

ROUTINE CARDIAC PLANNING

Tip Sheet

Additions and modifications often used for base Routine Cardiac protocol, according to the ...

1. Cardiac Radiologist for the day. If for...

- Eric Williams: add LVOT CINE SSFP and AORTIC ROOT CINE SSFP prior to REST PERFUSION pre.
- Dagmar Hoegmann-Savellano: scan entire heart for SAX CINE SSFP, 4CH CINE SSFP, SAX DE, AND 4CH DE.

Due to long length of scanning entire heart on SAX and 4CH post GAD, you will need to replace two of the DE sequences with DE SS's, unless told otherwise.

2. Dx of exam. If for...

-Amyloid

Include an additional pre-contrast TI Scout, prior to REST PERFUSION pre.

-Thrombus: If for...

- Williams: after post Rest Perfusion, run an immediate additional 2CH DE SS of entire heart, TI: 600. After sequence, proceed as normal, including usual 2CH DE.
- Savellano: Same as Williams. She may also request an additional 4CH DE SS of entire heart, TI: 600.

3. Patient condition. If pt has...

- Pacemaker/ICD: Whichever side of the body the generator is located, have pt raise that side's arm above head.
Moves generator more superiorly, further away from heart.
- Arrhythmia: If undesirable motion noted during CINE SSFP, apply "Arrhythmia Detection: By Time." This will only work on minor arrhythmias.

INDEX

<u>SLIDE</u>	<u>SEQUENCE</u>
3	Axial Haste
4	Scout 2CH
5	Scout SAX
6	Scout 4CH
7	SAX CINE
8	2CH CINE
9	3CH CINE
10	4CH CINE
11	LVOT CINE
12	AORTIC ROOT CINE (<i>aka SAX LVOT CINE or AORTIC VALVE CINE</i>)
13	TI Scout (pre)
14	Rest Perfusion
15	TI Scout (post)
16	SAX DE
17	4CH DE
18	2CH DE
19	3CD DE
20	Less often used sequences below (all are pre-contrast)...
21	SAX LVOT CINE PC's (<i>aka AORTIC VALVE CINE PC's</i>)
22	RVOT CINE
23	PULMONIC VALVE CINE (<i>aka SAX RVOT CINE</i>)
24	SAX GRID TAG
25	LAX GRID TAG
26	cine_realtime_tf2d_8sl_trig_TPAT, SAX view
27	cine_realtime_tf2d_8sl_trig_TPAT, LAX view

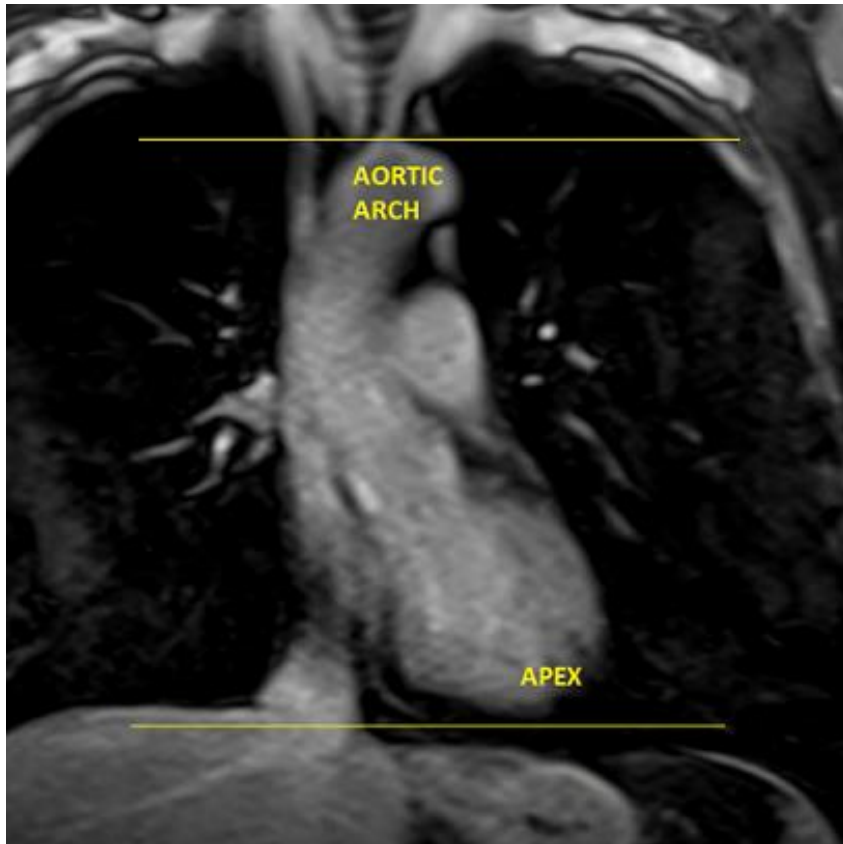
Axial Haste

Increase FOV as needed

Straight axial, superior aspect of aortic arch through apex of heart

Capture cycle

Scout COR



&

Scout SAG



Scout 2CH

1 slice

Angle from mid-mitral valve through apex on AX from Scout
Line should appear perpendicular to interventricular septum

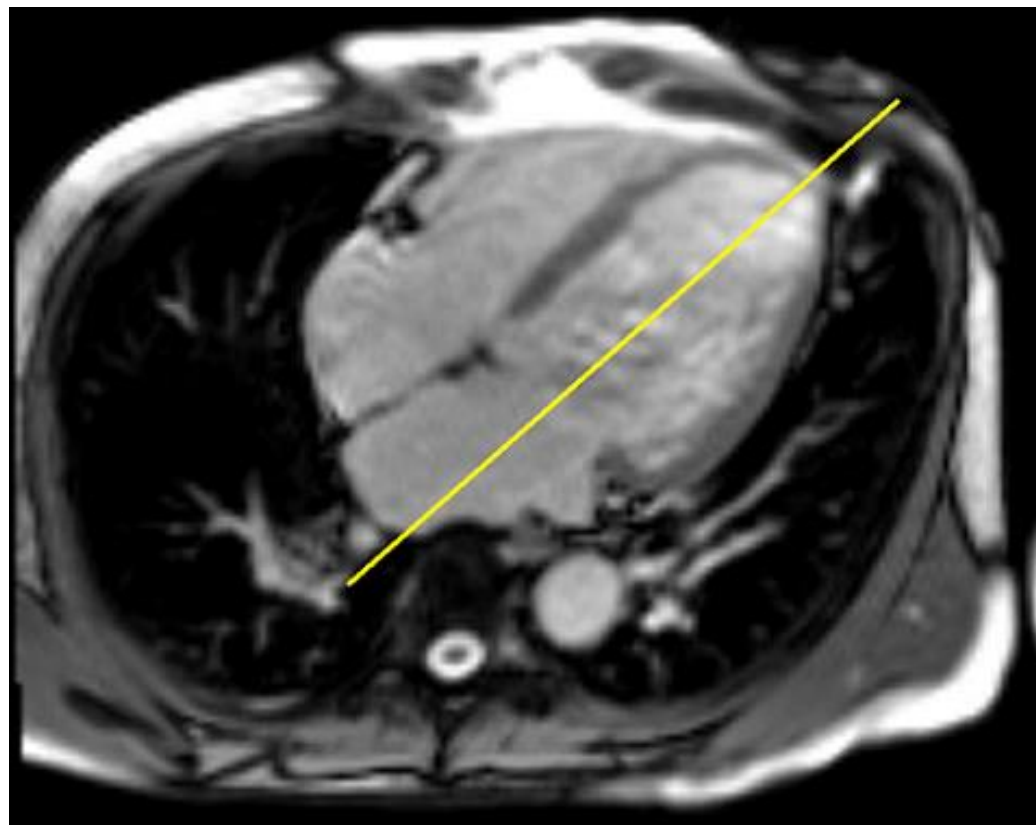
SCOUT sequences

“Quick and dirty.”

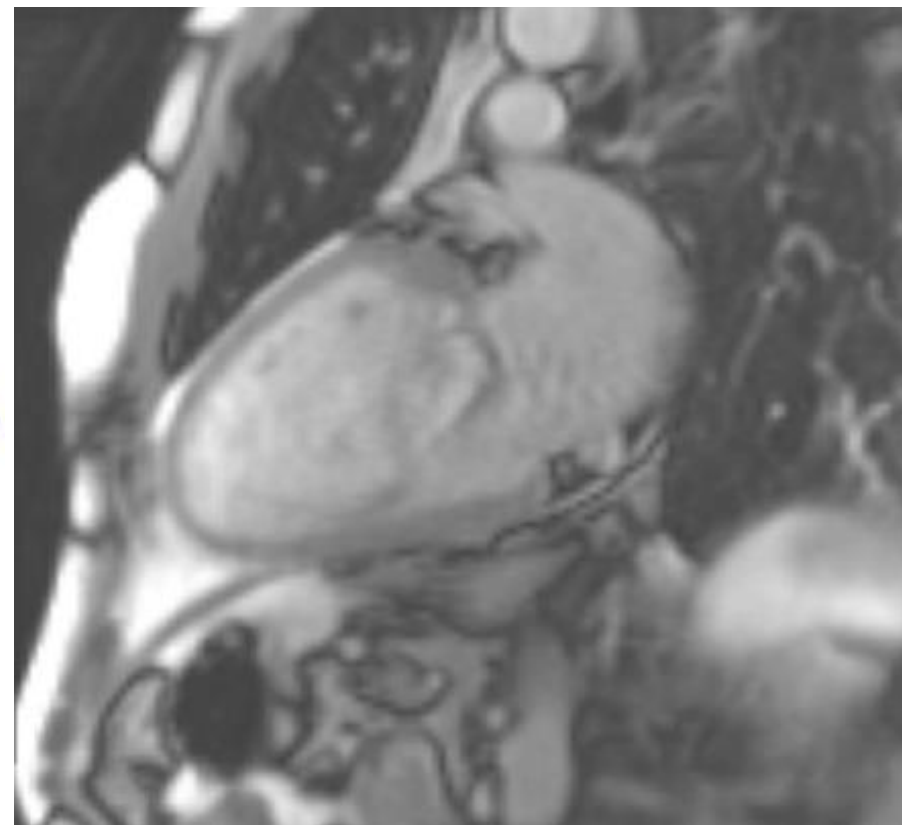
No FOV changes.

Capture cycle

AXIAL from Scout
(+perpendicular)



Scout 2CH



Scout SAX

Generally 10-14 slices.

Center mid-heart.

Angle with bottle-neck of mitral valve on 2CH.

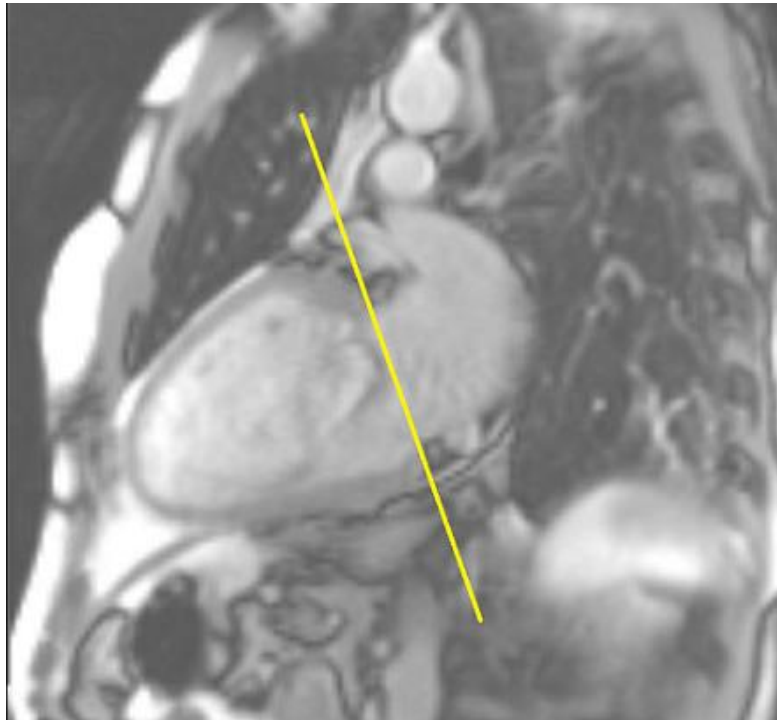
SCOUT sequences

“Quick and dirty.”

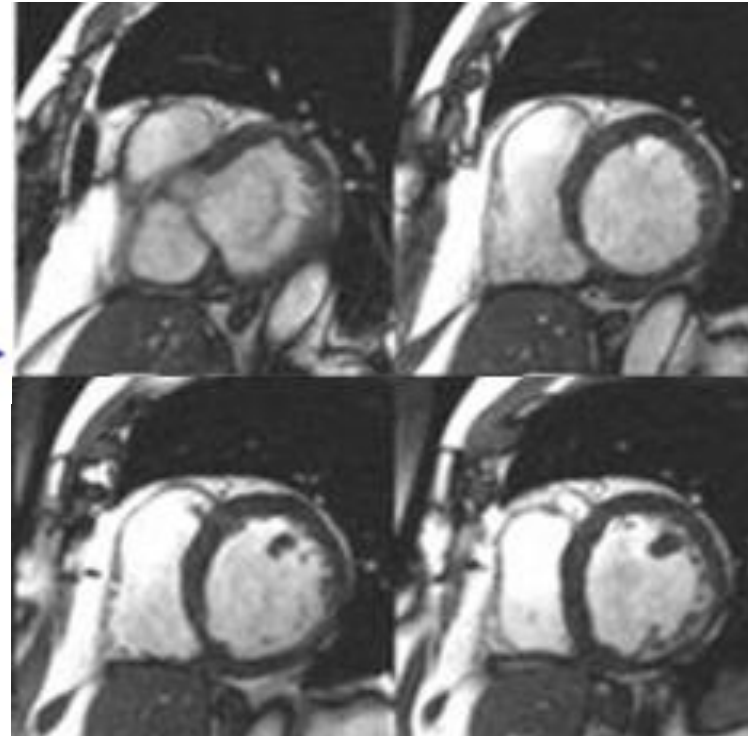
No FOV changes.

