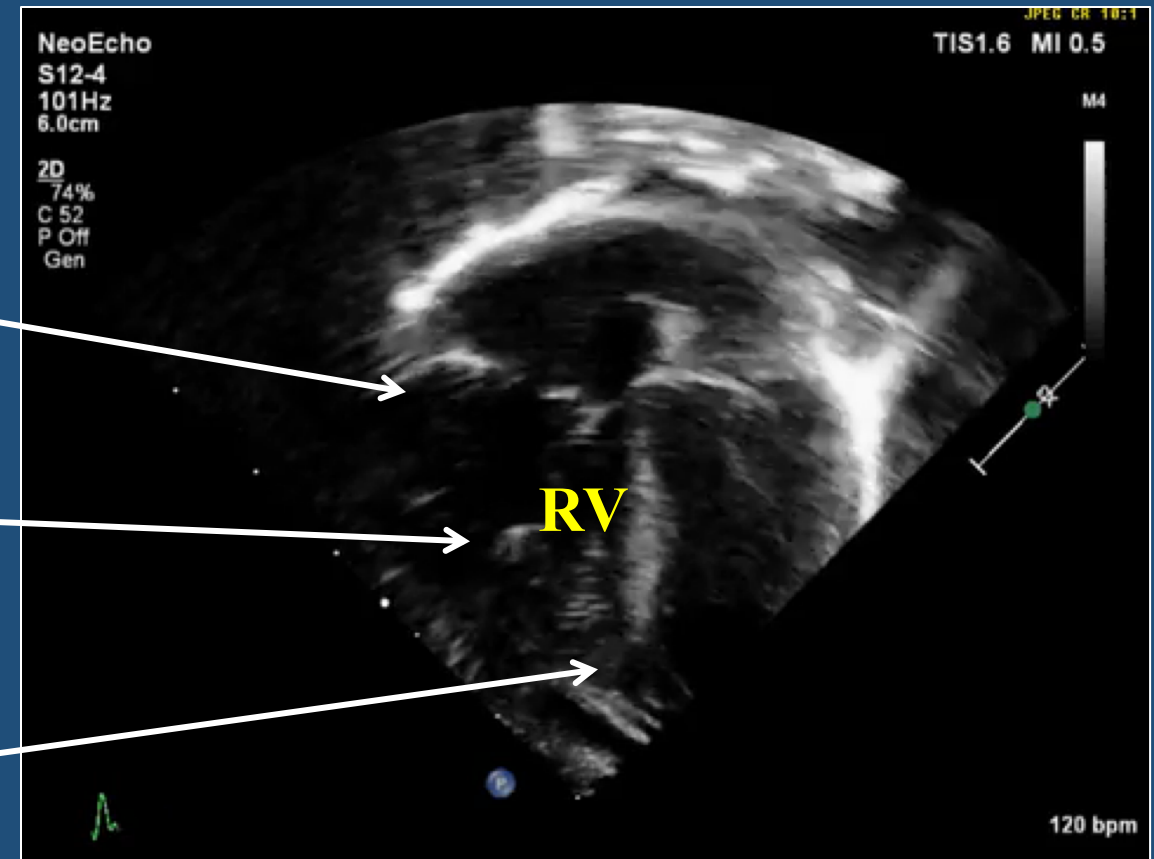


# RV contractility

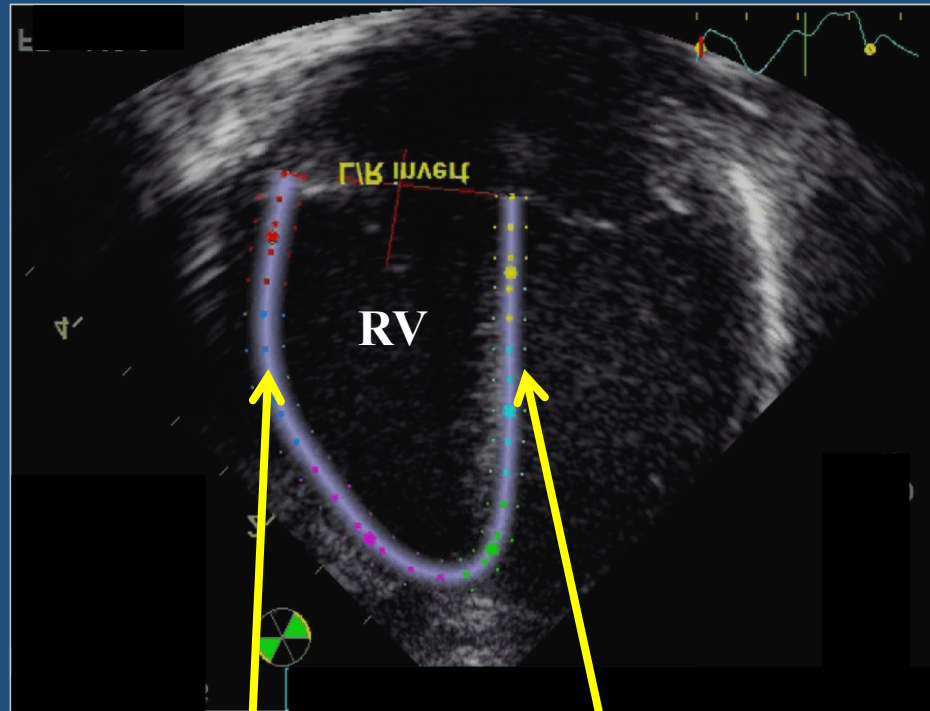
## *Peristaltic contraction patterns*

1. Contraction of longitudinal fibers pull the tricuspid valve towards apex.
2. Inward movement of the RV free wall.
3. Traction of RV free wall from connection to LV free wall at the Apex.

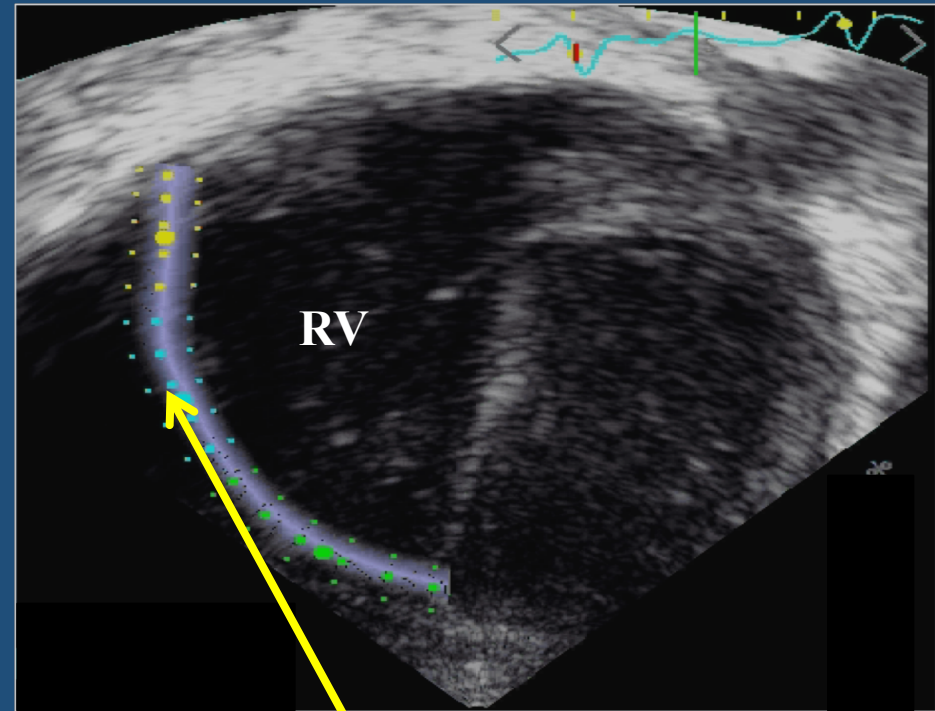


# RV function

## *Global vs. Regional*



RV free wall + Septum



