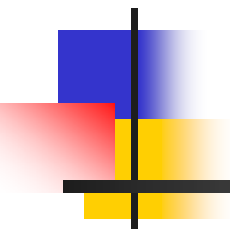


Perioperative Cardiac Surgery

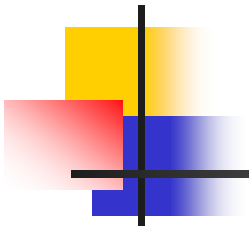
How Do I Use Echo ?



Jan Poelaert, MD, PhD

Cardiac Anaesthesia & Postoperative Cardiac Surgical
ICU

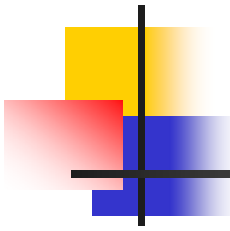
Ghent University Hospital
Gent, Belgium



Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

- **Preoperative Evaluation: Diagnosis**
- **Intraoperative Echocardiography: Monitoring**
- **Postoperative Assessment: Diagnosis & Monitoring**



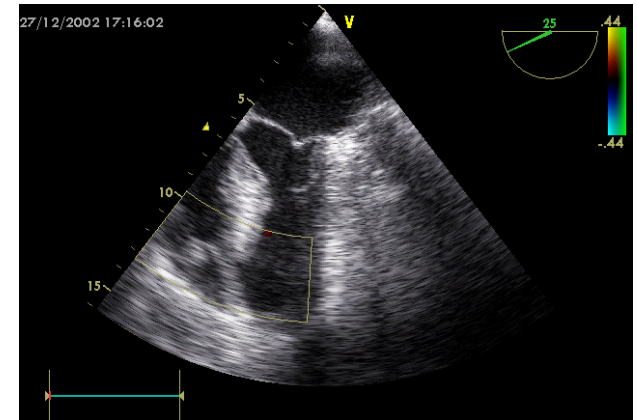
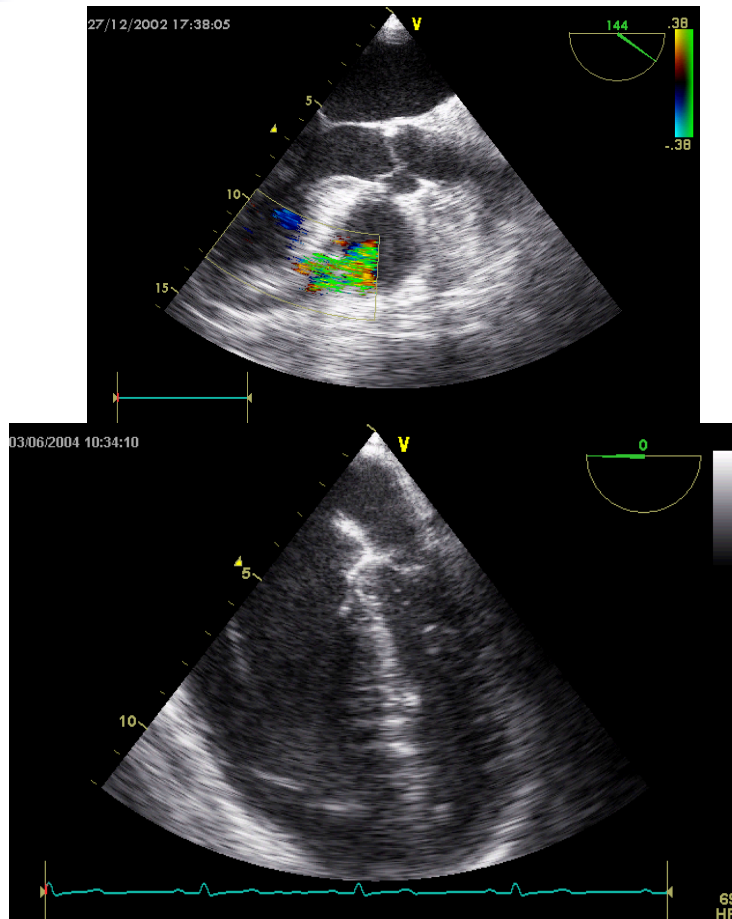
Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

- **Preoperative Evaluation**
 - **Interpretation of preop findings**
 - **ICU patients**
 - **Diagnosis**
 - **Optimalization of haemodynamics**
 - **Risk assessment**