Capture cycle

Scout 2CH
(+perpendicular)



Scout SAX



Scout 4CH

1 slice

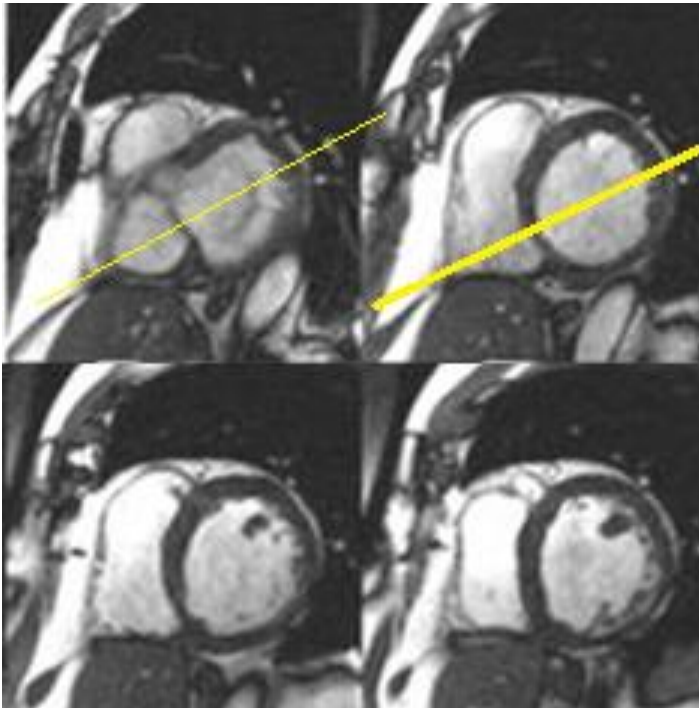
SCOUT sequences

“Quick and dirty.”

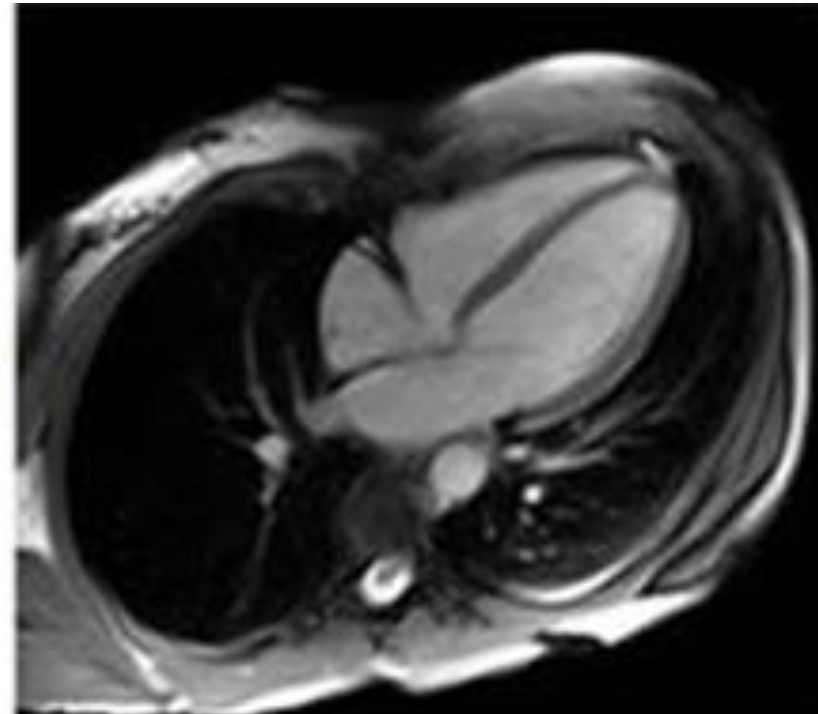
No FOV changes.

Capture cycle

Scout SAX (+perpendicular)



Scout 4CH



SAX CINE

Scan whole heart, extra slice past apex
1 concat per slice

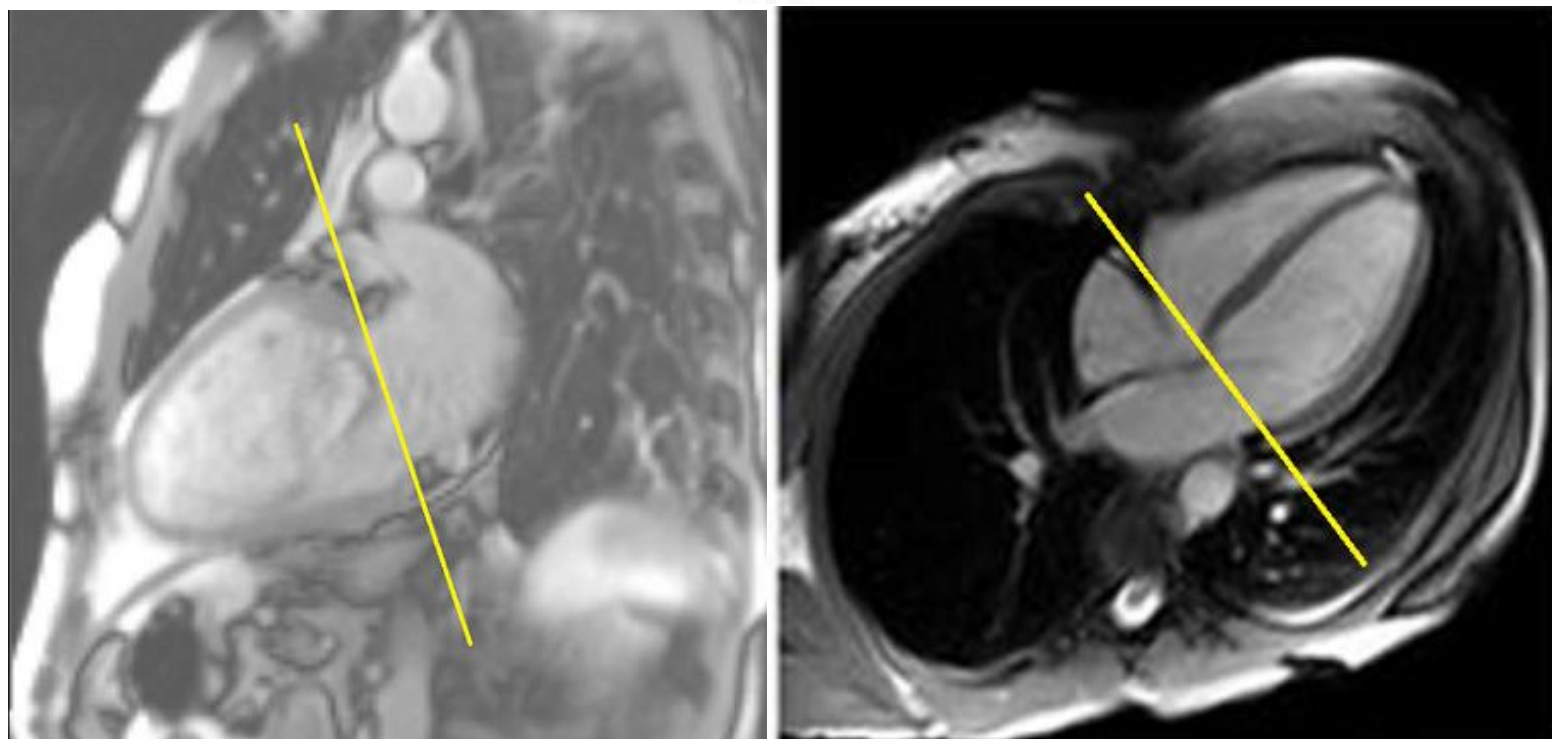
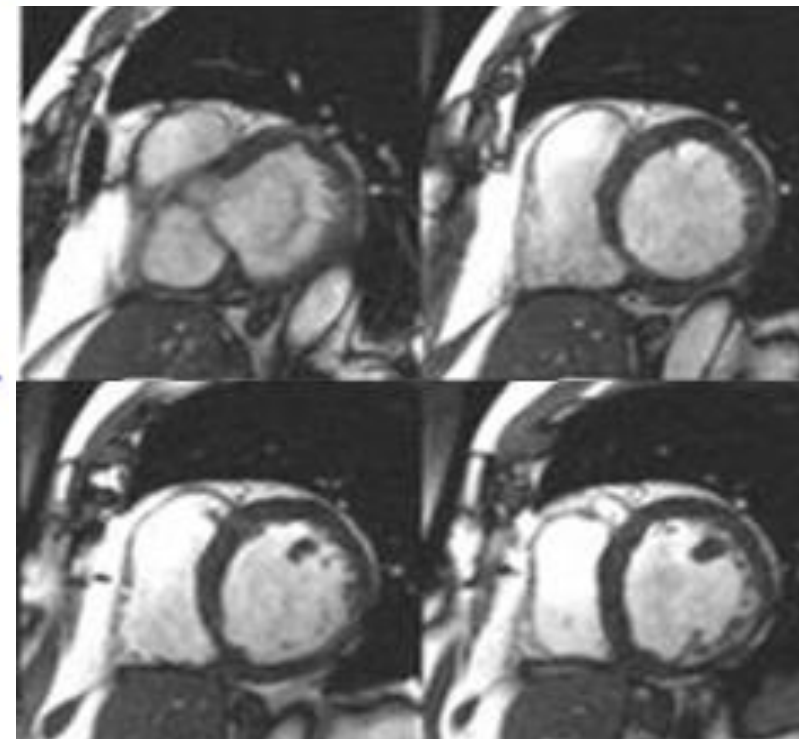
CINE sequences

Adjust shim volume, focusing on aortic root.
Small FOV's, approx 320mm.
Increase oversampling and phase FOV as needed
Fine-tune slice position planning
Check breath hold lengths

Scout 2CH & Scout 4CH



SAX CINE



2CH CINE

3 slices

CINE sequences

Adjust shim volume, focusing on aortic root.

Small FOV's, approx. 320mm.

Increase oversampling and phase FOV as needed

Fine-tune slice position planning

Check breath hold lengths

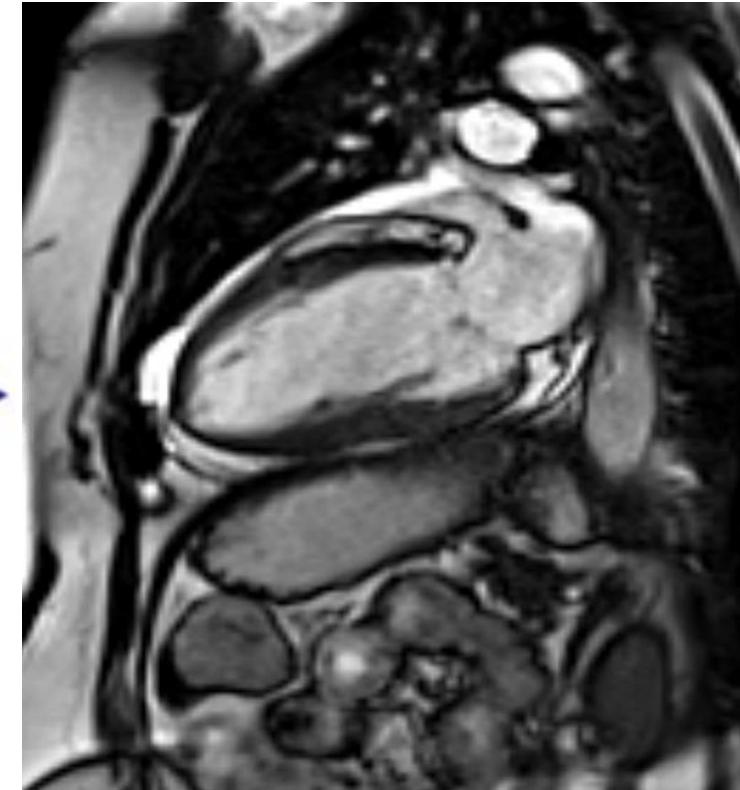
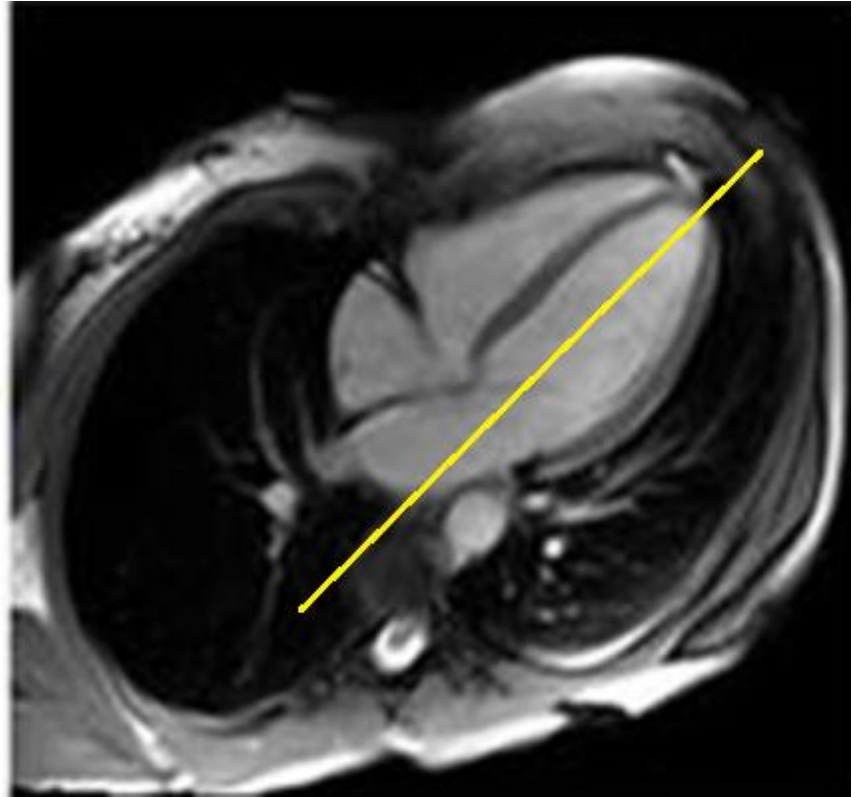
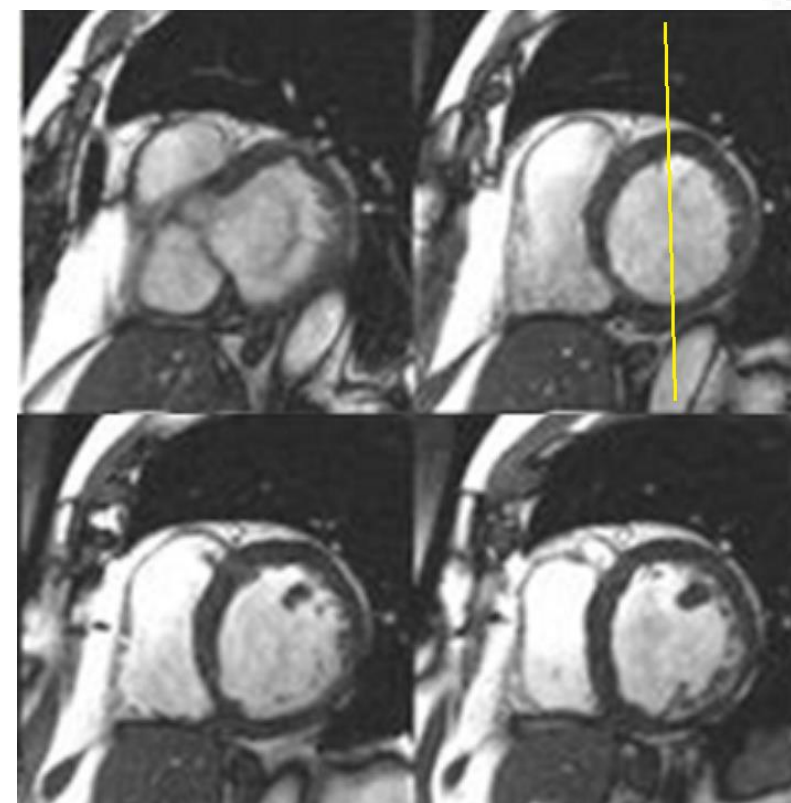
SAX CINE