RV free wall

# RV function

## *Systolic vs. Diastolic*

### *Systolic function*

#### Global

- **FAC (%)**
- **MPI / RIMP**
- **Global strain (%)**

#### Regional

- **TAPSE (cm)**
- **Regional strain (%)**

### *Diastolic function*

#### Global

- **Strain rate (1/sec)**
  - *early and late*
  - *contractility*

#### Regional

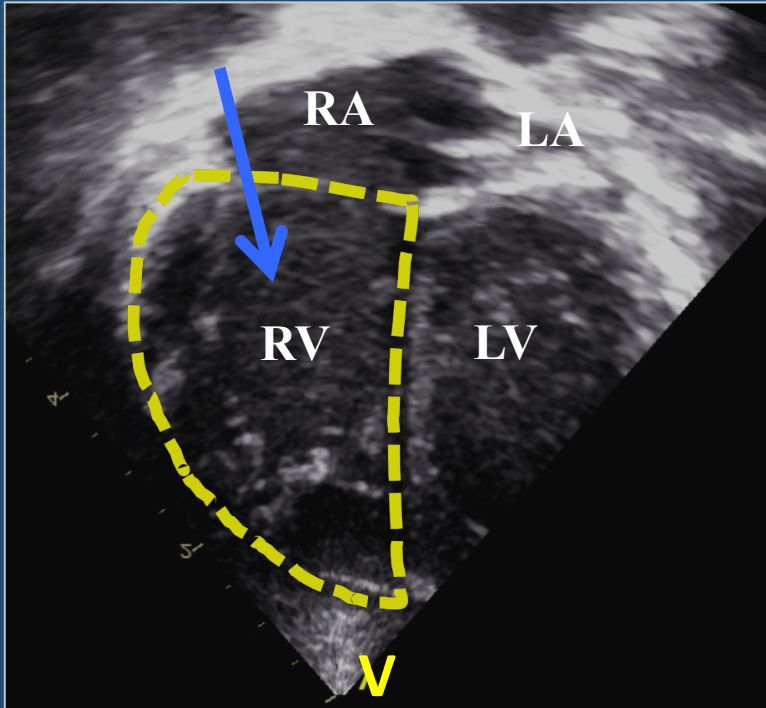
- **Strain rate (1/sec)**
- **Tissue Doppler velocities**  
(E,A,S, E', A', S')