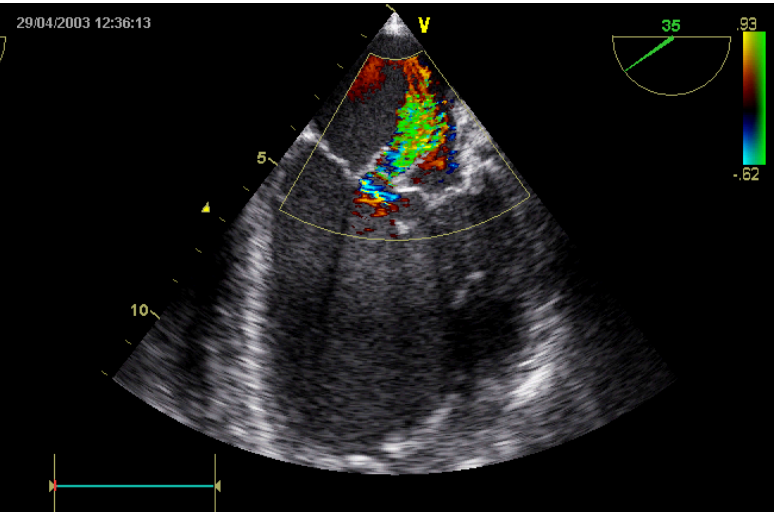
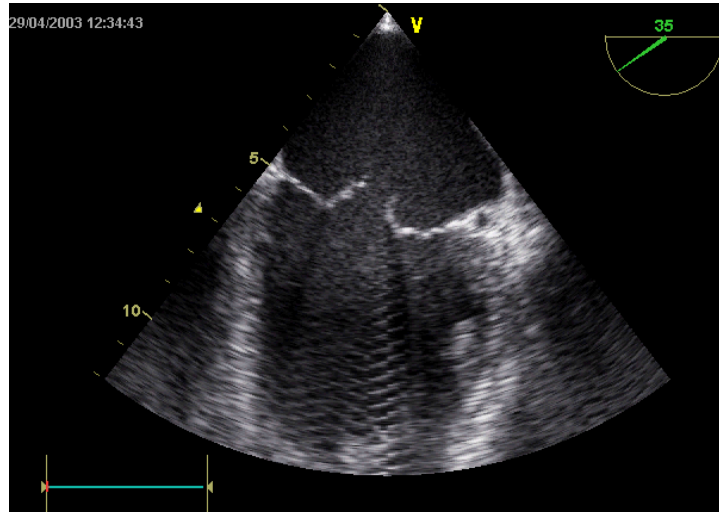
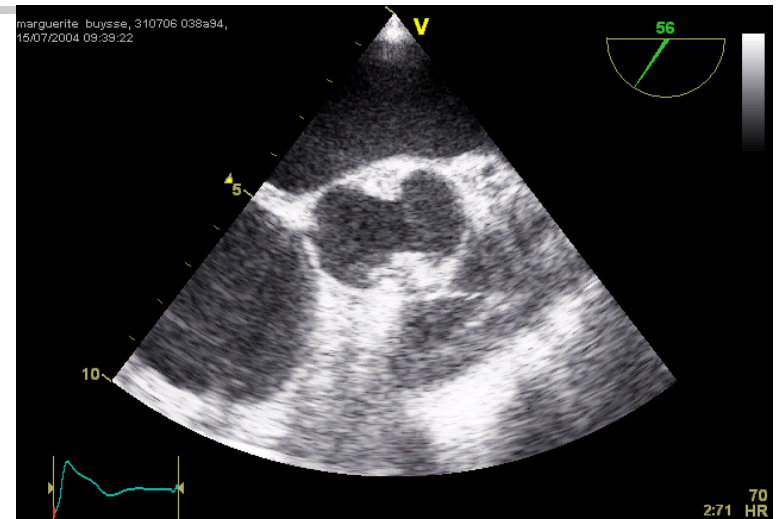
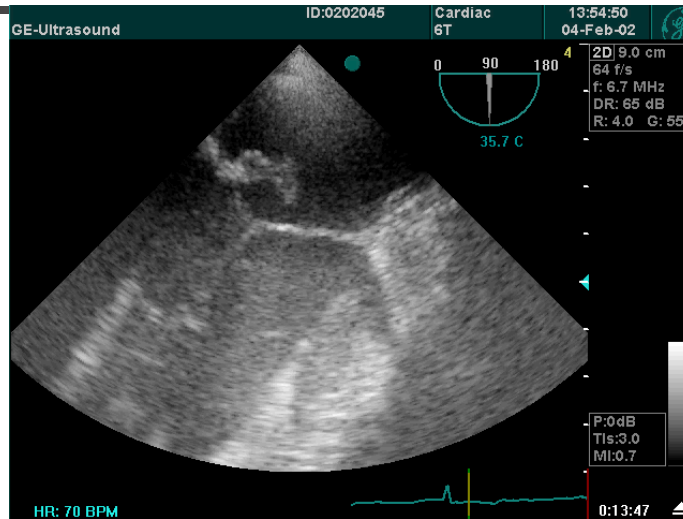
Cardiogenic Shock

Some Examples...



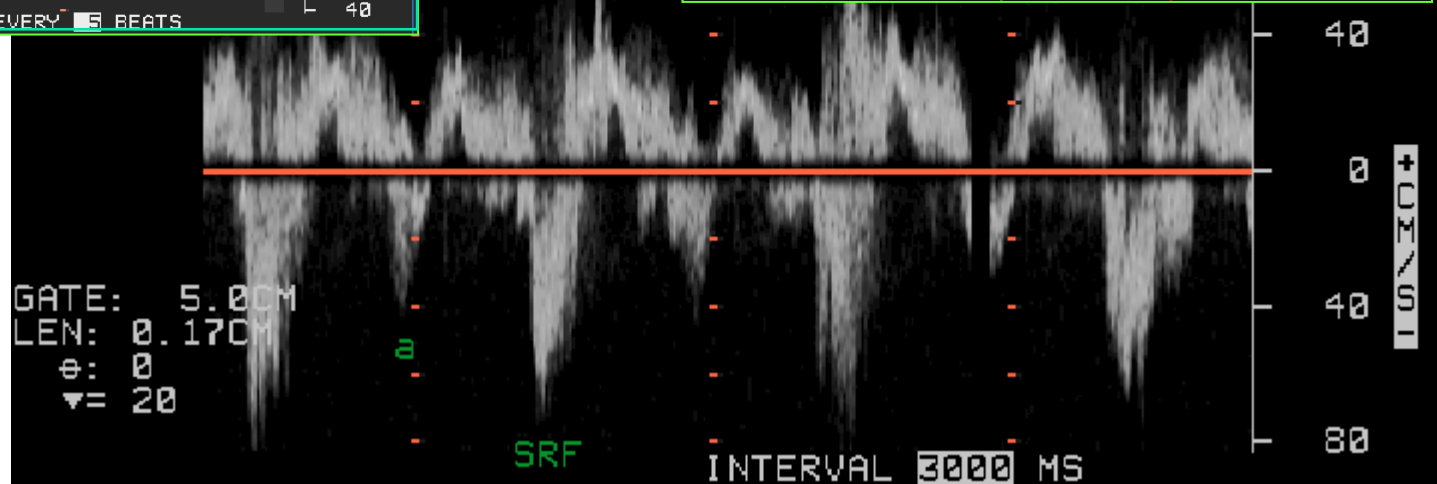
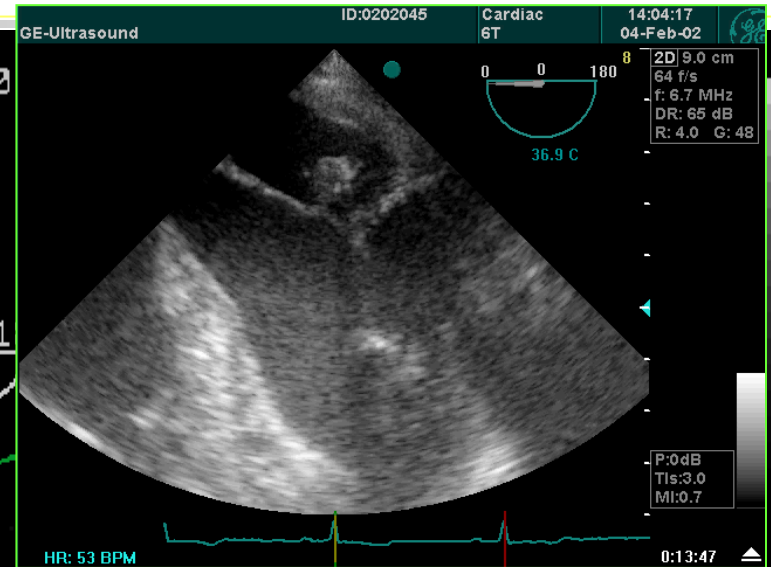
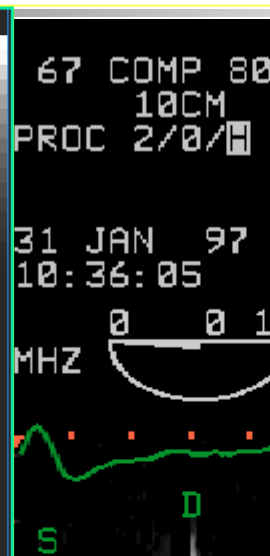
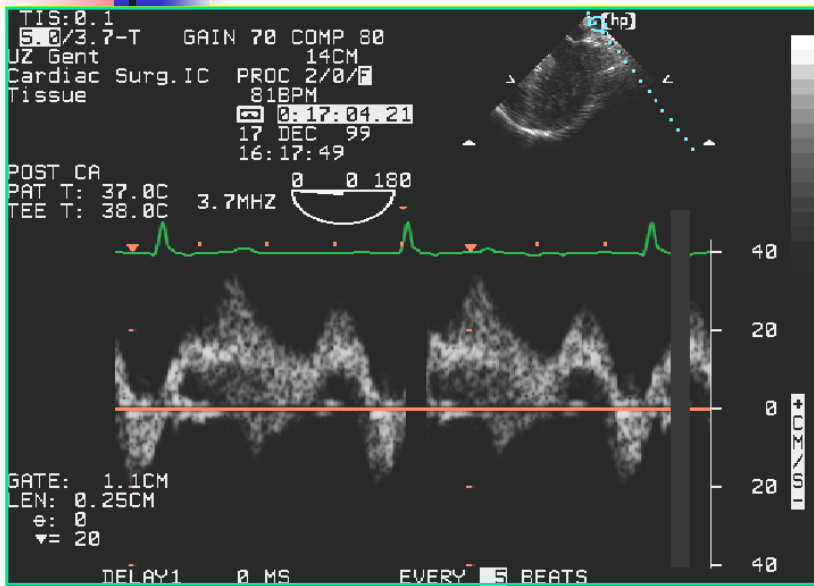
Cardiogenic Shock