&

Scout 4CH



2CH CINE



3CH CINE

3 slices

CINE sequences

Adjust shim volume, focusing on aortic root.

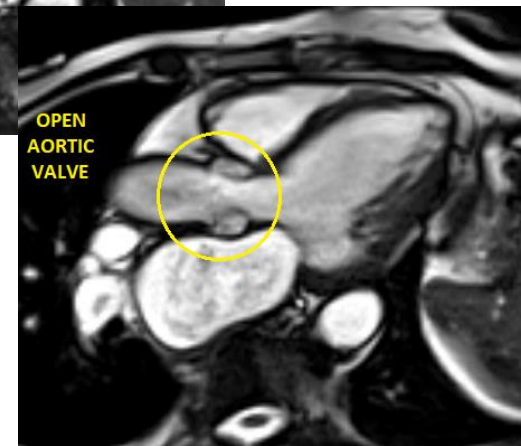
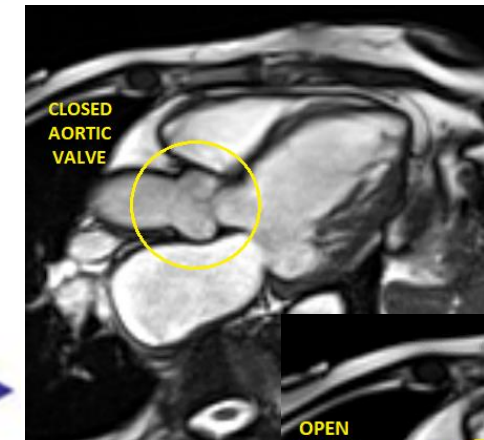
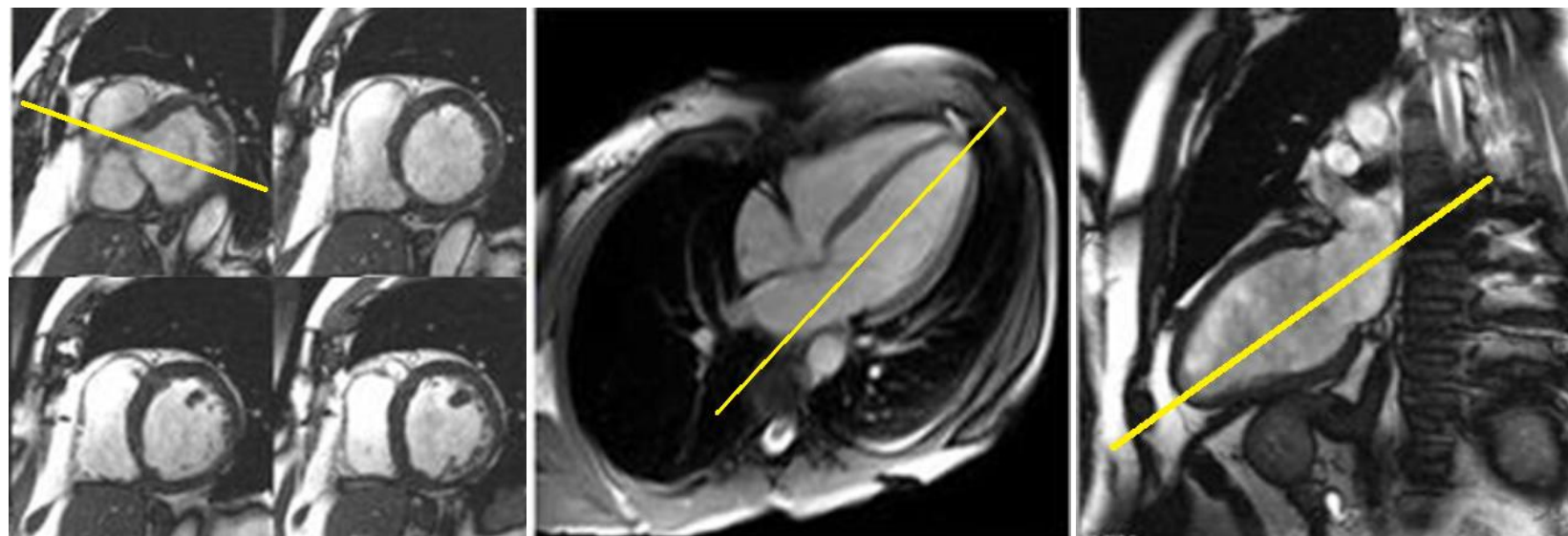
Small FOV's, approx 320mm.

Increase oversampling and phase FOV as needed

Fine-tune slice position planning

Check breath hold lengths

SAX CINE & Scout 4CH & 2CH CINE → 3CH CINE



4CH CINE

**Scan whole heart, if for Dr. Hoegmann-Savellano*
3 slices, otherwise.

CINE sequences

Adjust shim volume, focusing on aortic root.
Small FOV's, approx 320mm.
Increase oversampling and phase FOV as needed
Fine-tune slice position planning
Check breath hold lengths

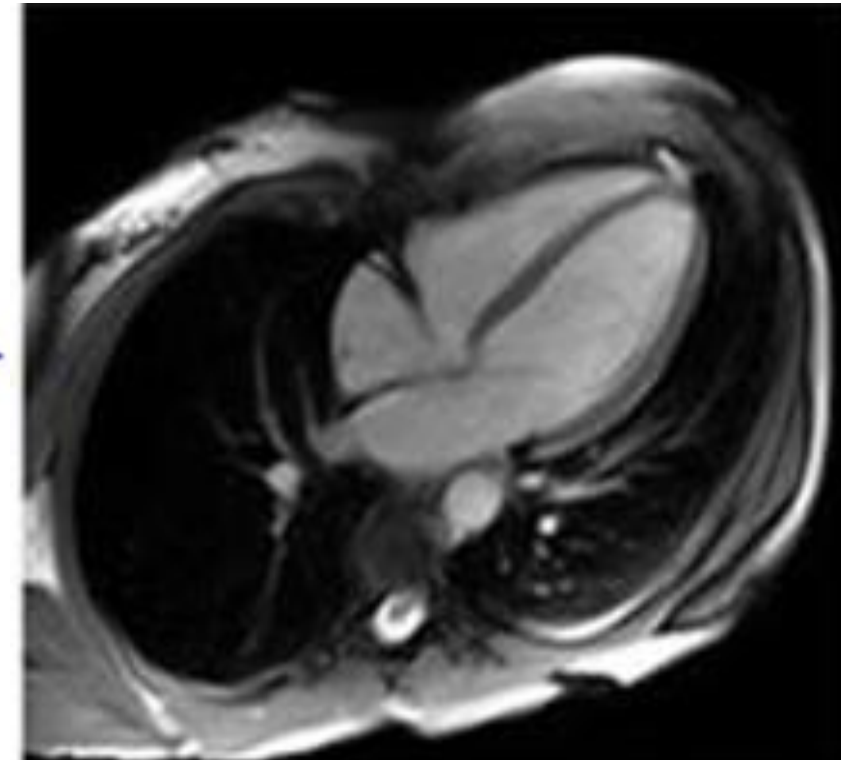
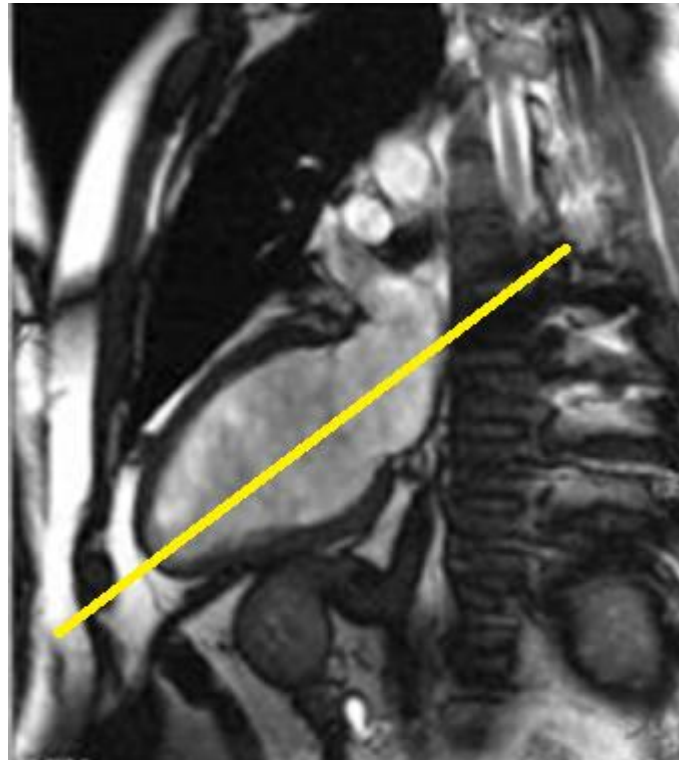
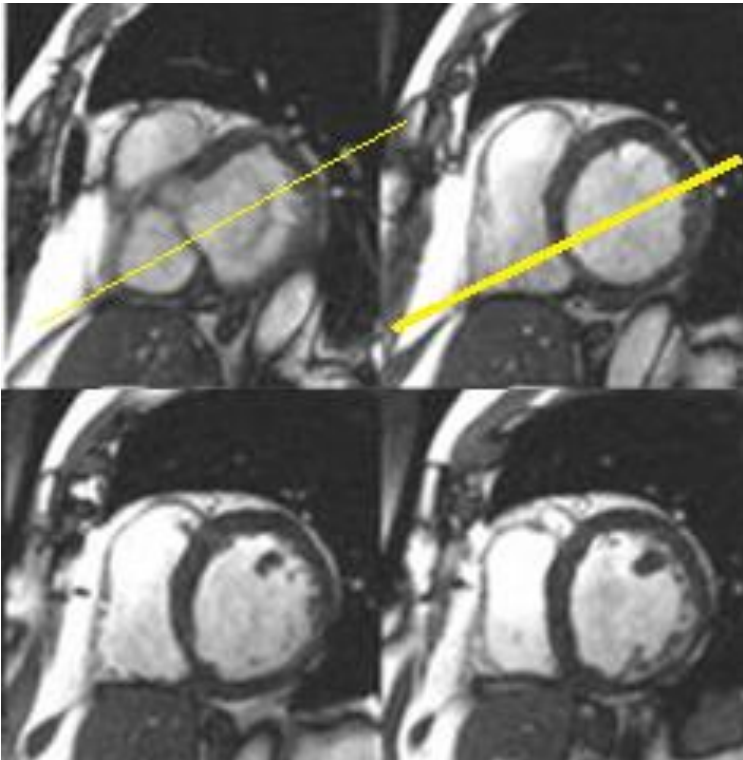
SAX CINE

&

2CH CINE



4CH CINE



LVOT CINE SSFP

**Include for Dr. Williams. Otherwise, OPTIONAL.*

3 slices

Make sure to use Copy Reference for "Adjustment Volume"

CINE sequences

Adjust shim volume, focusing on aortic root.

Small FOV's, approx 320mm.