# RV function

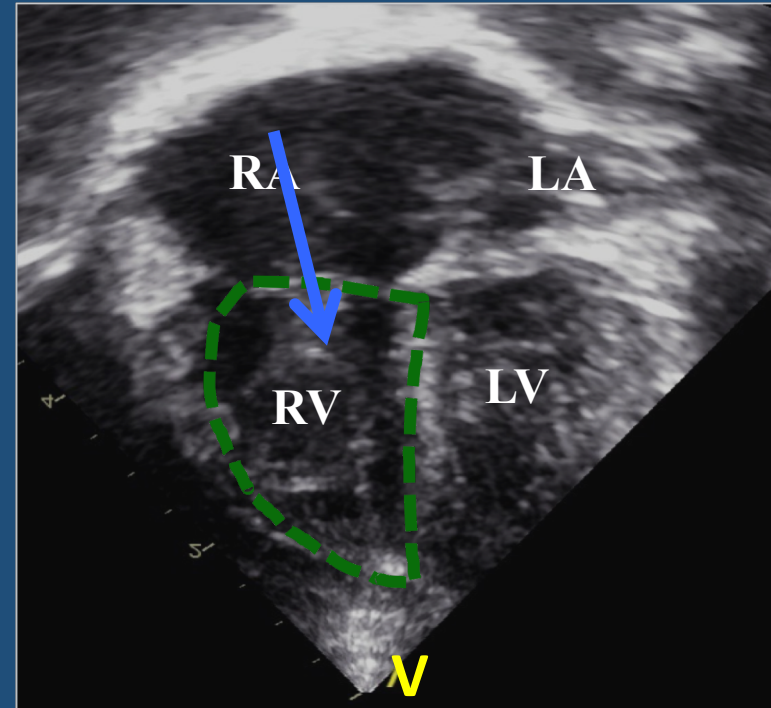
*Percent fractional area of change (FAC)*

$$\text{FAC \%} = 100 \times \frac{[\text{RV EDA (cm}^2\text{)} - \text{RV ESA (cm}^2\text{)}]}{\text{RV EDA (cm}^2\text{)}}$$