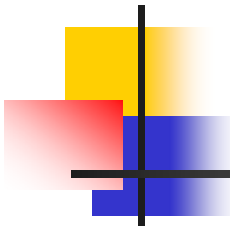
Some Examples...



Perioperative Cardiac Surgical ICU

How Do I Use Echo ?





Perioperative Cardiac Surgical ICU

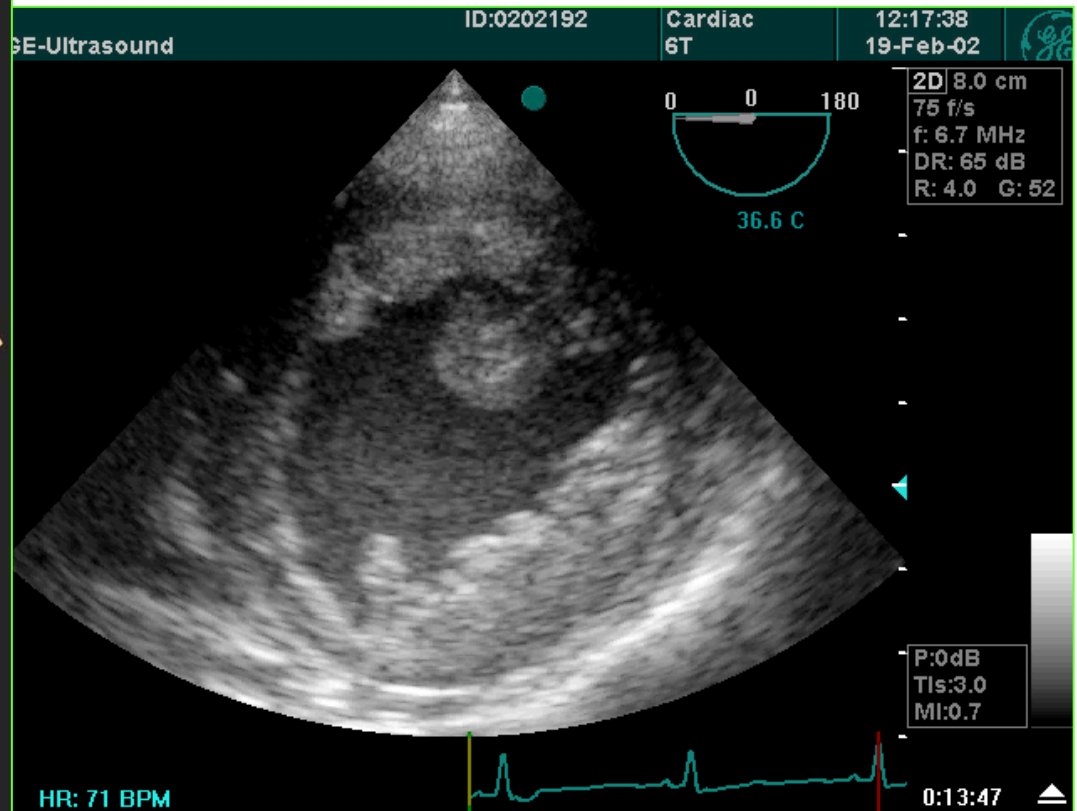
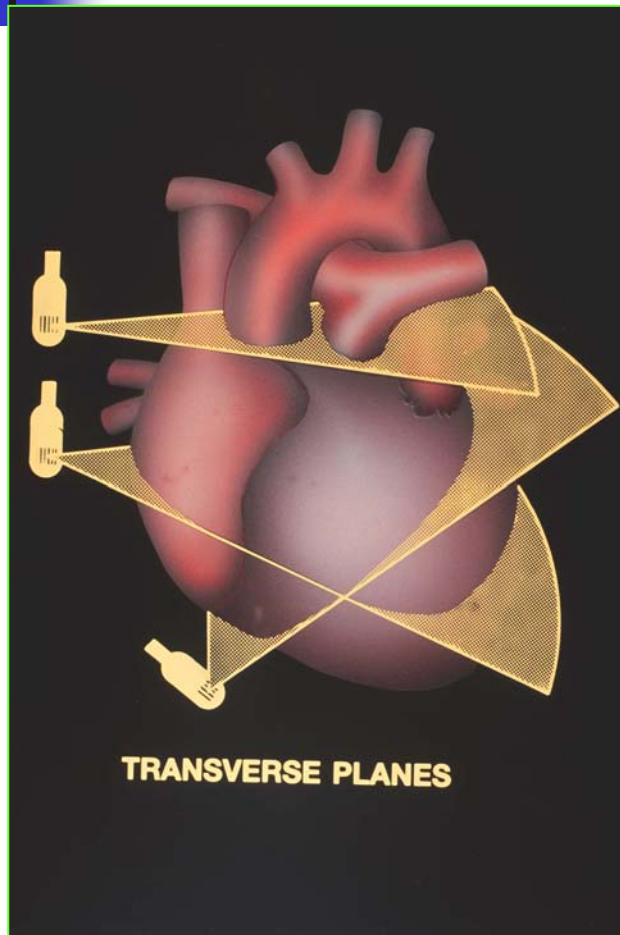
How Do I Use Echo ?