Increase oversampling and phase FOV as needed

Fine-tune slice position planning

Check breath hold lengths

3CH CINE

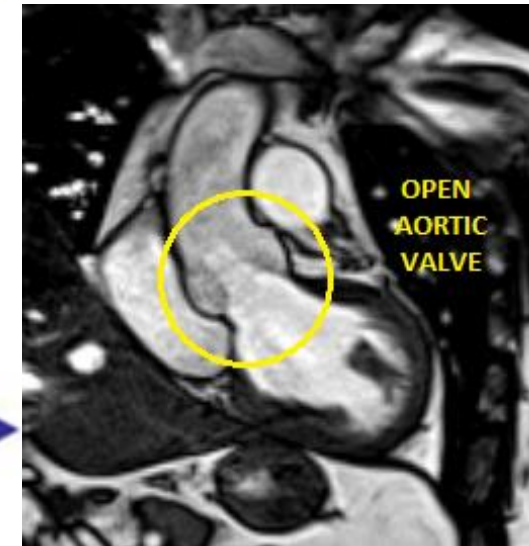
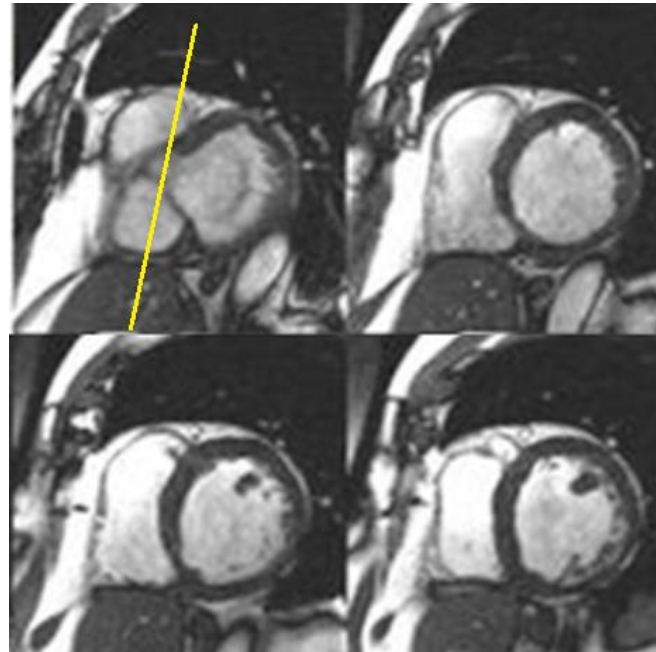
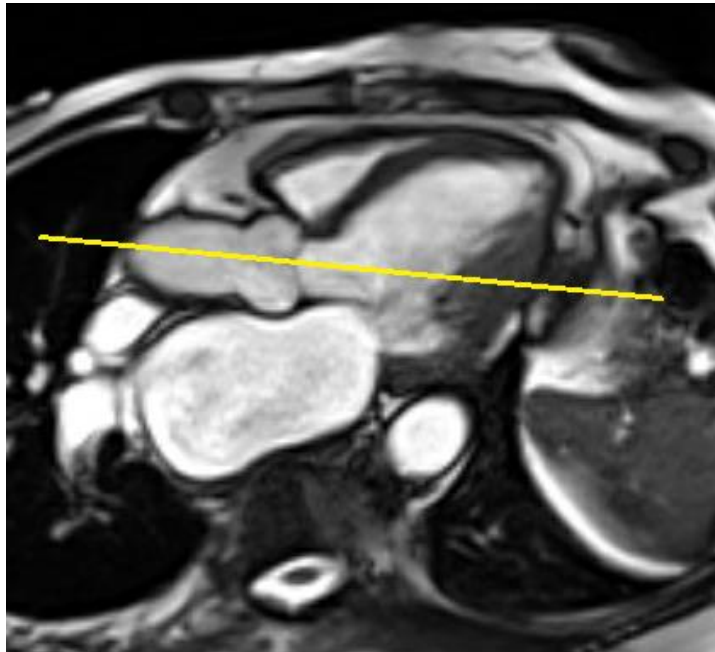
(+perpendicular)

&

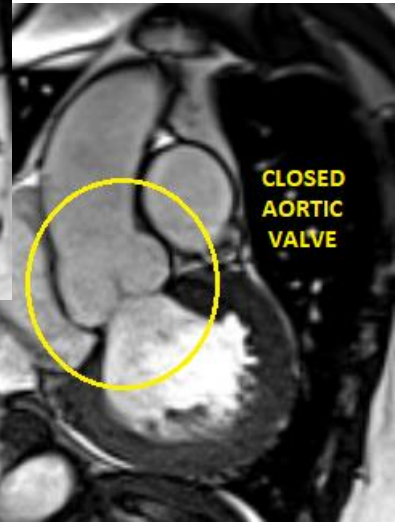
SAX CINE



LVOT CINE SSFP



OPEN
AORTIC
VALVE



CLOSED
AORTIC
VALVE

AORTIC ROOT CINE SSFP

(aka SAX LVOT, or AORTIC VALVE)

**Include for Dr. Williams. Otherwise, OPTIONAL.*

5-6 slices, inferior of aortic tricuspid valve through tips

Make sure to use Copy Reference for "Adjustment Volume"

CINE sequences

Adjust shim volume, focusing on aortic root.

Small FOV's, approx 320mm.

Increase oversampling and phase FOV as needed

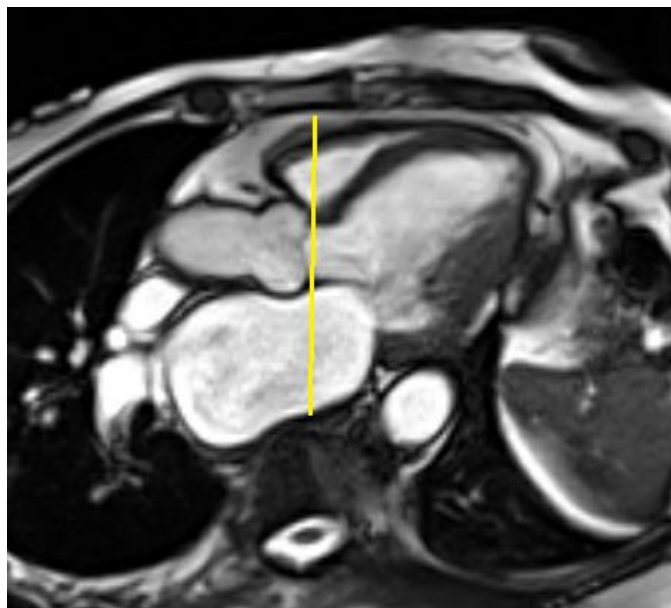
Fine-tune slice position planning

Check breath hold lengths

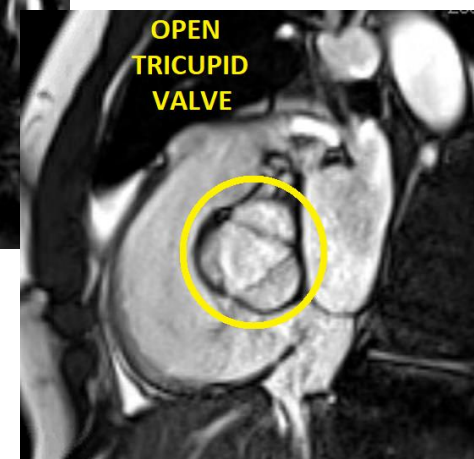
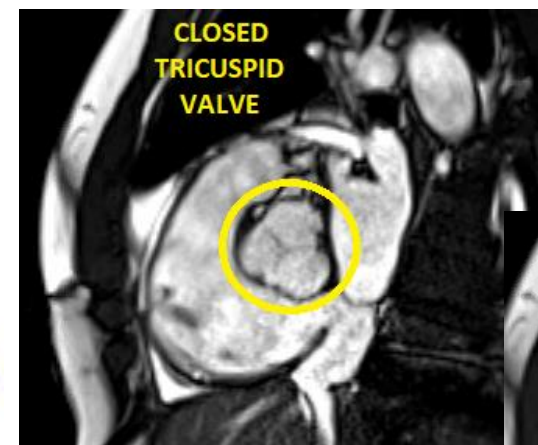
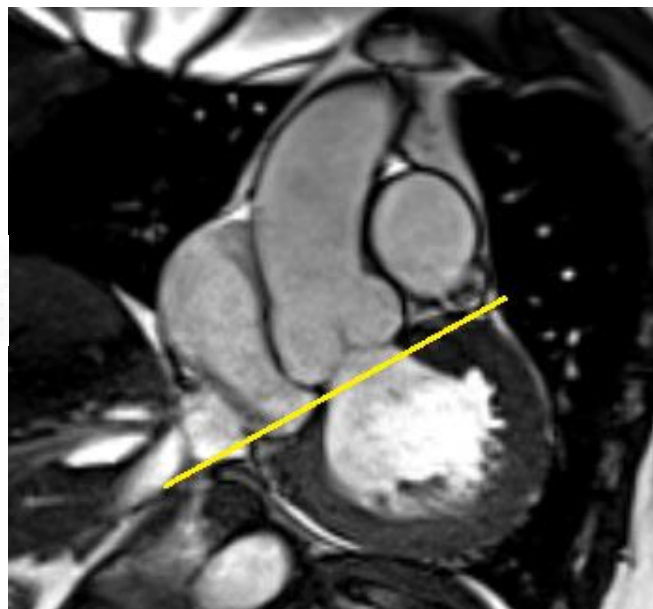
3CH CINE & LVOT CINE
(+perpendicular)



AORTIC ROOT
CINE SSFP



&



TI Scout (pre-)

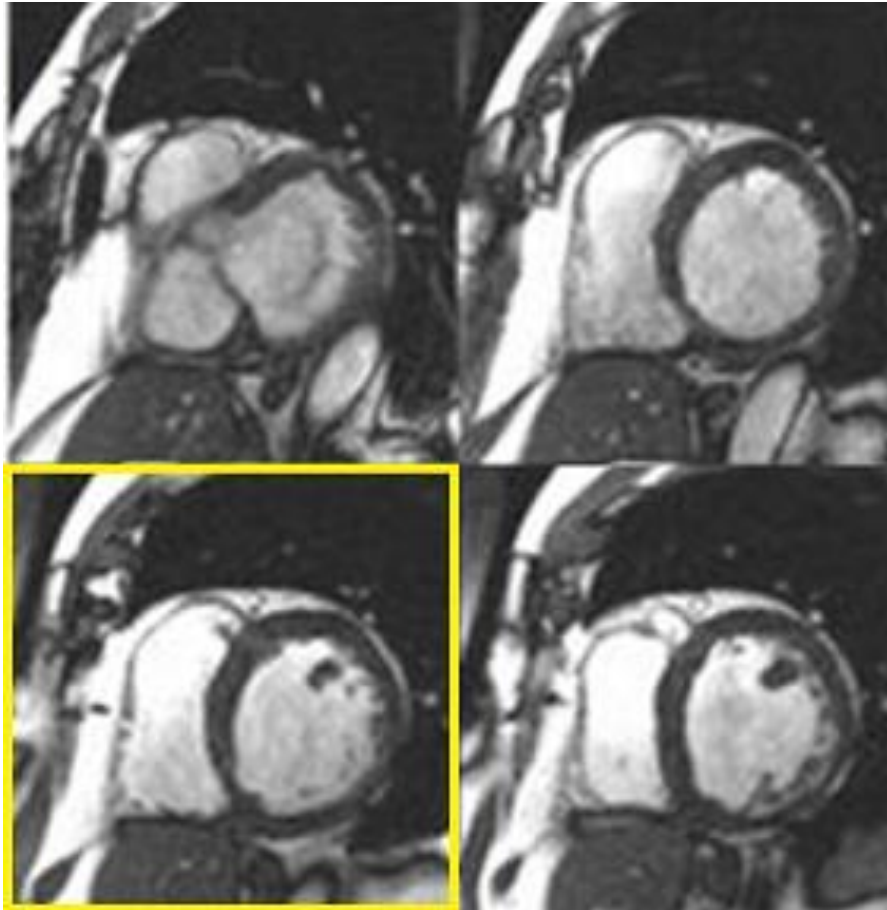
Additional pre-contrast sequence, if for Amyloid

Capture cardiac cycle

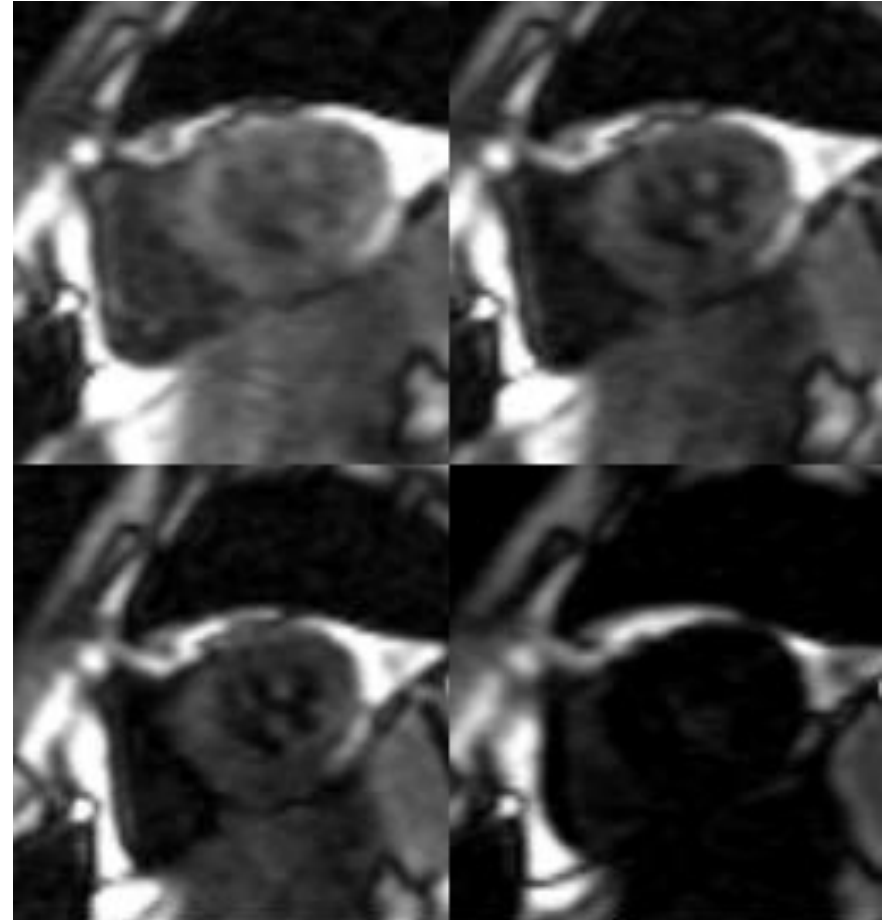
SAX CINE

3 slices

“Copy Image Position” to best mid-ventricle slice



TI Scout (pre-)



