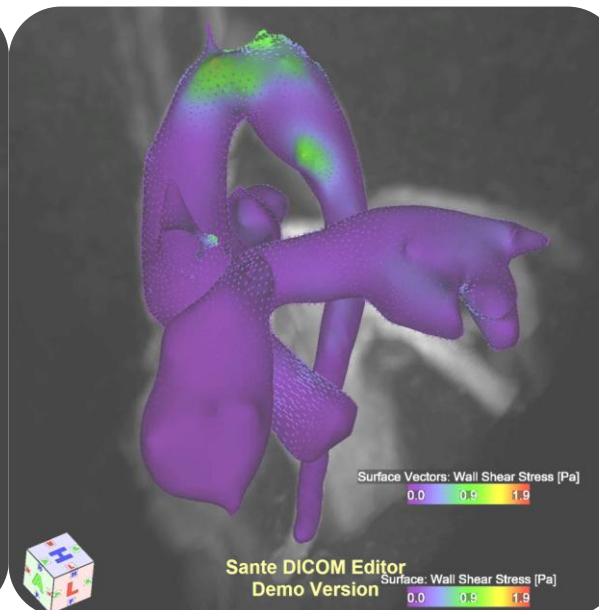
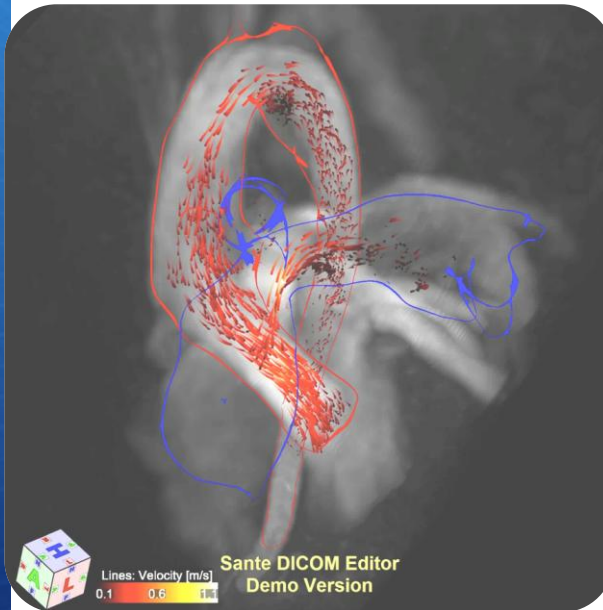
Pathlines – Helix Cluster



4D-Flow in corrected TOF (streamlines, WSS)

Bloodline:
A system for the guided analysis of cardiac 4D PC-MRI data

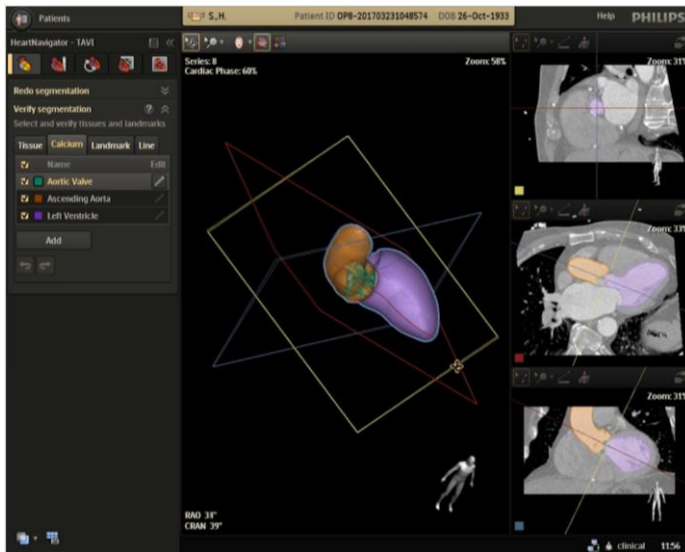
Computers & Graphics
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Static Fusion Imaging: "Roadmapping"