**RV end-  
diastolic area  
(RV EDA)**



**RV end-  
systolic area  
(RV ESA)**



**RV focused apical 4 – chamber view (inflow)**

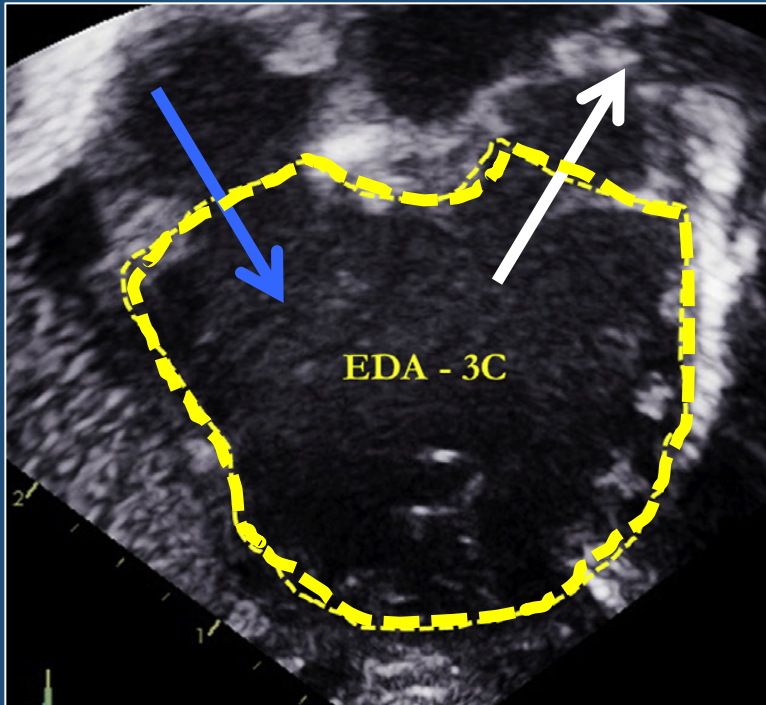


# RV function

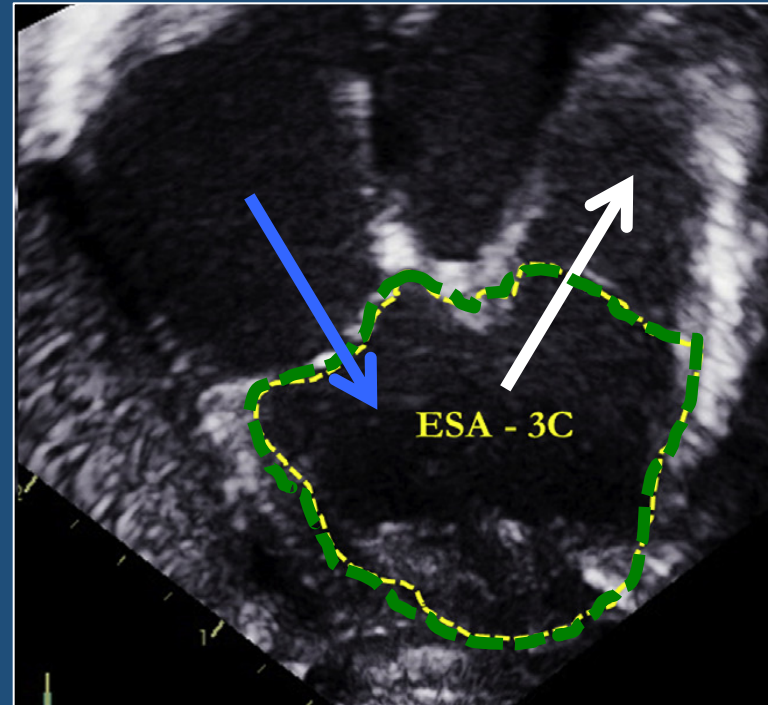
*Percent fractional area of change (FAC)*