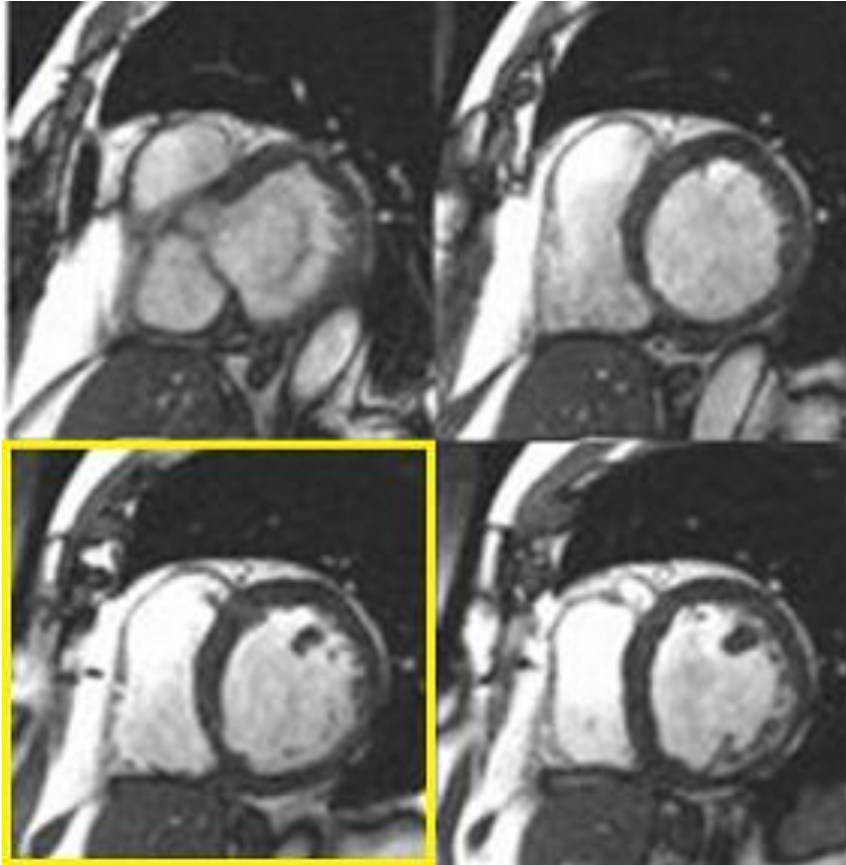
Rest Perfusion

Uncouple graphics before planning
Capture cardiac cycle

SAX CINE

3 slices

"Copy Image Position" to center slice in mid-ventricle

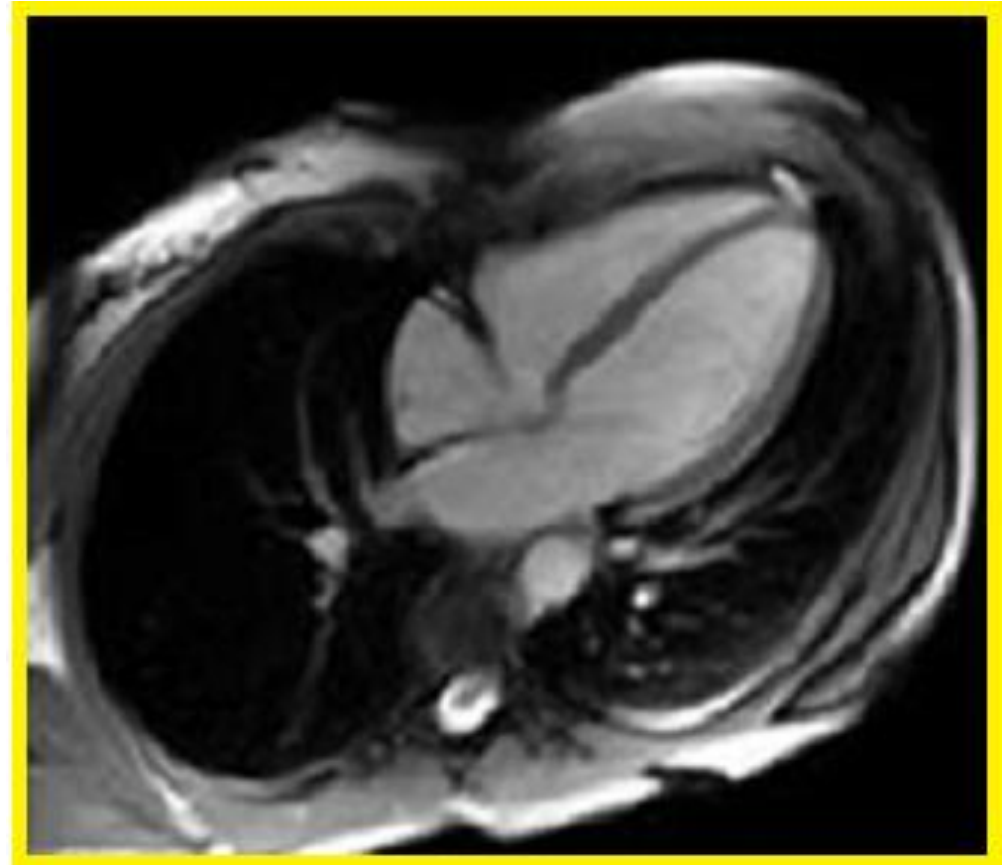


&

4CH CINE

1 slice

"Copy Image Position" to center slice in mid-ventricle



&

TI Scout (post)

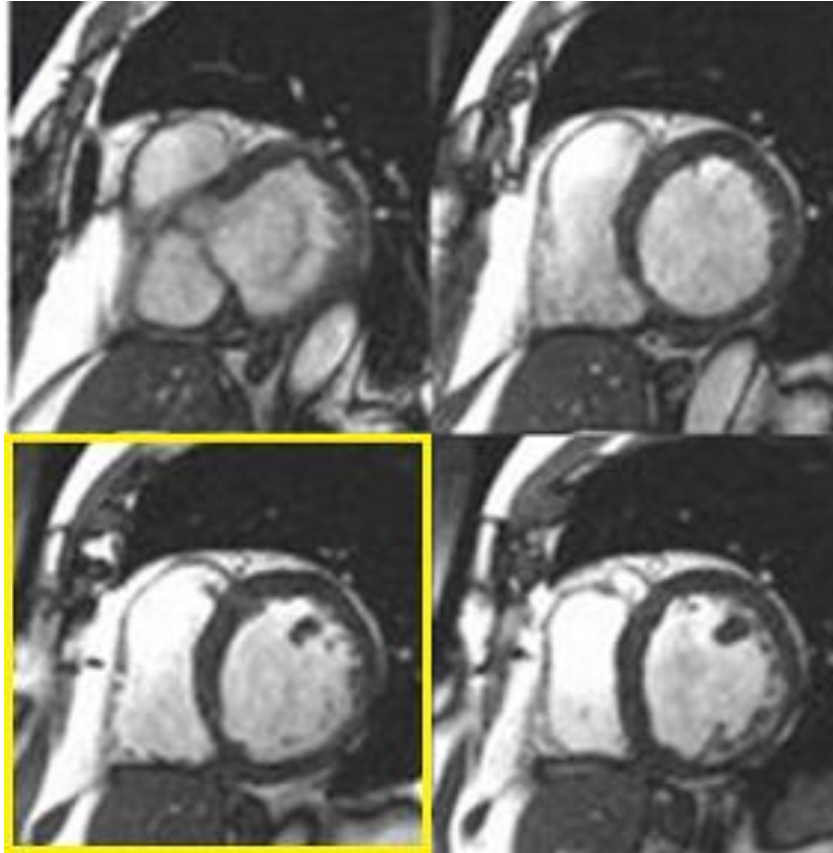
Capture cardiac cycle

Ideal TI image is typically within 2-3 slices of "sub" image

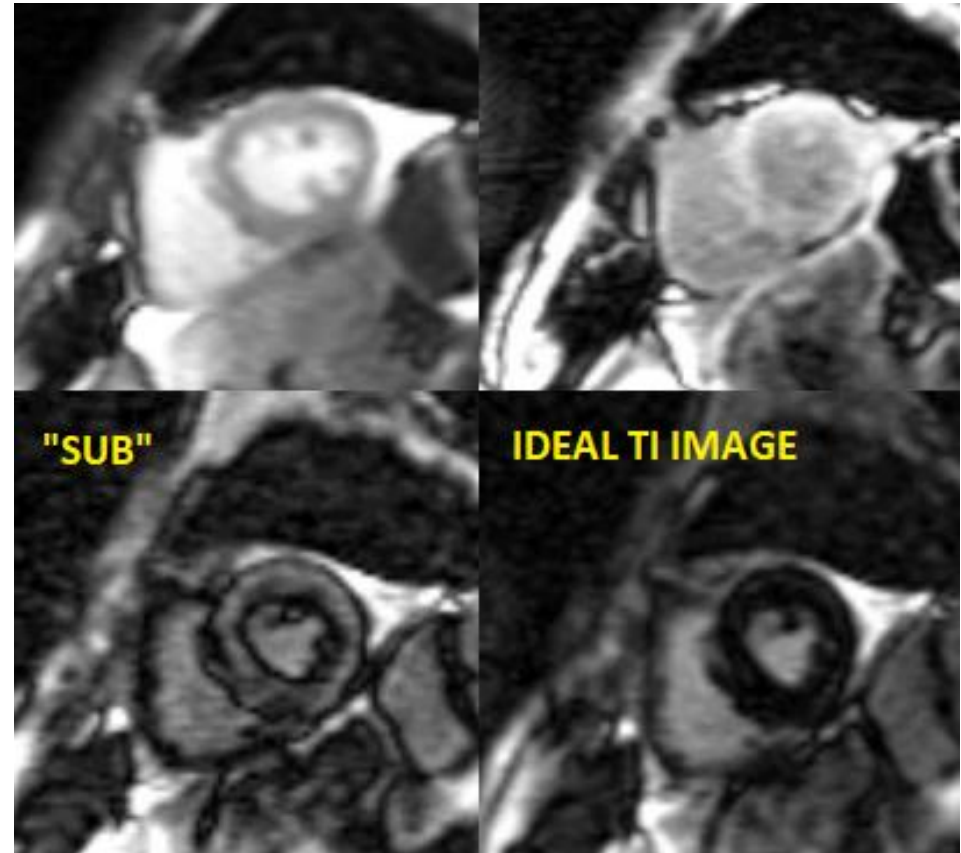
SAX CINE

3 slices

"Copy Image Position" to center slice in mid-ventricle



TI Scout (post)



SAX DE

Scan whole heart, extra slice past apex
Do not adjust concats

DE sequences

Large FOV.

No oversampling, due to long BH's.

Adjust Physio.