- **Intraoperative Assessment of Left-sided Haemodynamics**
 - **Preload**
 - **Contractility**

Start with SAX

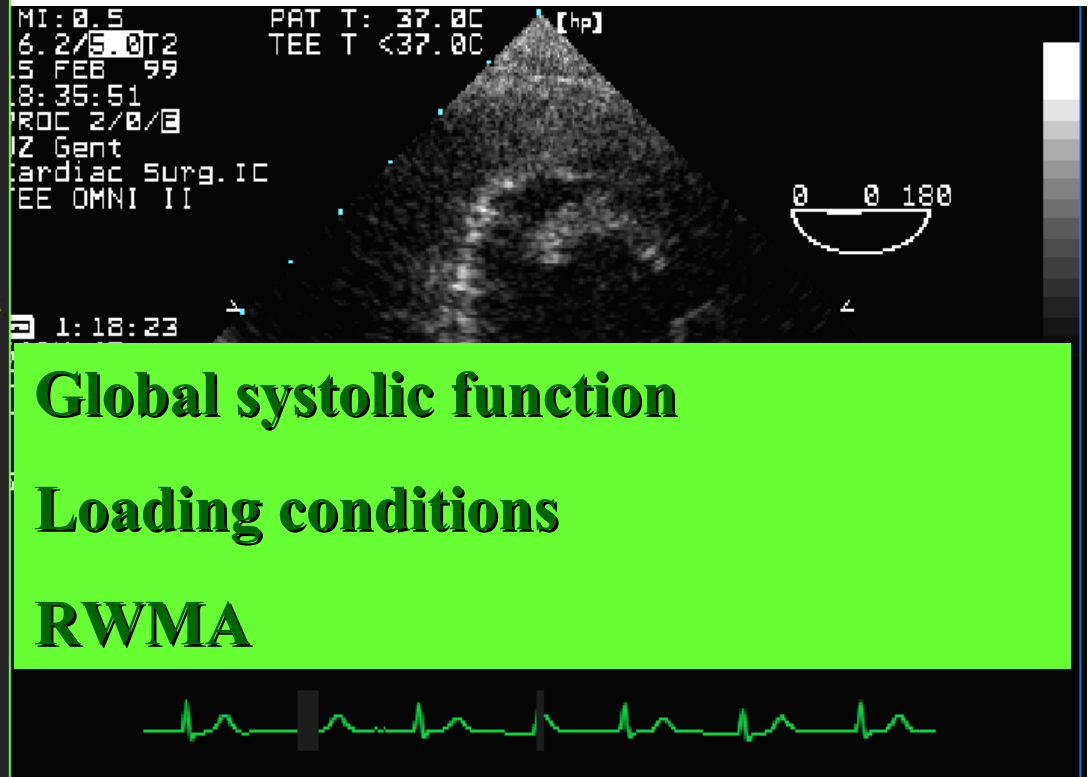
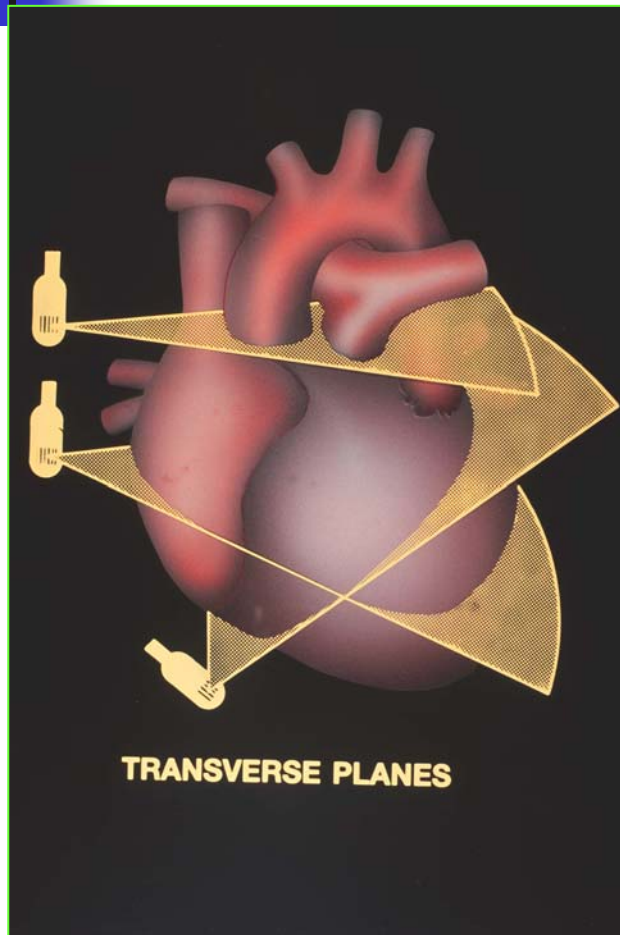
Perioperative Cardiac Surgical ICU

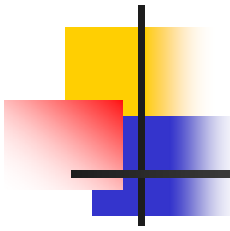
How Do I Use Echo ?



Perioperative Cardiac Surgical ICU

How Do I Use Echo ?