$$\text{FAC \%} = 100 \times \frac{[\text{RV EDA (cm}^2\text{)} - \text{RV ESA (cm}^2\text{)}]}{\text{RV EDA (cm}^2\text{)}}$$

RV end-  
diastolic area  
(RV EDA)



RV end-  
systolic area  
(RV ESA)



RV focused apical 3 – chamber view (inflow + outflow)

# RV function

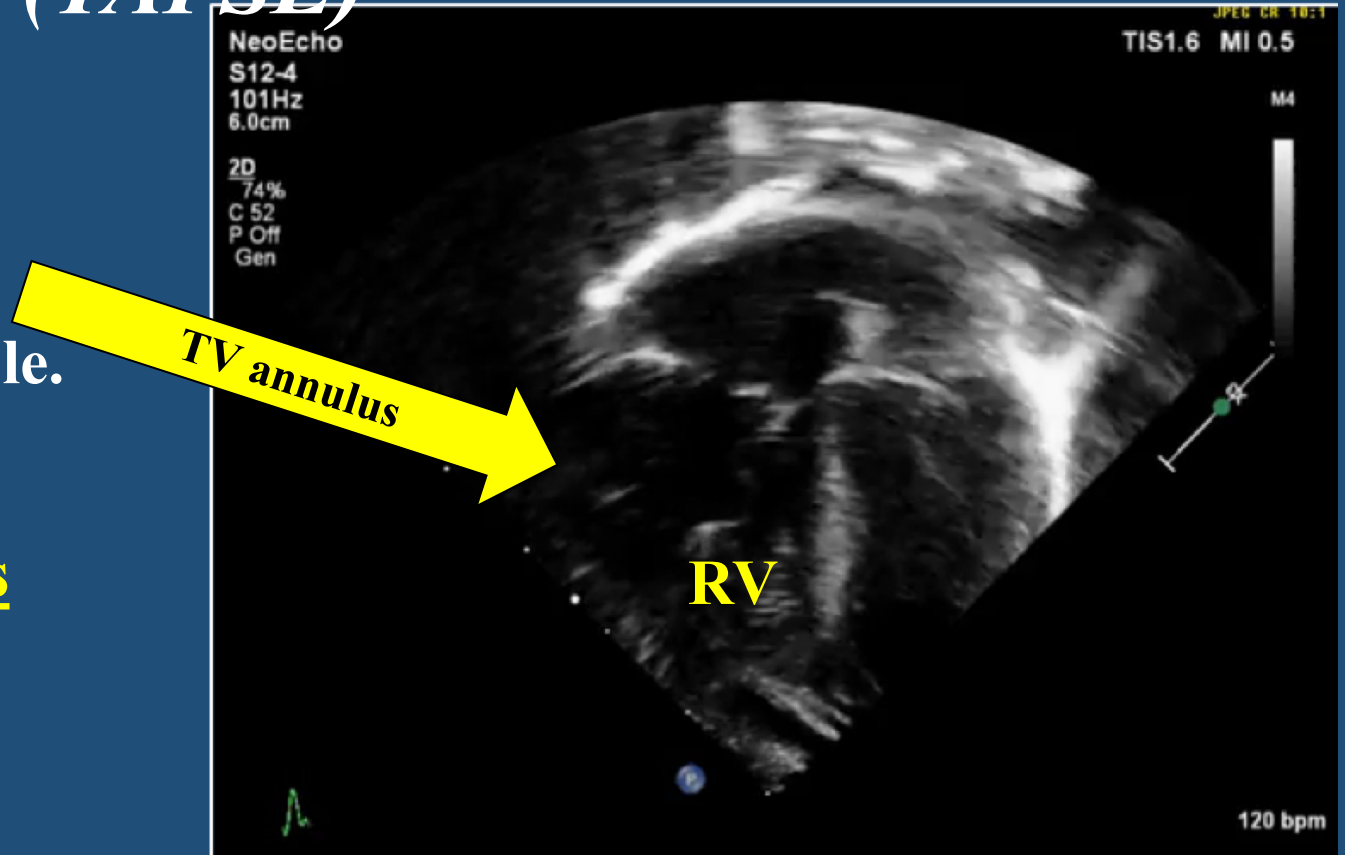
## *Tricuspid annular plane systolic excursion (TAPSE)*