Adjust TI based on TI-Scout

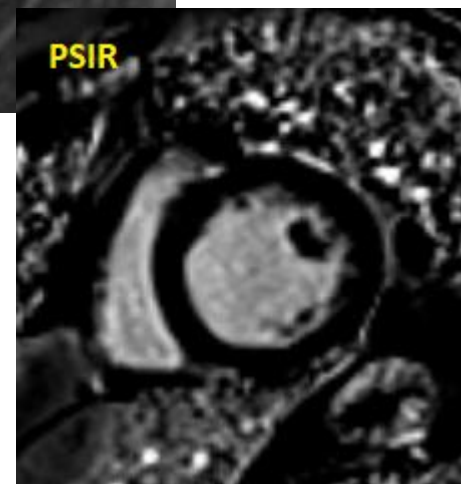
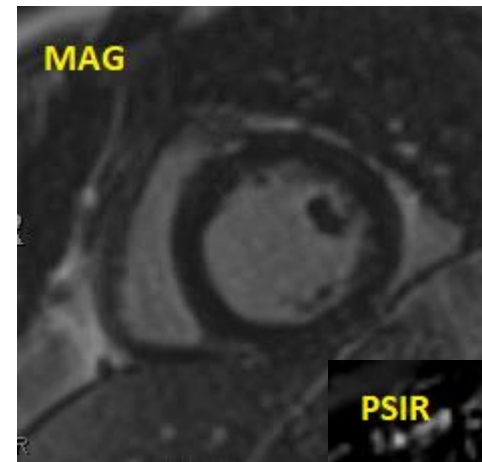
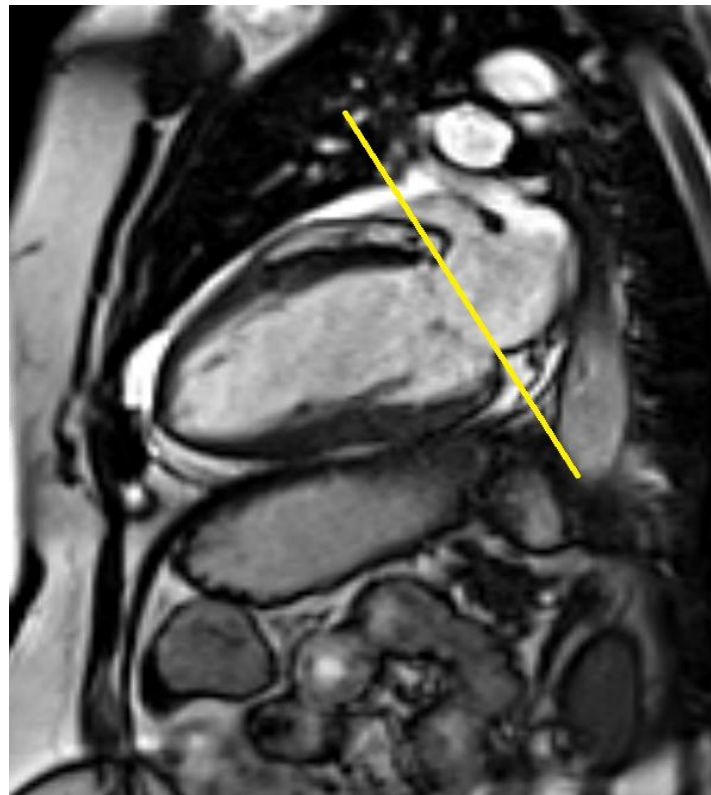
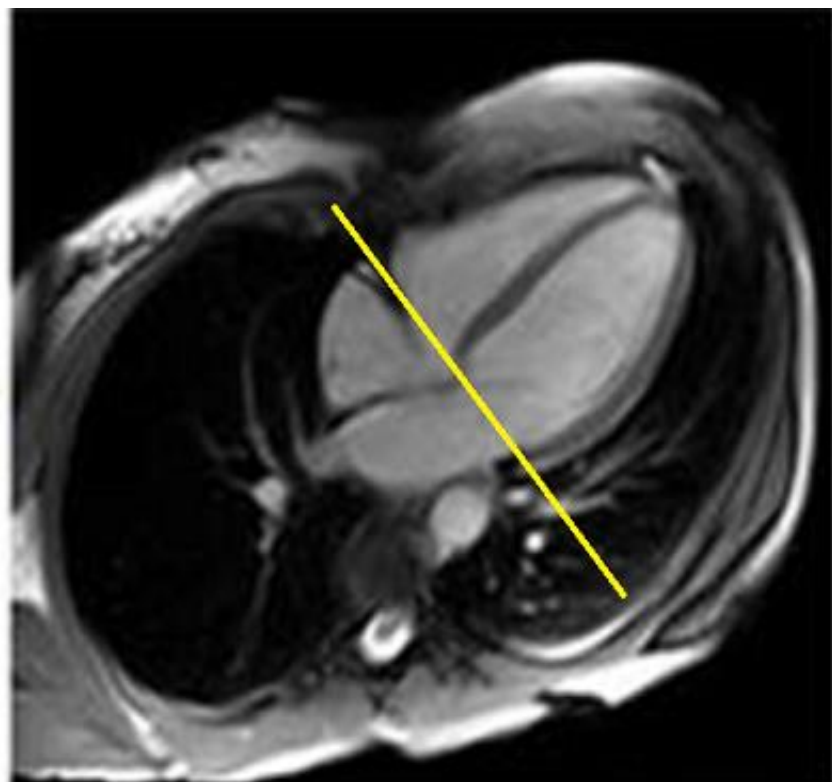
Scout 4CH

&

Scout 2CH



SAX DE



4CH DE

**Scan whole heart, if for Dr. Hoegmann-Savellano*
3 slices, otherwise.

DE sequences

Large FOV.

No oversampling, due to long BH's.

Adjust Physio.

Adjust TI based on TI-Scout

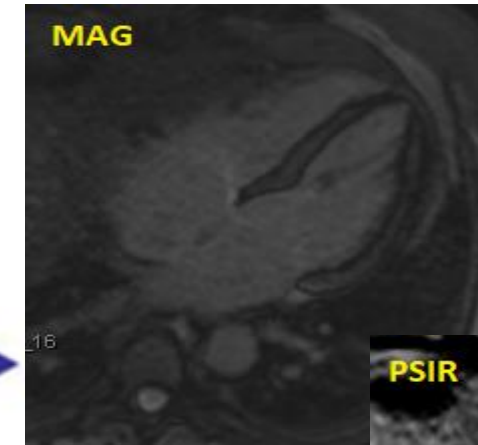
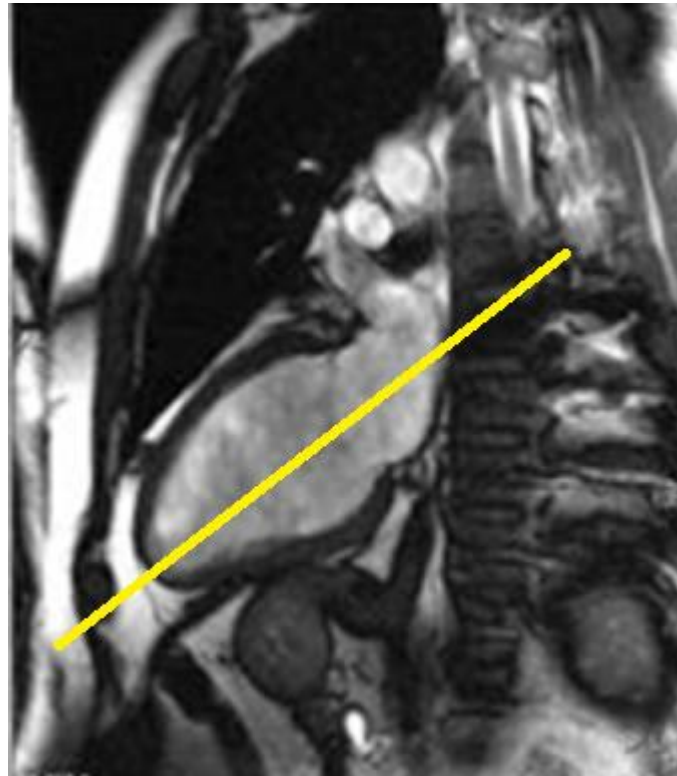
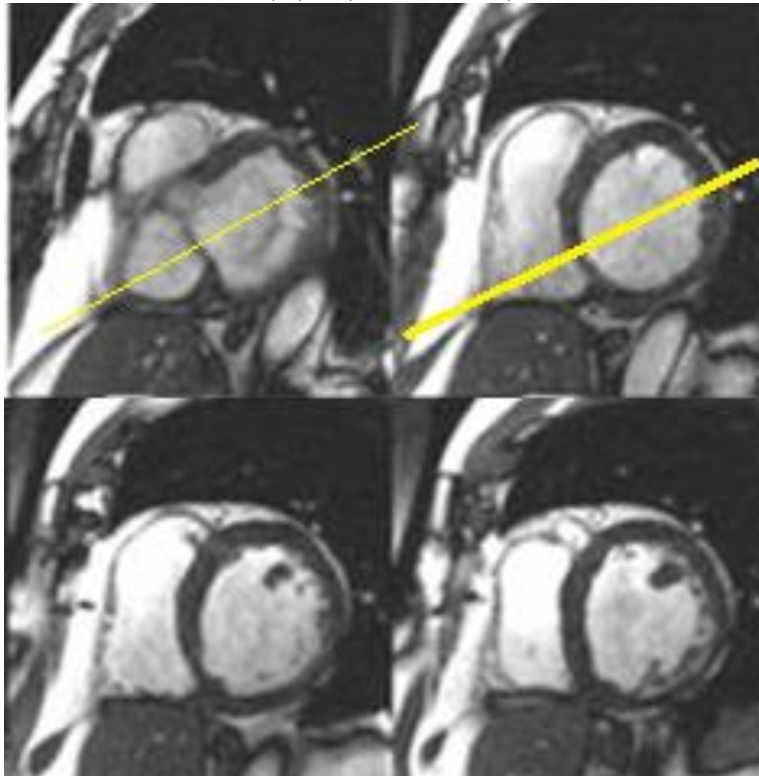
SAX CINE
(+perpendicular)

&

2CH CINE



4CH DE



2CH DE

3 slices.

DE sequences

Large FOV.

No oversampling, due to long BH's.

Adjust Physio.

Adjust TI based on TI-Scout

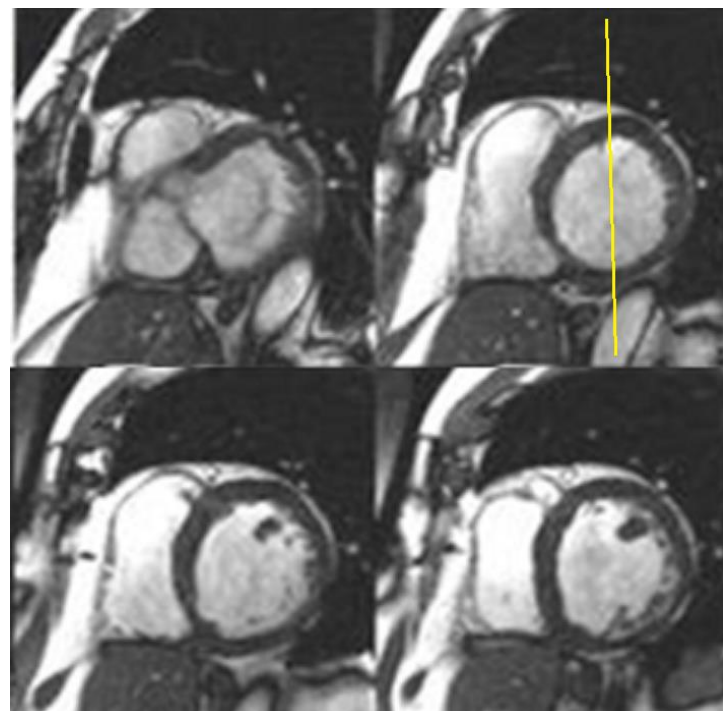
SAX CINE

&

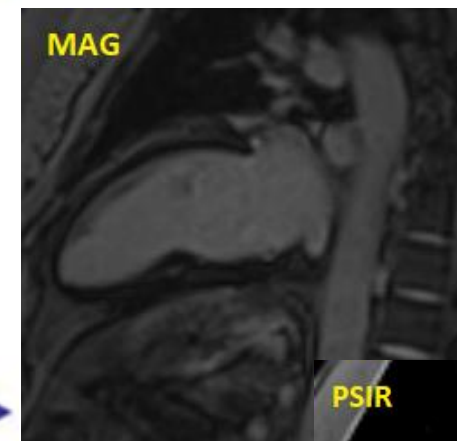
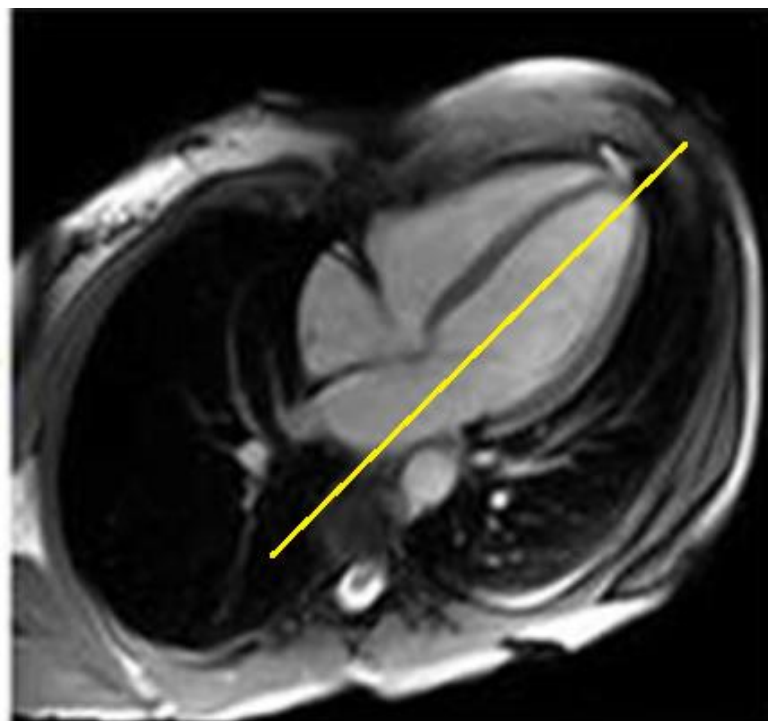
4CH CINE



2CH DE



&



3CH DE

3 slices.

DE sequences

Large FOV.

No oversampling, due to long BH's.