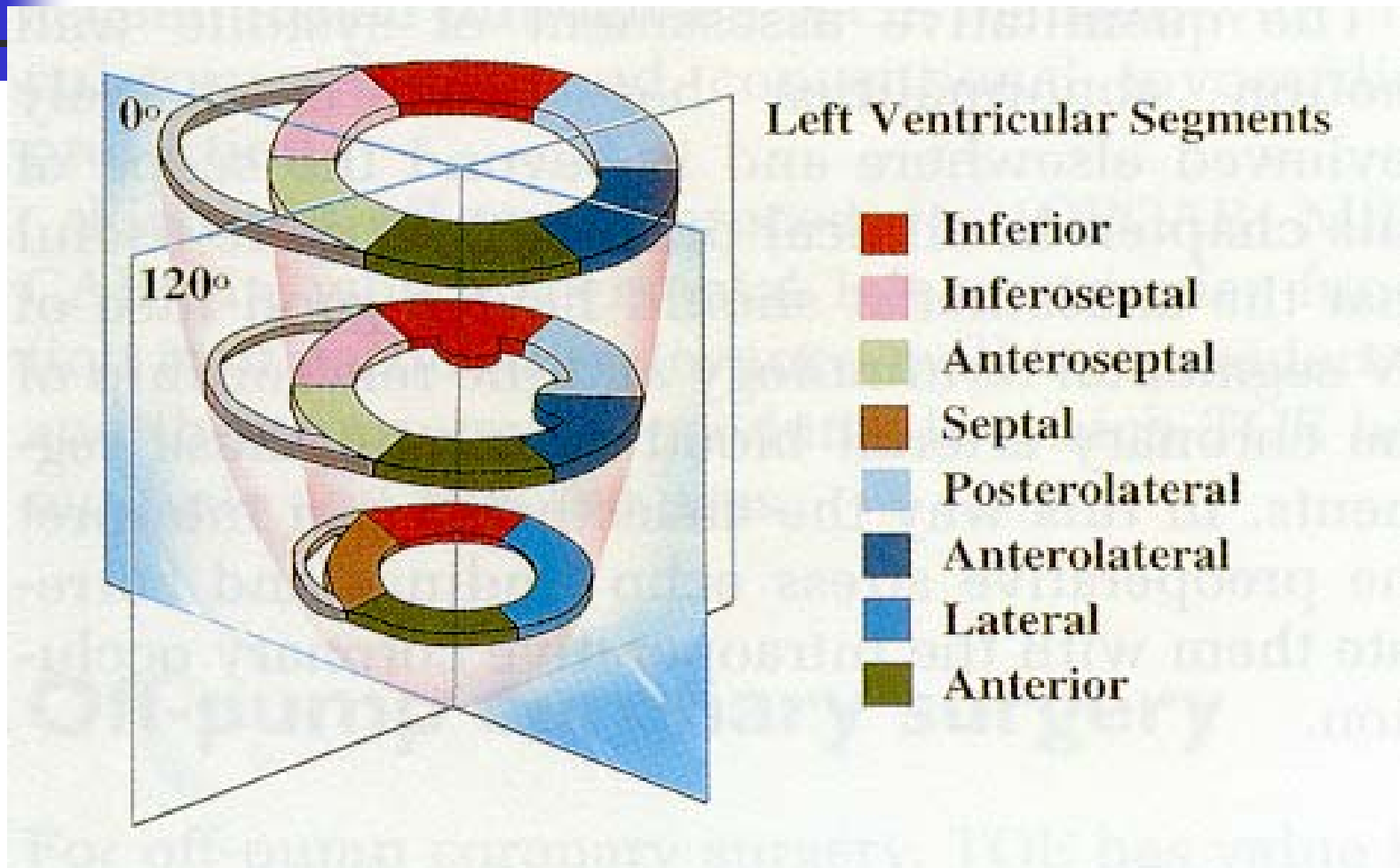
Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

- **Estimation of LV performance**
- **Diagnosis of RV failure**
- **Assessment of Regional Wall Motion Abnormalities**
- **Optimalization of preload**
- **Estimation of filling pressures**

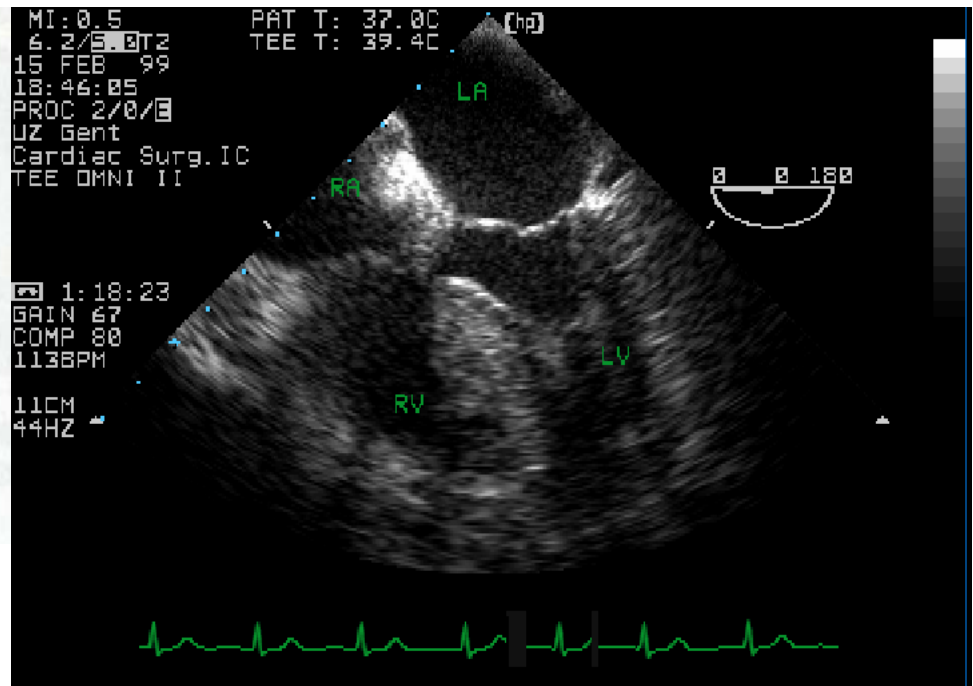
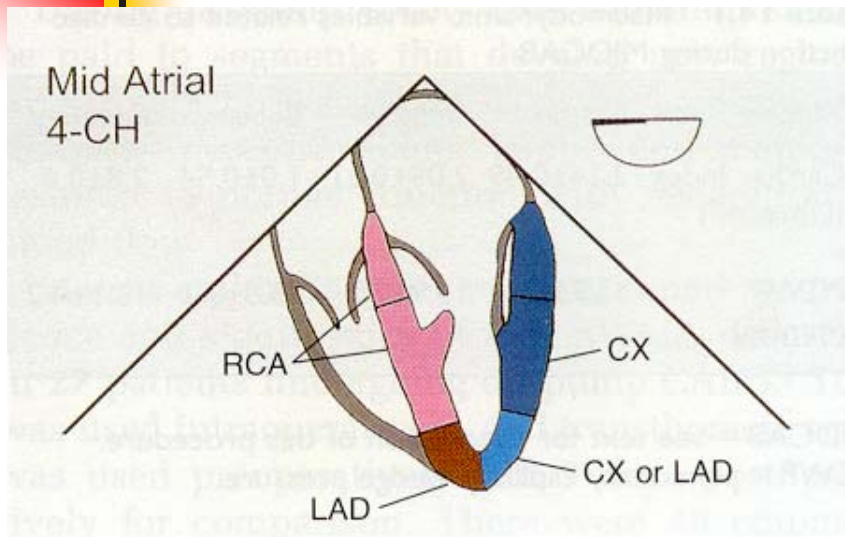
Perioperative Cardiac Surgical ICU

How Do I Use Echo ?



Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

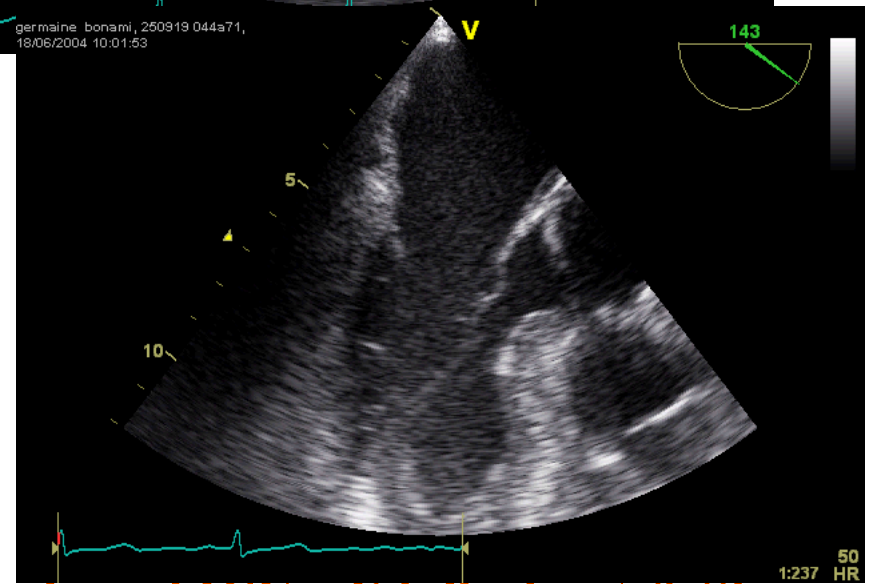
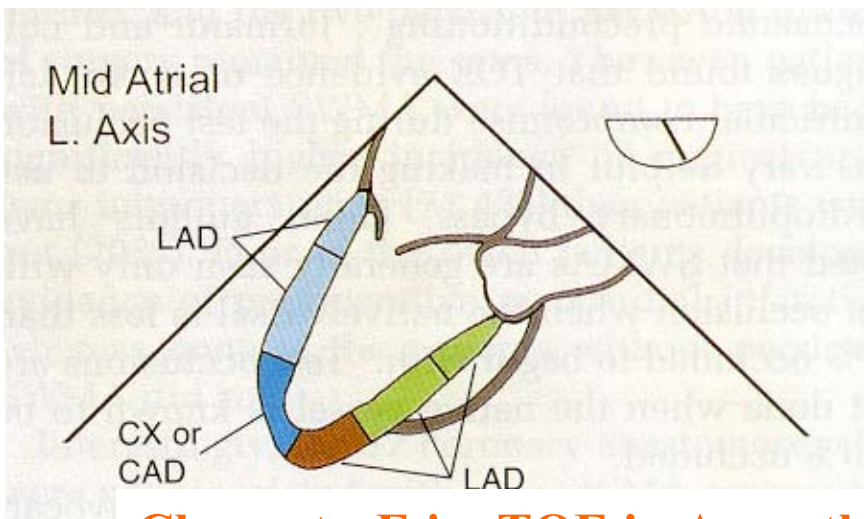
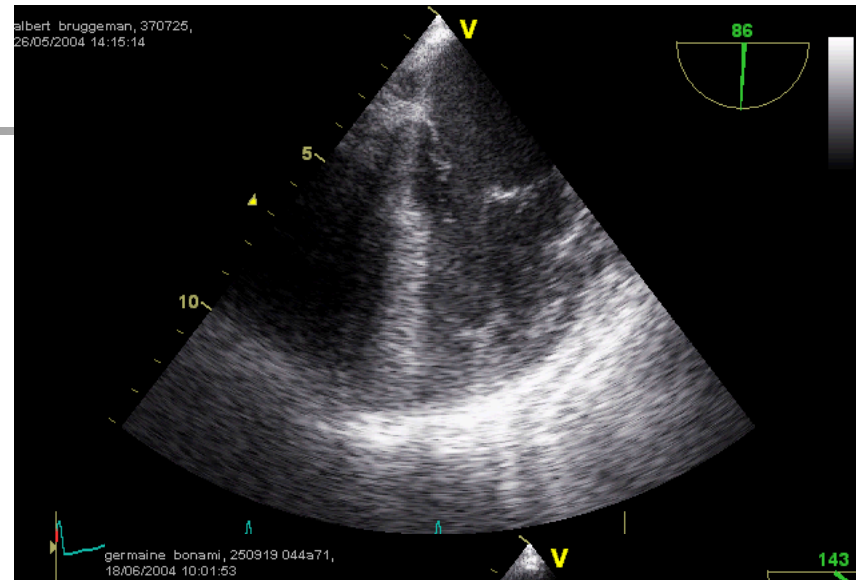
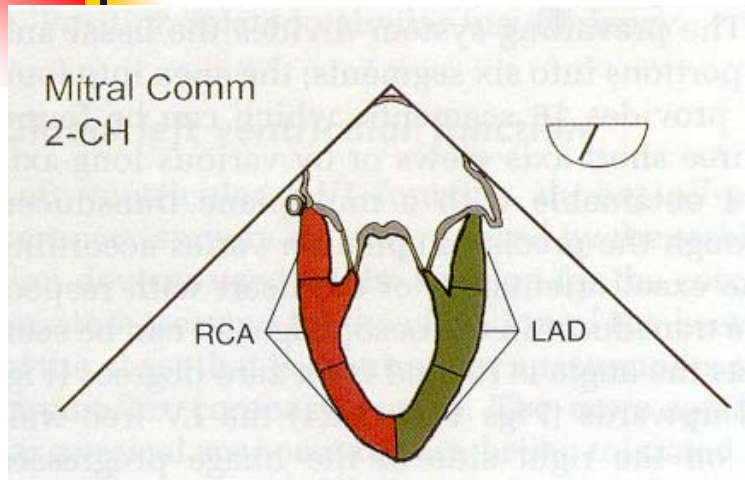


Clements, F *in*: TOE in Anaesthesia and ICU – Ed. Poelaert & Skarvan

Normal motion	>30% shortening	Thickening +++
<Hypokinesia	10-30%	++
>Hypokinesia	0-10%	+
Akinesia	0	0
Dyskinesia	systolic lengthening	systolic thinning