- Contraction of the deep longitudinal fibers pull the tricuspid valve from the base towards the apex during systole.

### Two approaches to measures

#### TAPSE:

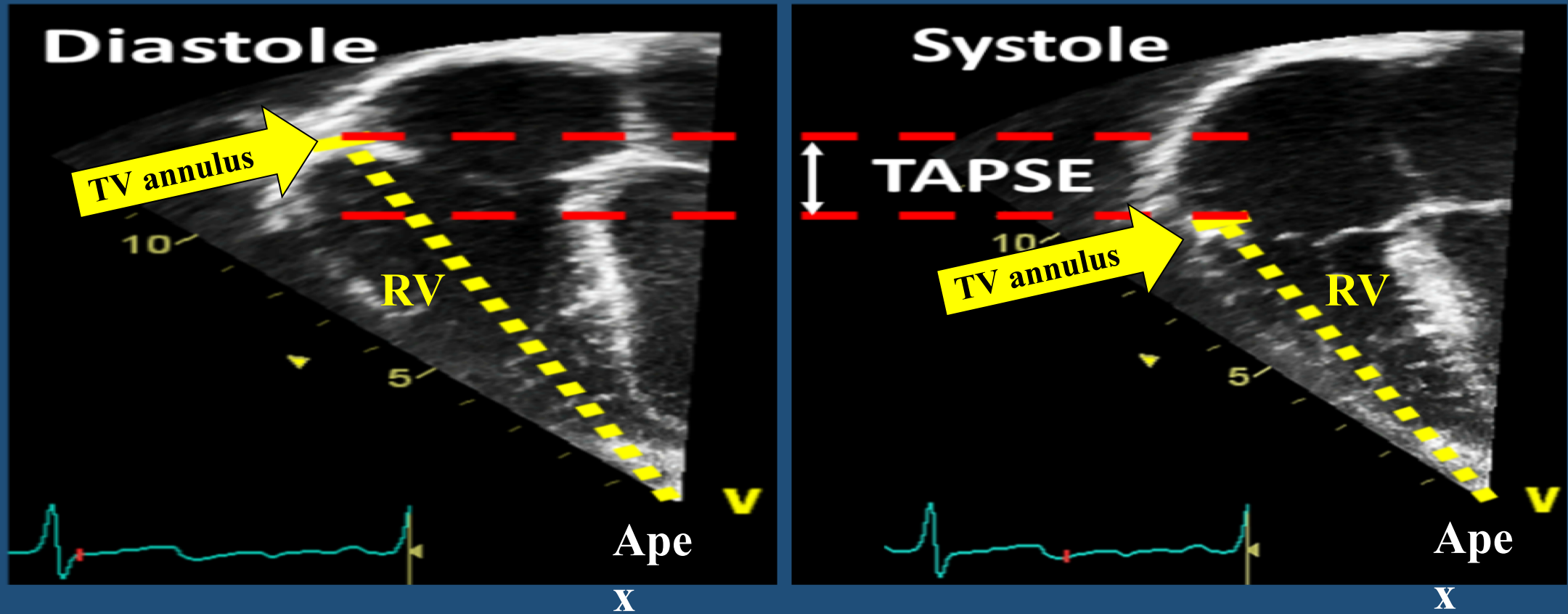
1. Apical 4-chamber
2. M-mode