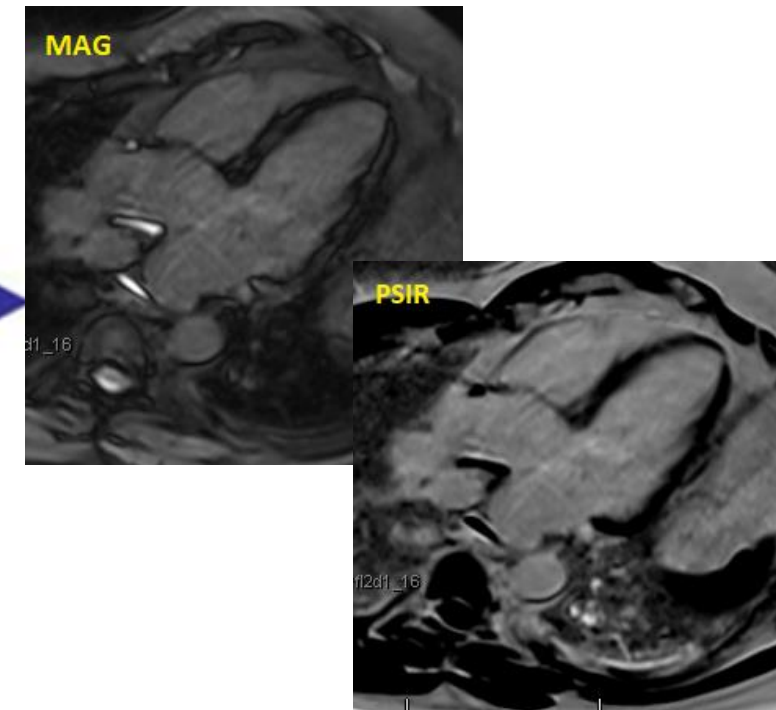
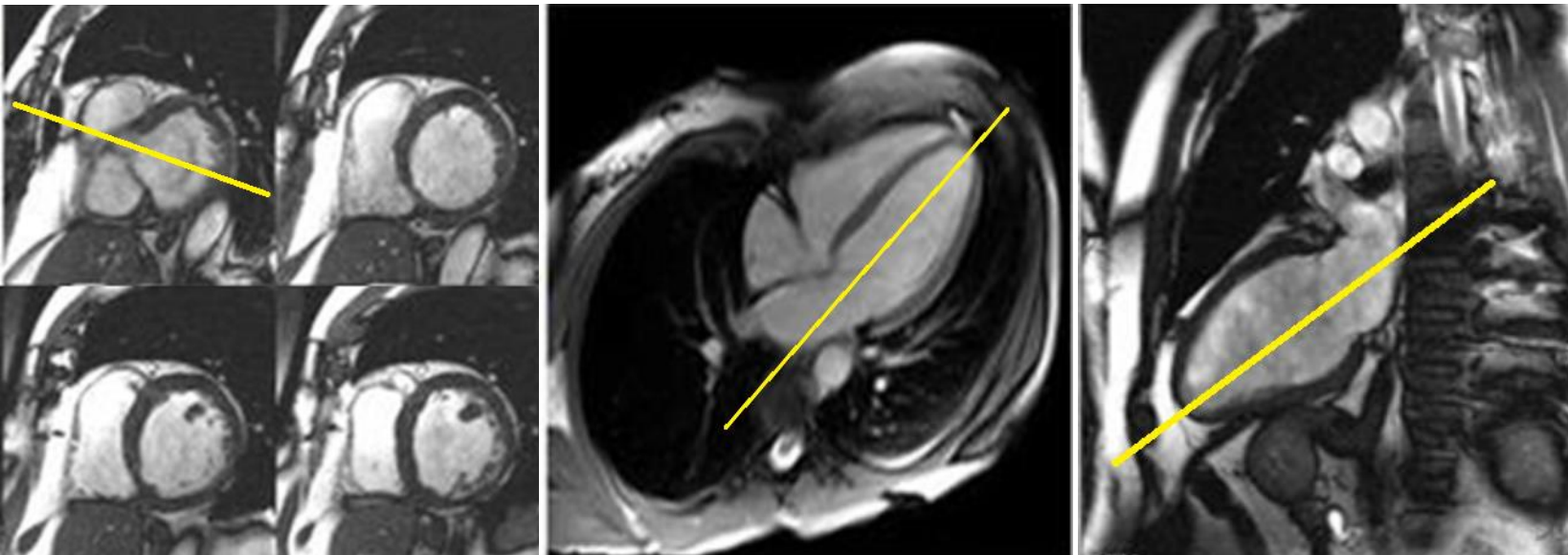
Adjust Physio.

Adjust TI based on TI-Scout

SAX CINE & 4CH CINE & 2CH CINE



3CH DE



Less often used sequences below.
(All are pre-contrast)

SAX LVOT CINE PC's

(aka or AORTIC VALVE)

**Optional pre-contrast sequences*

RAD to determine slice planning. Run sequence before REST PERFUSION PRE-.

Uses 2D CINE PC VENC sequence, will be run 4 separate times. Addend each sequence name to include plane name, which VENC was used, and if with or without Valsalva.

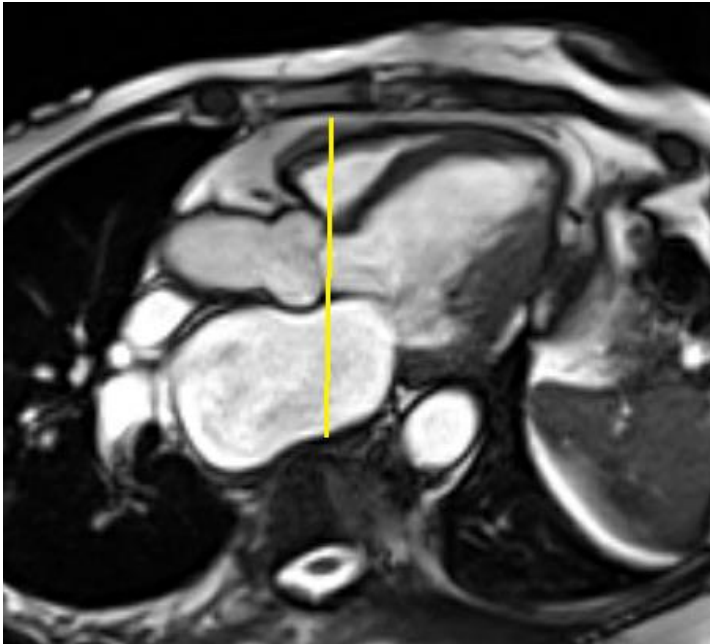
- Run the 250 VENC twice. Once without Valsalva. Once with Valsalva.
- Run the 500 VENC twice. Once without Valsalva. Once with Valsalva.

**Note: Depending on pt, RAD may request a different VENC instead of 500 VENC.*

Increase oversampling and phase FOV as needed
Manual Valsalva instructions as directed.

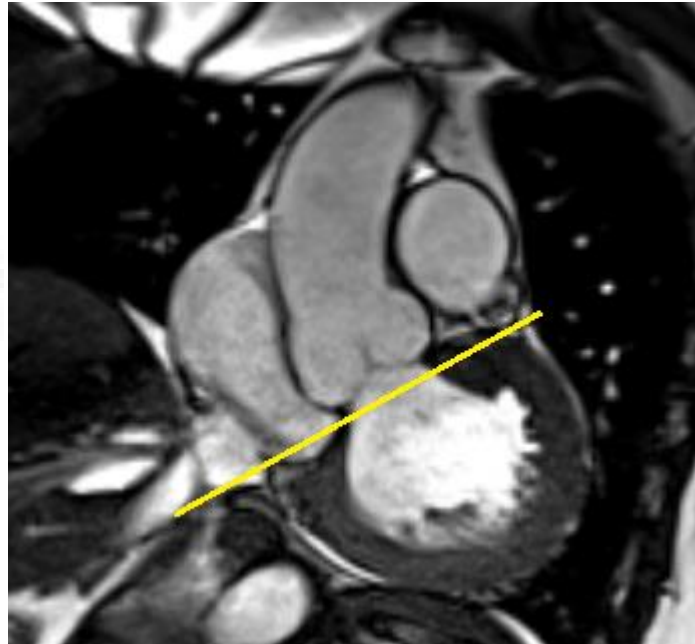
3CH CINE SSFP & LVOT CINE SSFP

RAD to determine slice planning on image

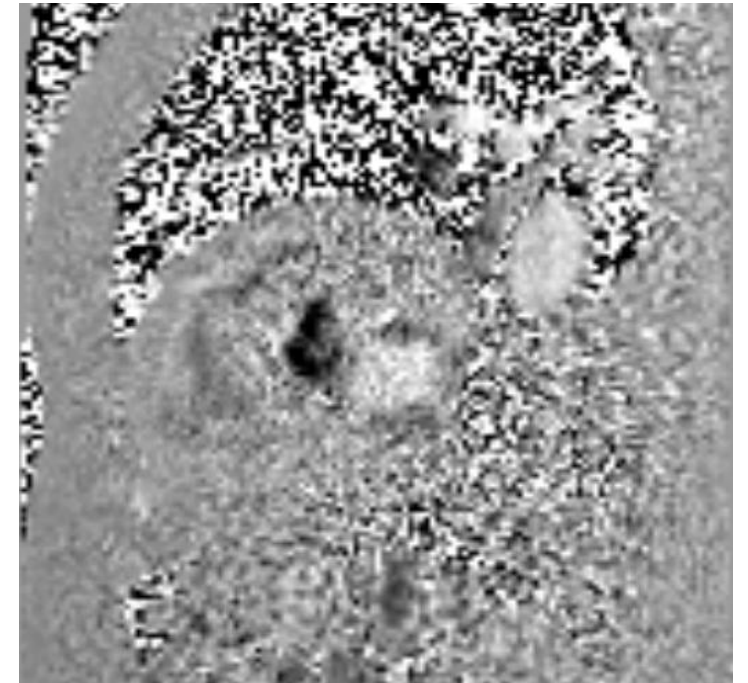


&

RAD to determine slice planning on image



→ SAX LVOT CINE PC



RVOT CINE

*Optional pre-contrast sequence

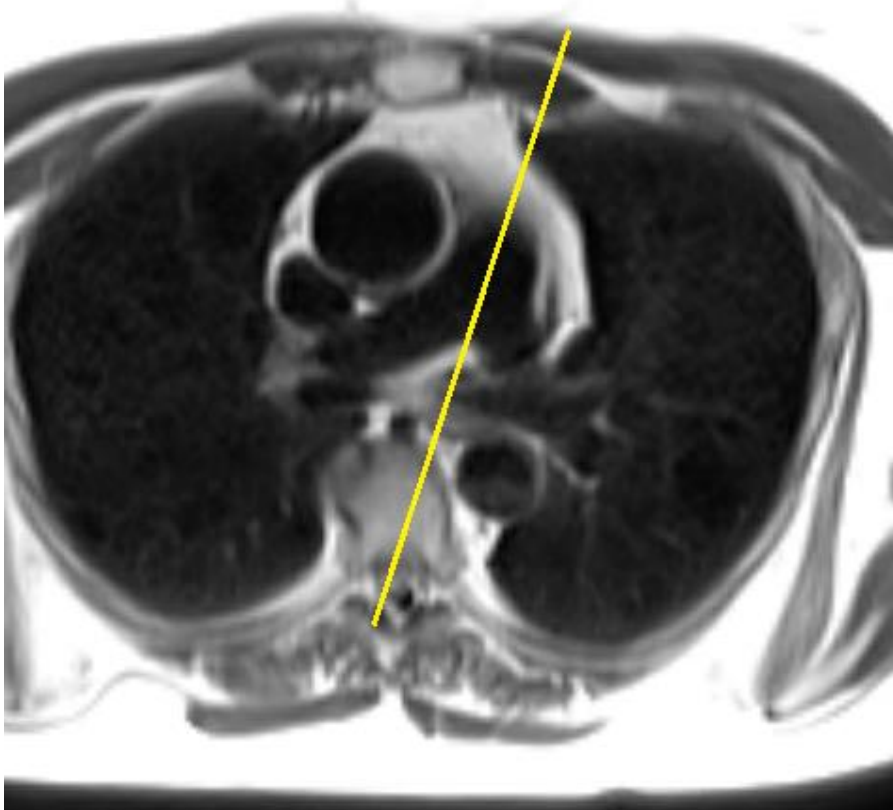
Bifurcation of main pulmonary trunk

CINE sequences

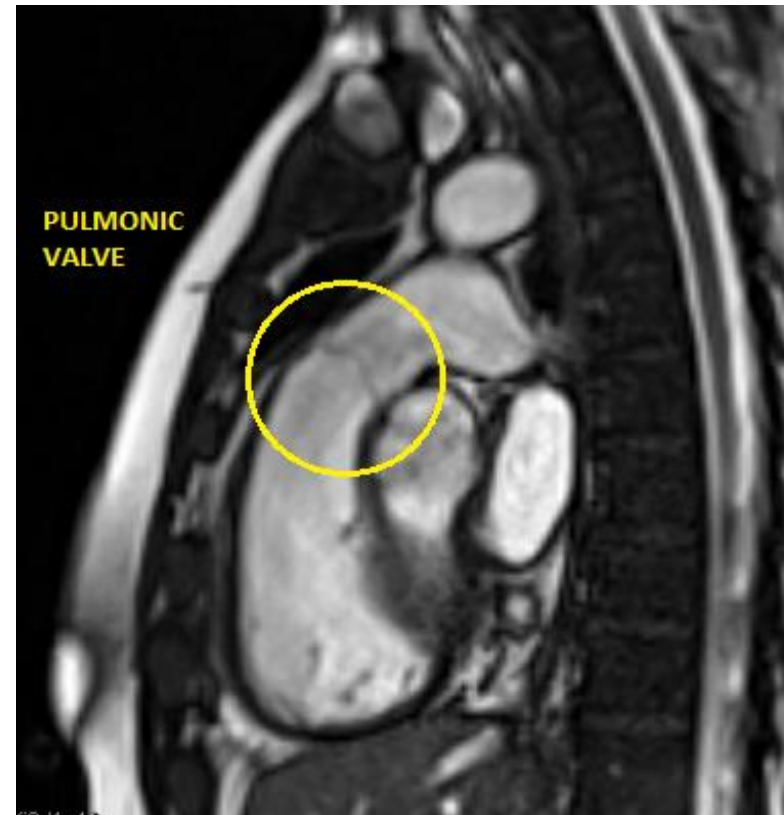
Adjust shim volume, focusing on aortic root.
Small FOV's.