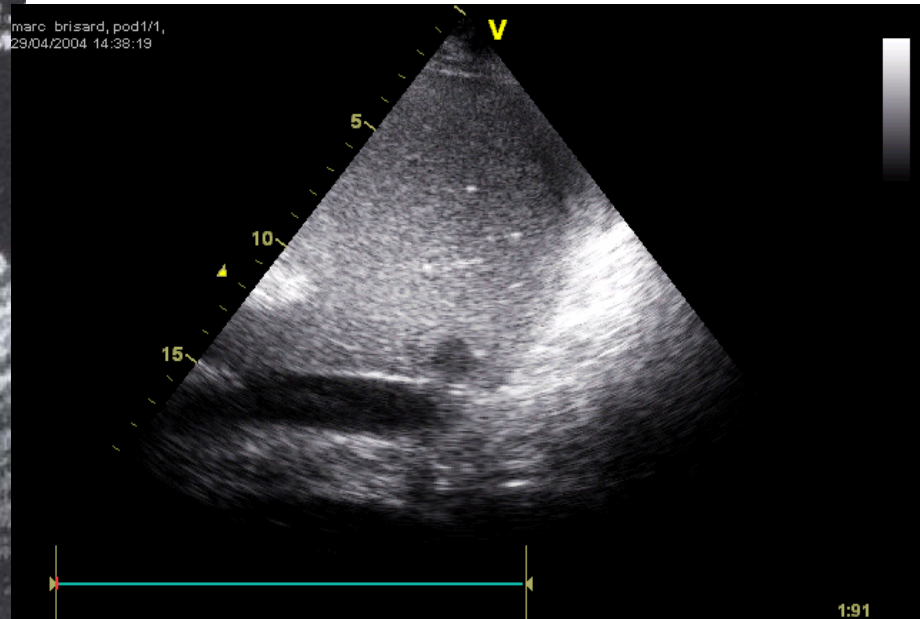
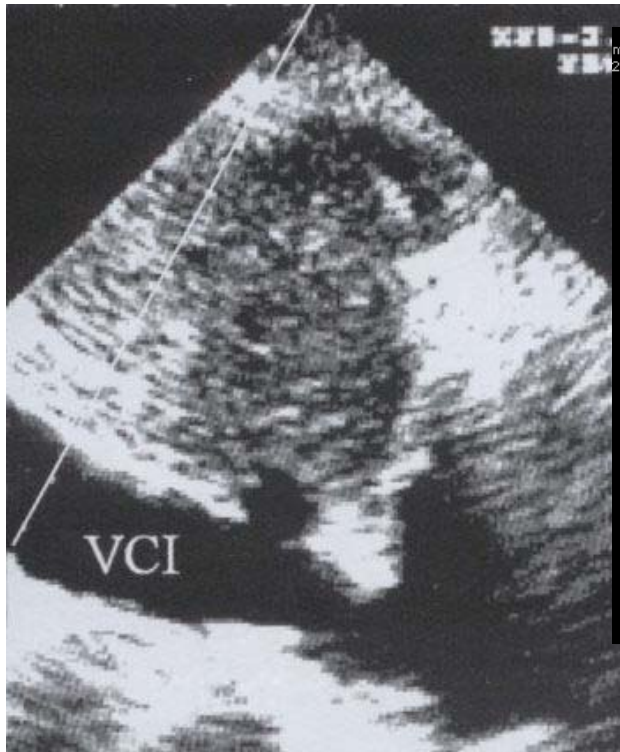
Perioperative Cardiac Surgical ICU

How Do I Use Echo ?



Perioperative Cardiac Surgical ICU

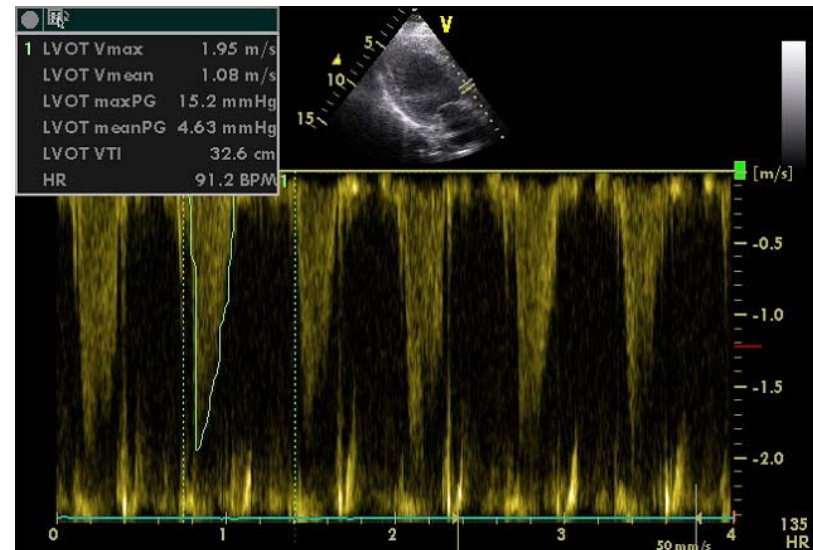
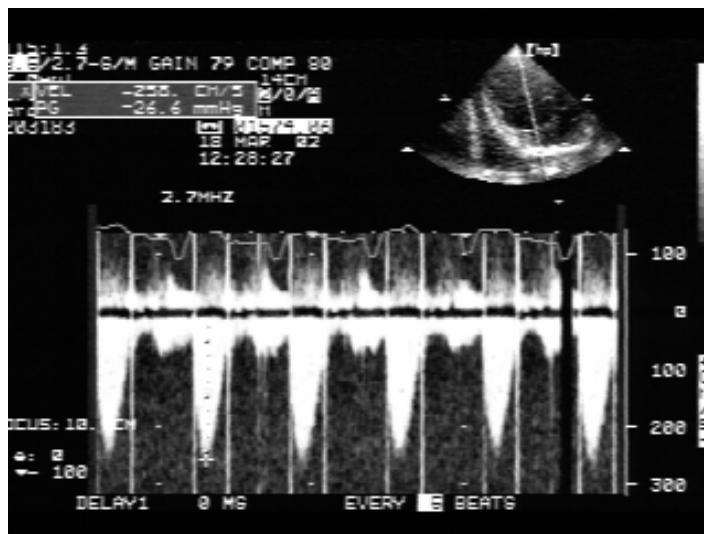
How Do I Use Echo ?



<50% variation => CVP >

Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

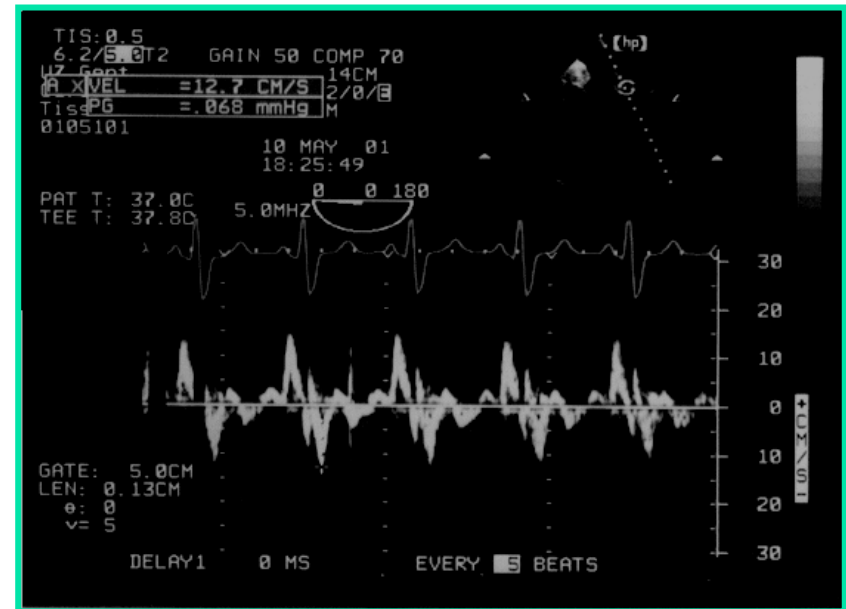


Slama, M et al. Am J Physiol 2002; 283:H1729-33

Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

- **Mitral inflow**
 - Rate and extent of ventricular relaxation
 - Suction
 - Atrial and ventricular compliance
 - Mitral valve inertance
 - Left atrial pressure