**RV focused apical 4- chamber view**

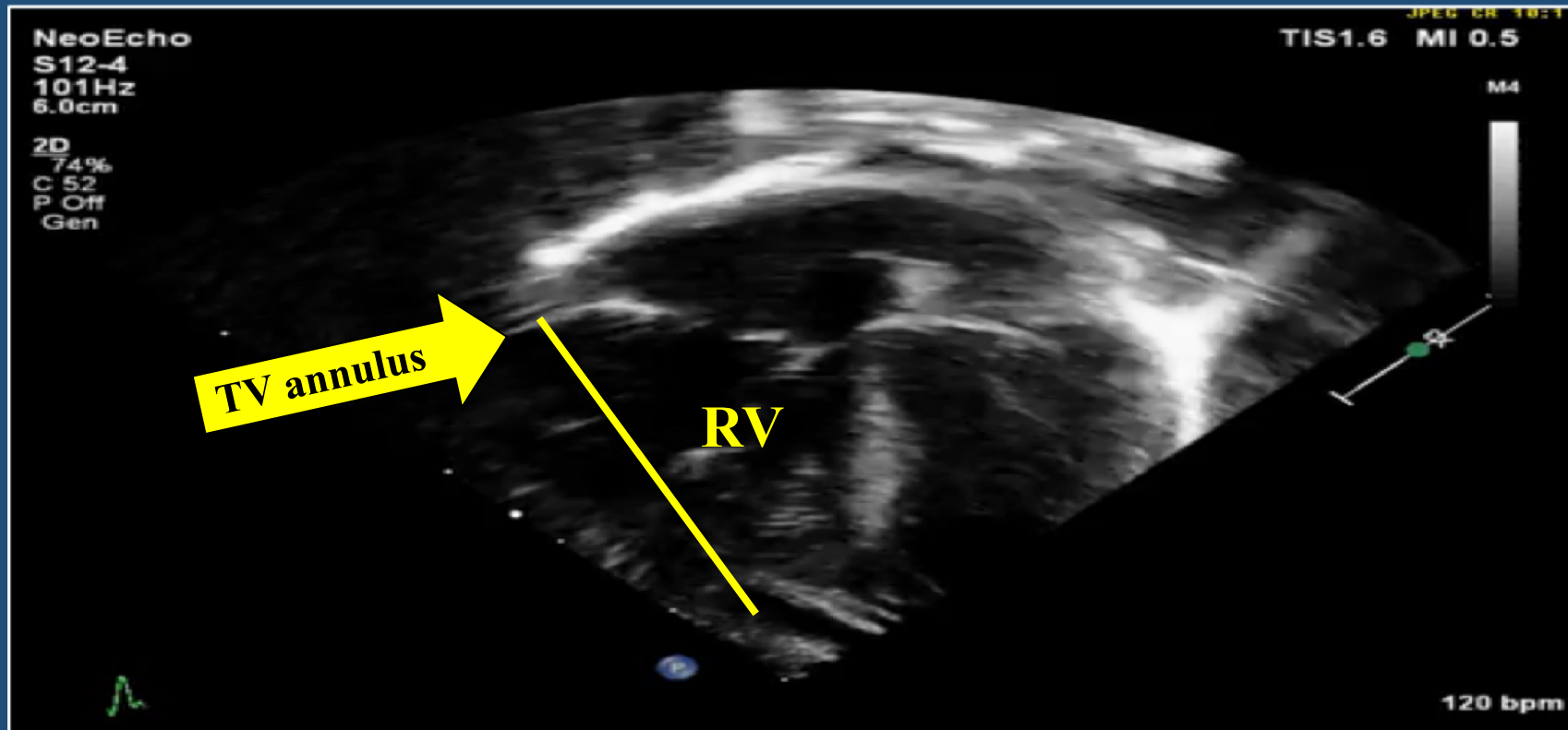
# RV function

## *TAPSE – Apical 4- chamber view (linear)*



# RV function

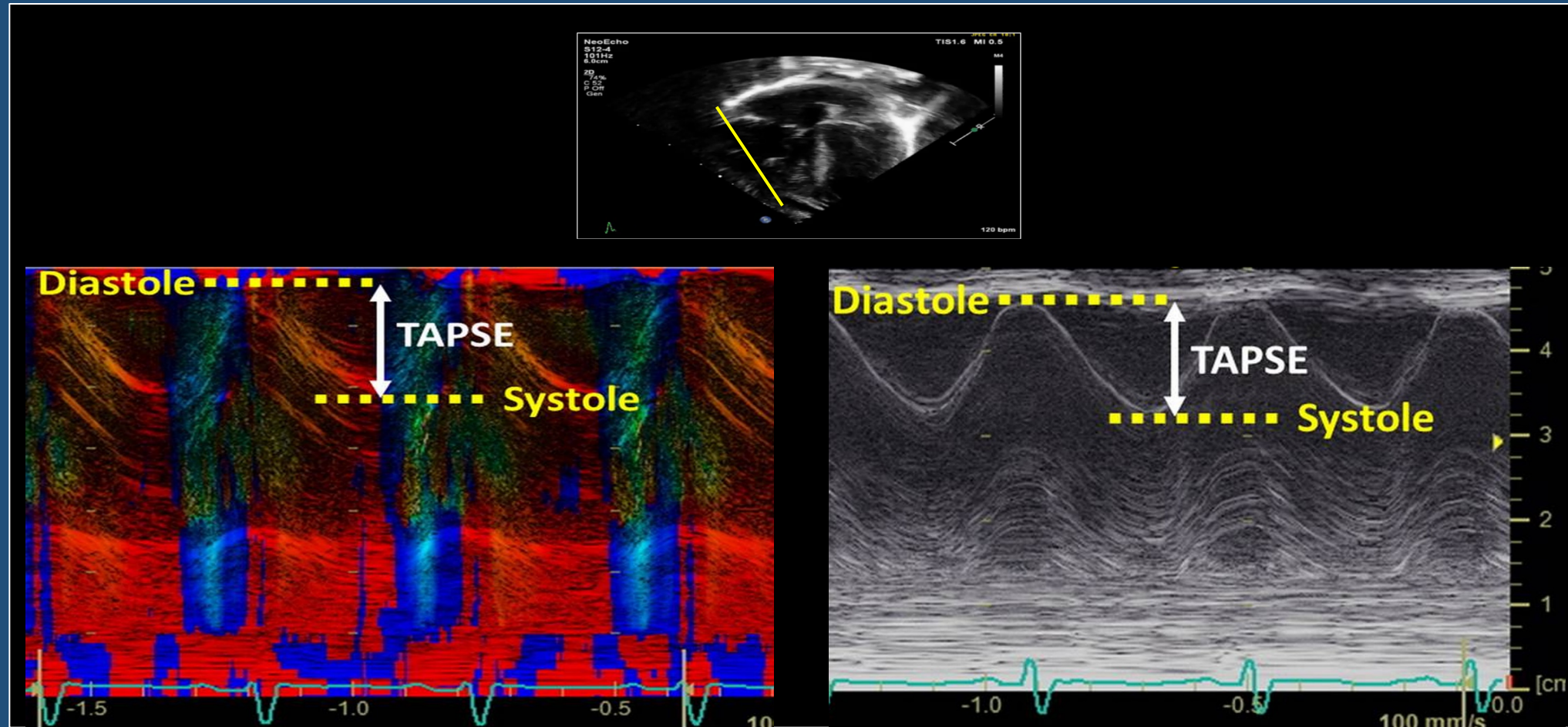
*TAPSE – Apical 4- chamber view (m-mode)*