Heart Navigator 3

Preoperative CT



Preoperative CT

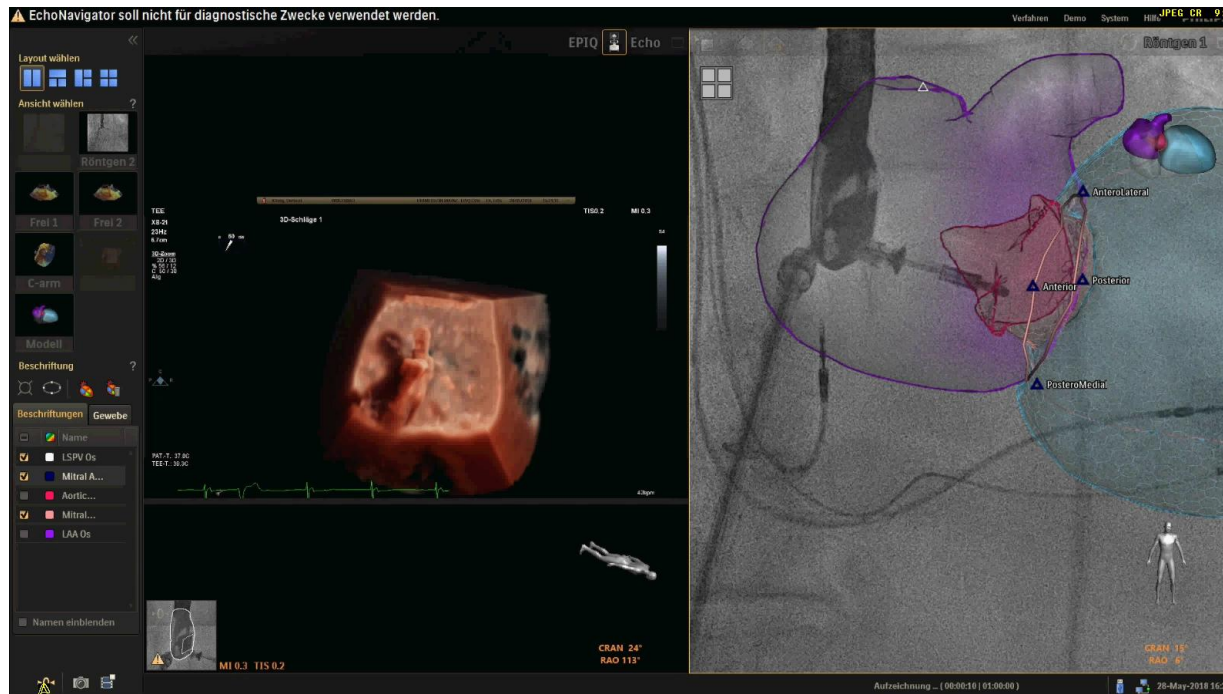
Periprocedural Fluoroscopy



*Static CT segmentation +
real-time 2D fluoroscopy*

With courtesy of Axel Unbehaun, German Heart Center Berlin

Dynamic Fusion Imaging - Echo Navigator



With courtesy of Felix Kreidel, Mainz University Medical Centre

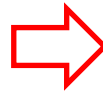
Fusion Imaging – Fields of Application

Congenital heart disease

- ASD/VSD closure
- Fontan fenestration, baffle leak closure
- Atrial septostomy or Fontan fenestration creation
- Transcatheter valve implantation

Acquired structural heart disease

- LAA occlusion
- **Transcatheter HV interventions**



Potential improvement

- Optimal transseptal puncture
- Steering of large systems in LA
- TAVR or TMVR (V-i-V or V-i-R) in non-radiopaque structures
- Identification of PVL or residual regurgitation
- Closing of iatrogenic ASD

Success of Treatment

A successful outcome depends on:

- + Obstetrics
- + Neonatologist
- + Paediatric cardiologist
- + **Radiologist importance**
- + Anesthetist
- + Intensive care doctors, nursing, staff, physiotherapist
- + Paediatric cardiac surgeon
- + Perfusionist

...even the perfect decision is just a beginning



**AS A CARDIAC SURGEON
„YOU NEVER WALK ALONE“**

Thank You for Your Attention