Pulmonary venous Doppler flow velocities

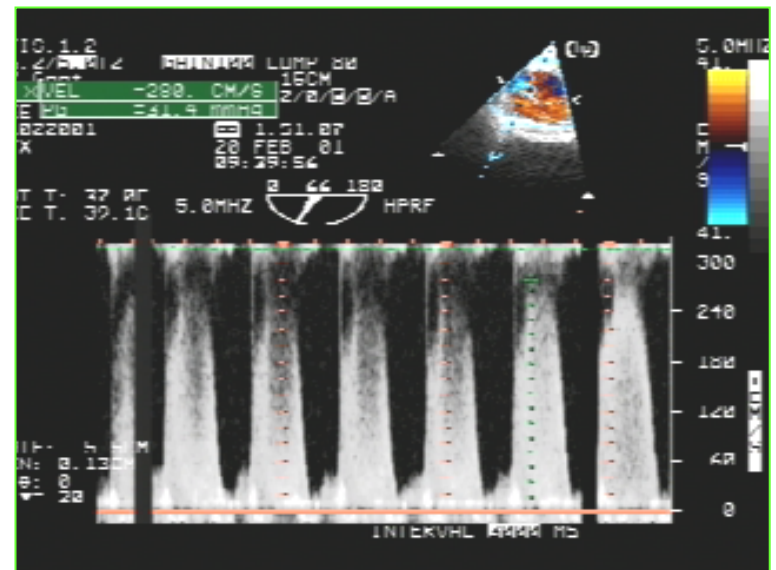
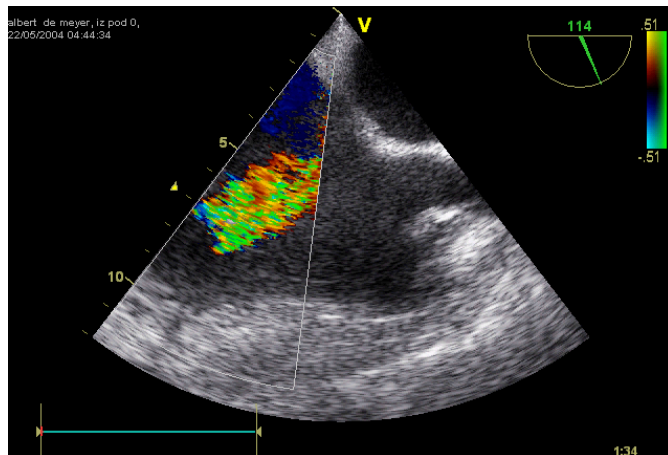
Colour M mode

Tissue Doppler Imaging

Perioperative Cardiac Surgical ICU

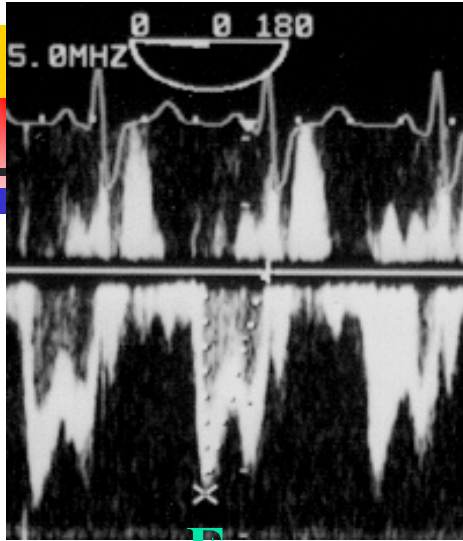
How Do I Use Echo ?

- **Mode: CW**
- **TI flow; longitudinal view**
- **Formula:**
 - $PAPs = 4 V^2 + RAP$
 - **cave : PS**



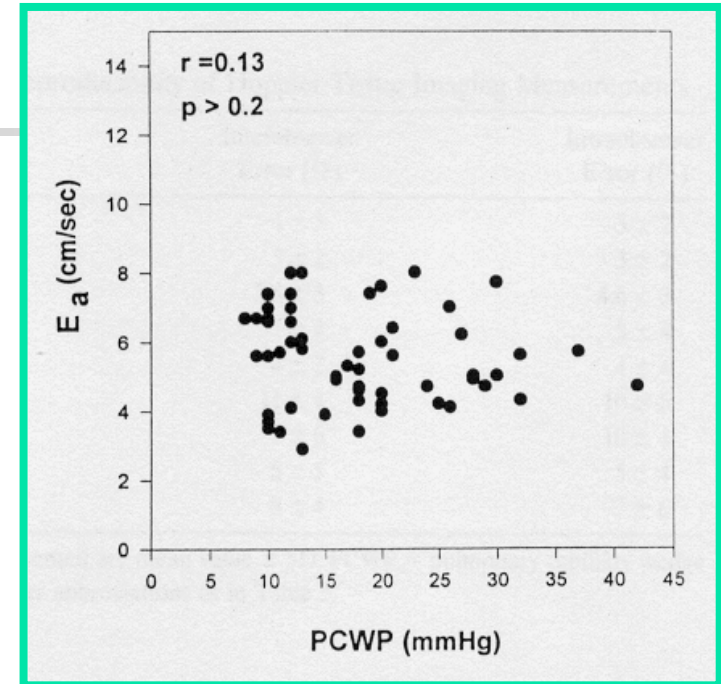
Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

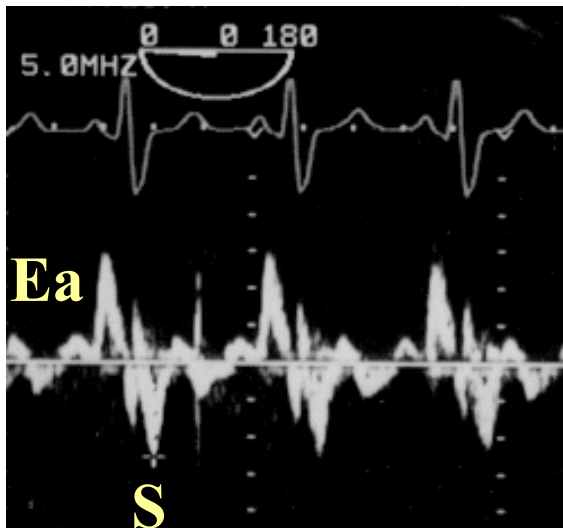


Nagueh et al. JACC
1997;30:1527-33

Nagueh et al.
JACC
2001;37:278-85



PCWP



N = 60

R = .87

E/Ea

Perioperative Cardiac Surgical ICU

How Do I Use Echo ?

- **Exclusion of Tamponade**