# RV function

## *TAPSE – Apical 4- chamber view (m-mode)*

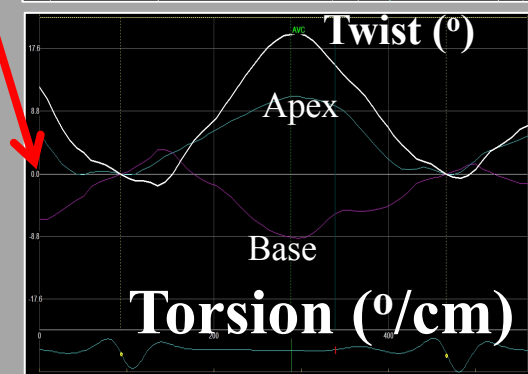
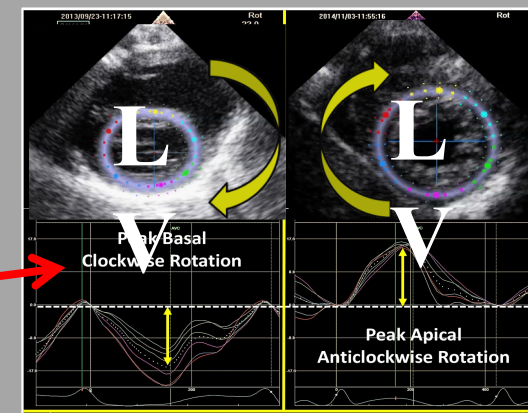
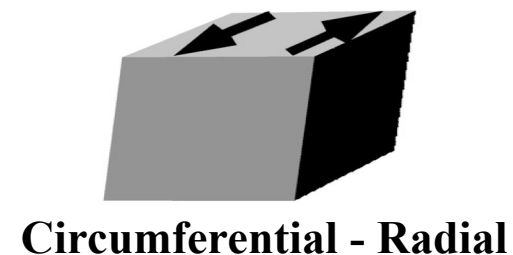
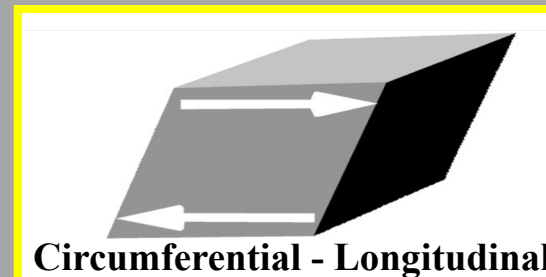
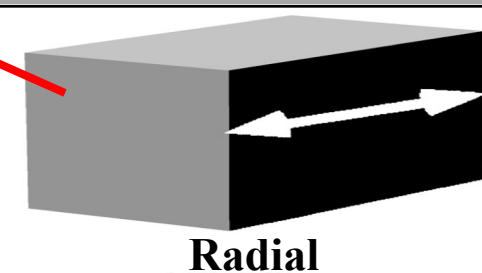
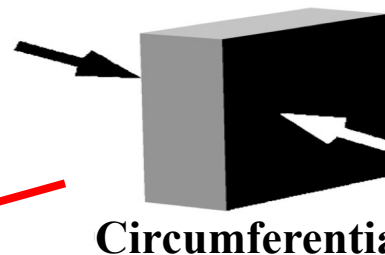
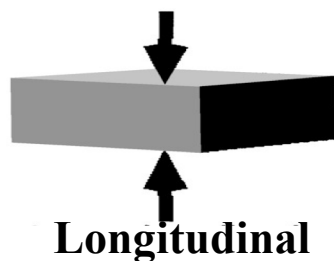
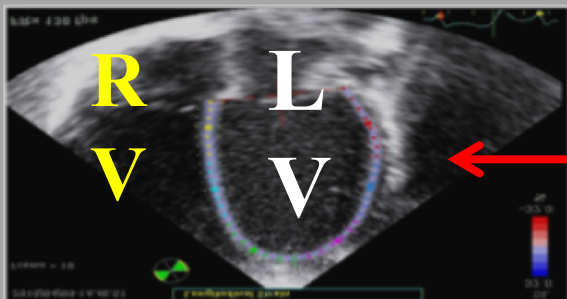




Normal Strain  
(perpendicular)

Deformation  
Left Ventricle

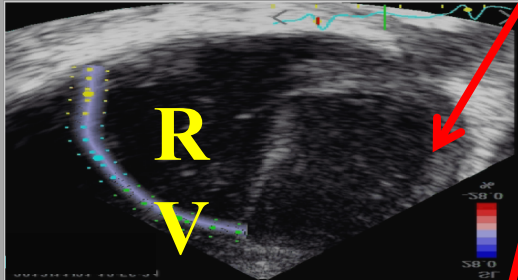
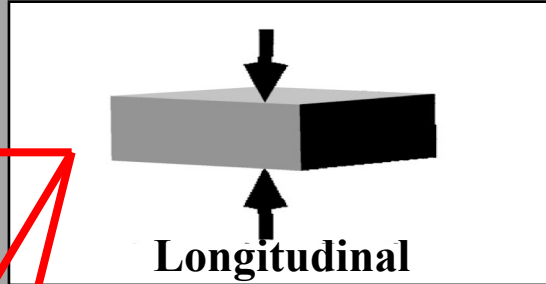
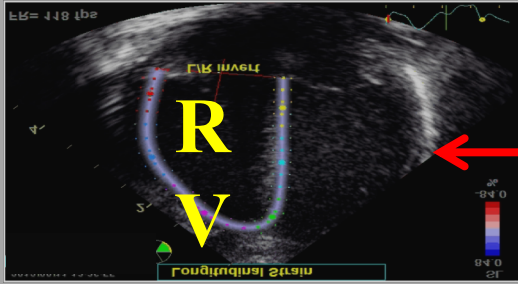
Shear Strain  
(parallel)



Normal Strain  
(perpendicular)

Deformation  
Right Ventricle

Shear Strain  
(parallel)



**RV global longitudinal strain**  
*(Focused RV apical 4-chamber view)*

**RV free wall longitudinal strain**  
*(Focused RV apical 4-chamber view)*

**RV inferior wall longitudinal strain**  
*(RV apical 3-chamber view)*

# RV function

*Wall motion vs. change in cavity area / deformation*