Increase oversampling and phase FOV as needed
Fine-tune slice position planning
Check breath hold lengths

AXIAL HASTE
(+perpendicular)



RVOT



PULMONIC VALVE CINE

(aka SAX RVOT)

*Optional pre-contrast sequence

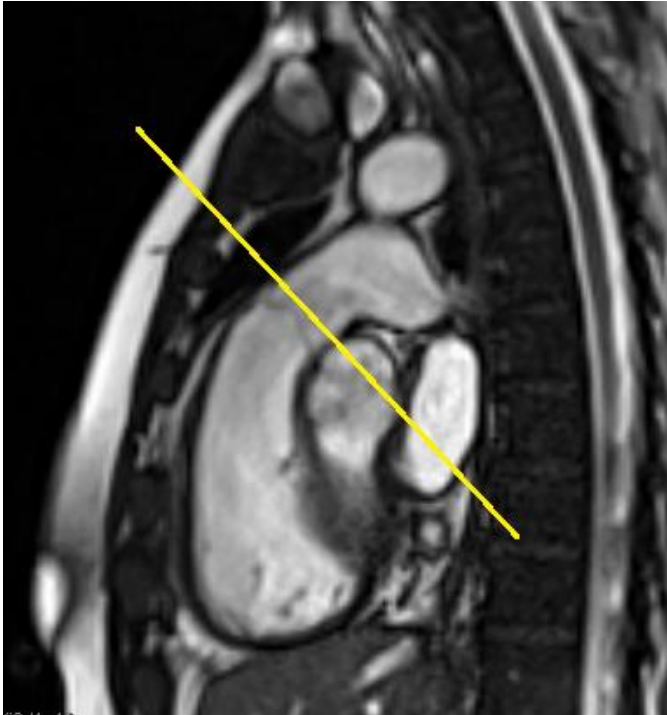
CINE sequences

Adjust shim volume, focusing on aortic root.
Small FOV's.

Increase oversampling and phase FOV as needed
Fine-tune slice position planning
Check breath hold lengths

RVOT

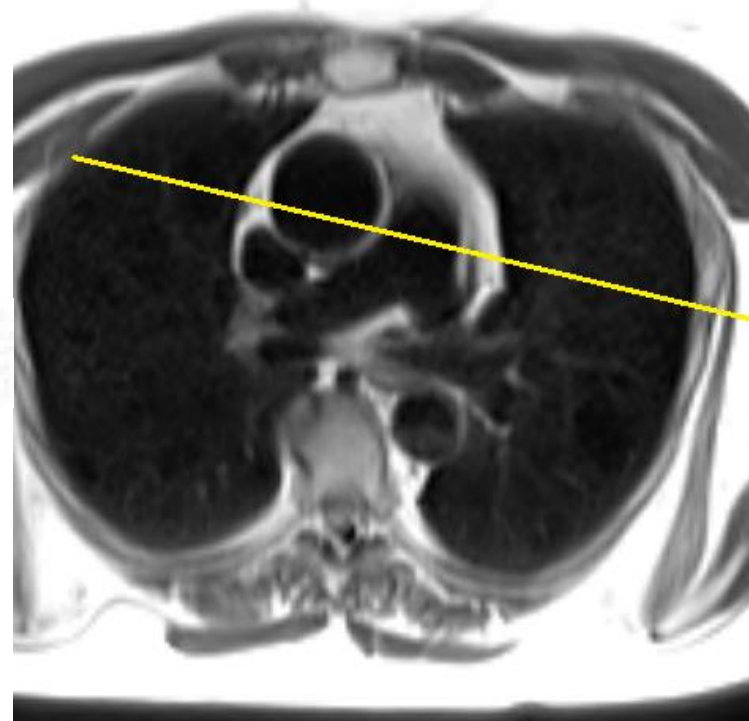
(+ perpendicular)



&

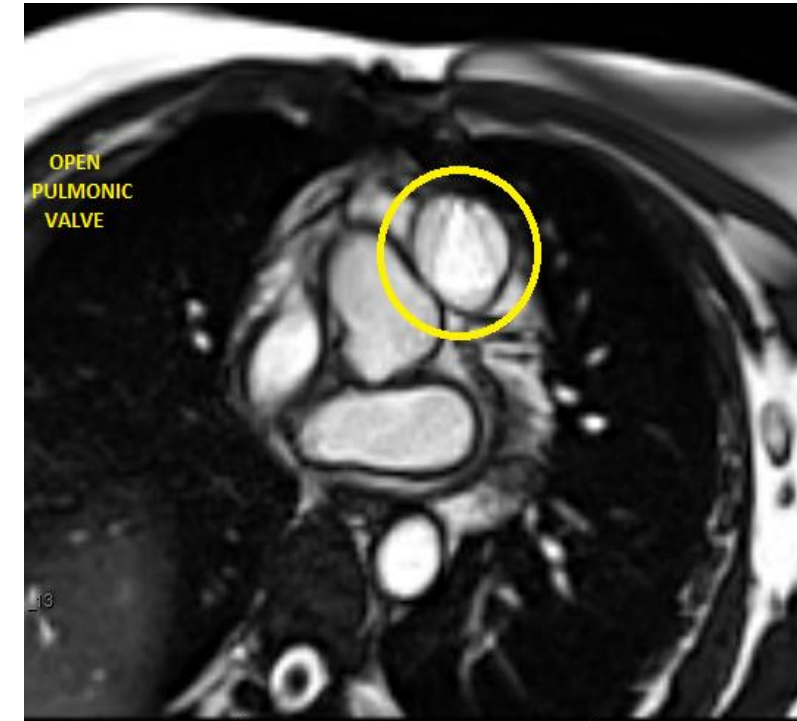
AXIAL HASTE

&



→

PULMONIC VALVE



SAX GRID TAG

*Optional pre-contrast sequence

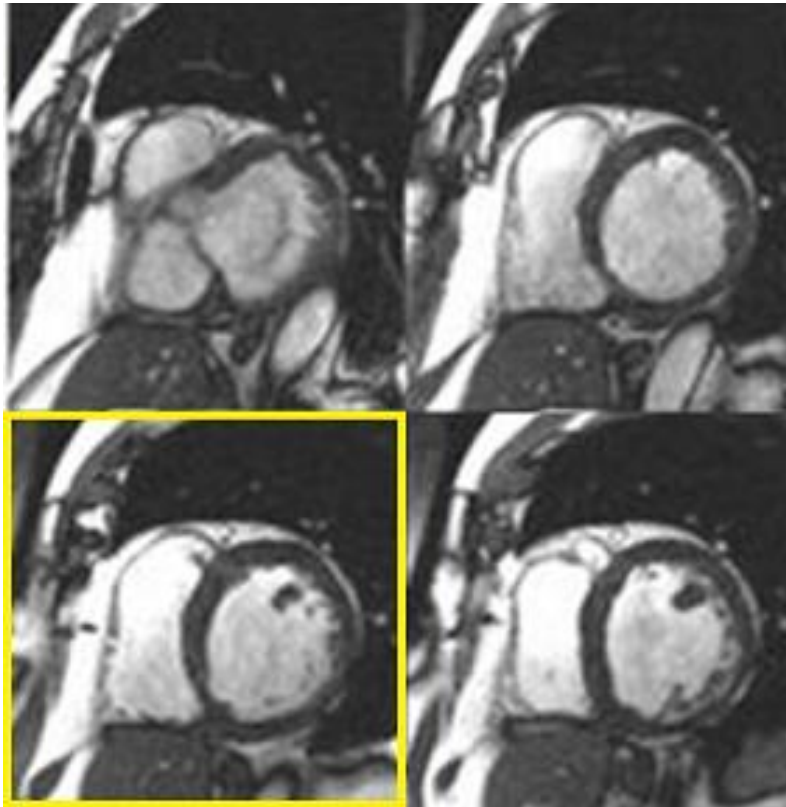
3 slices

GRID TAG sequences
Small FOV's, approx 320mm.
Capture cycle

SAX CINE

3 slices

"Copy Image Position" to center slice in mid-ventricle



SAX GRID TAG



LAX GRID TAG

**Optional pre-contrast sequence*

*Like the Rest Perfusion, images are planned for two different planes

1 slice, best demonstrating 4CH

1 slice, best demonstrating 2CH

GRID TAG sequences
Small FOV's, approx 320mm.
Capture cycle

2CH CINE

&

4CH CINE



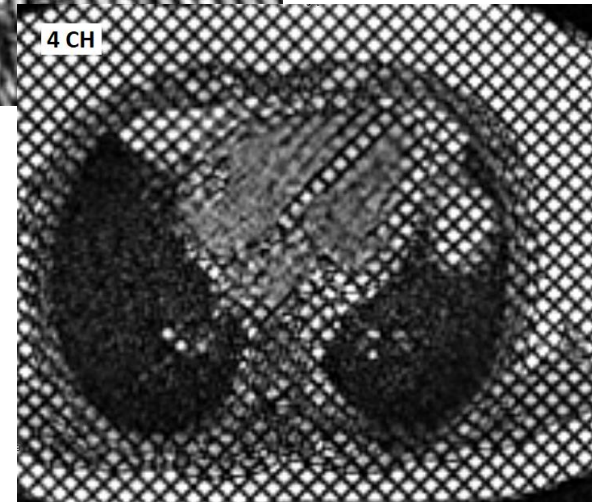
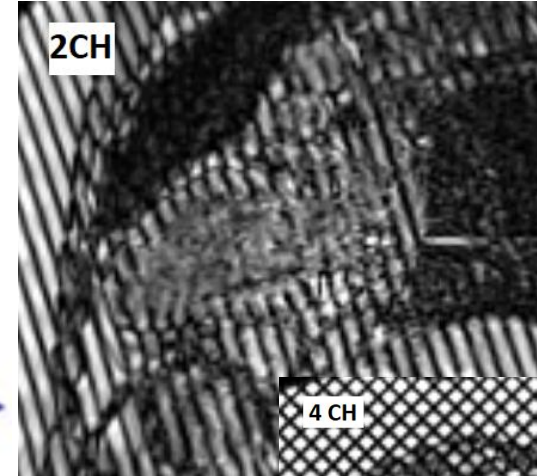
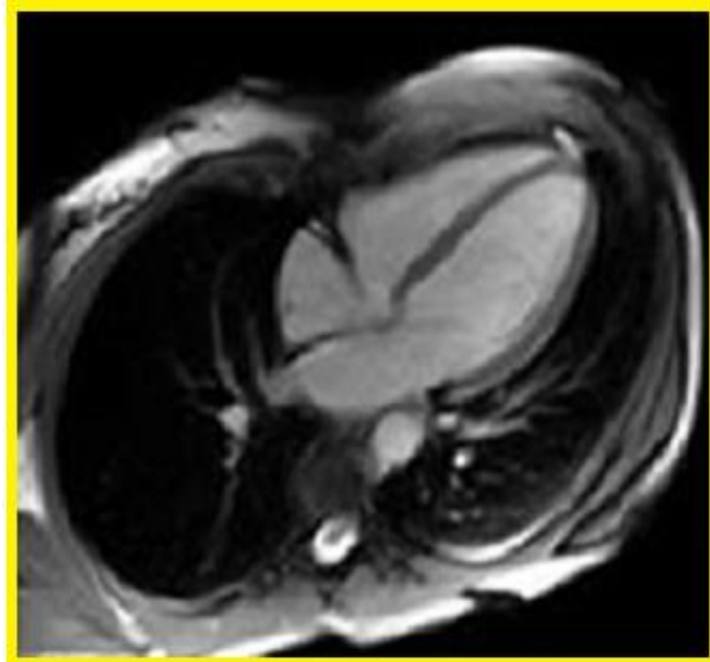
LAX GRID TAG

"Copy Image Position" to center slice in mid-ventricle

"Copy Image Position" to center slice in mid-ventricle



&



SAX cine realtime tf2d 8sl trig TPAT

*Optional pre-contrast sequence

Addend sequence name to add plane.

1 slice, best demonstrating SAX

Free Breathing Cine sequences

Small FOV's, approx 320mm.

Maximize phases (usually 511)

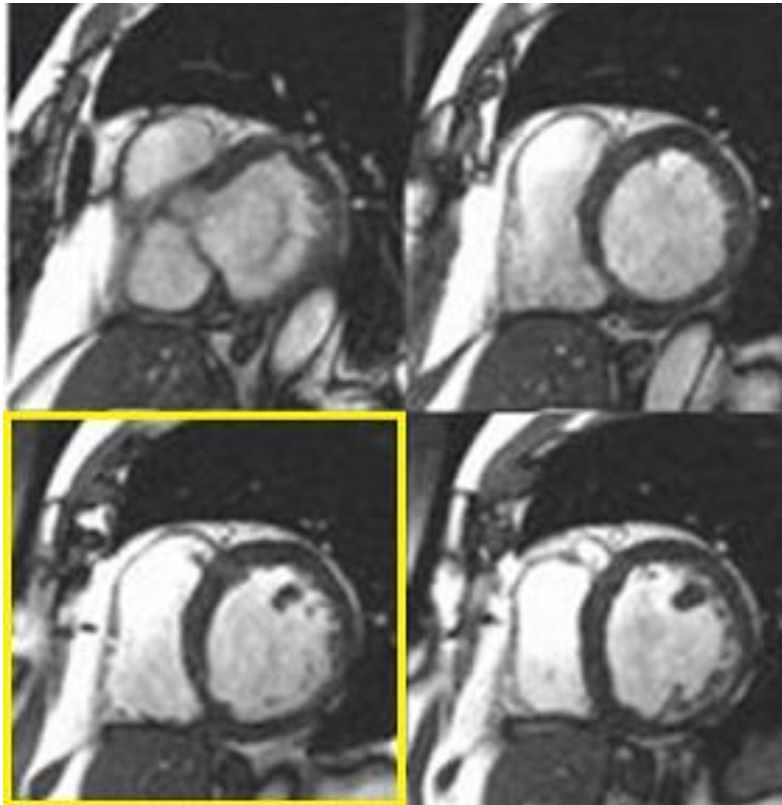
Do NOT capture cycle

Approx 10-15 sec

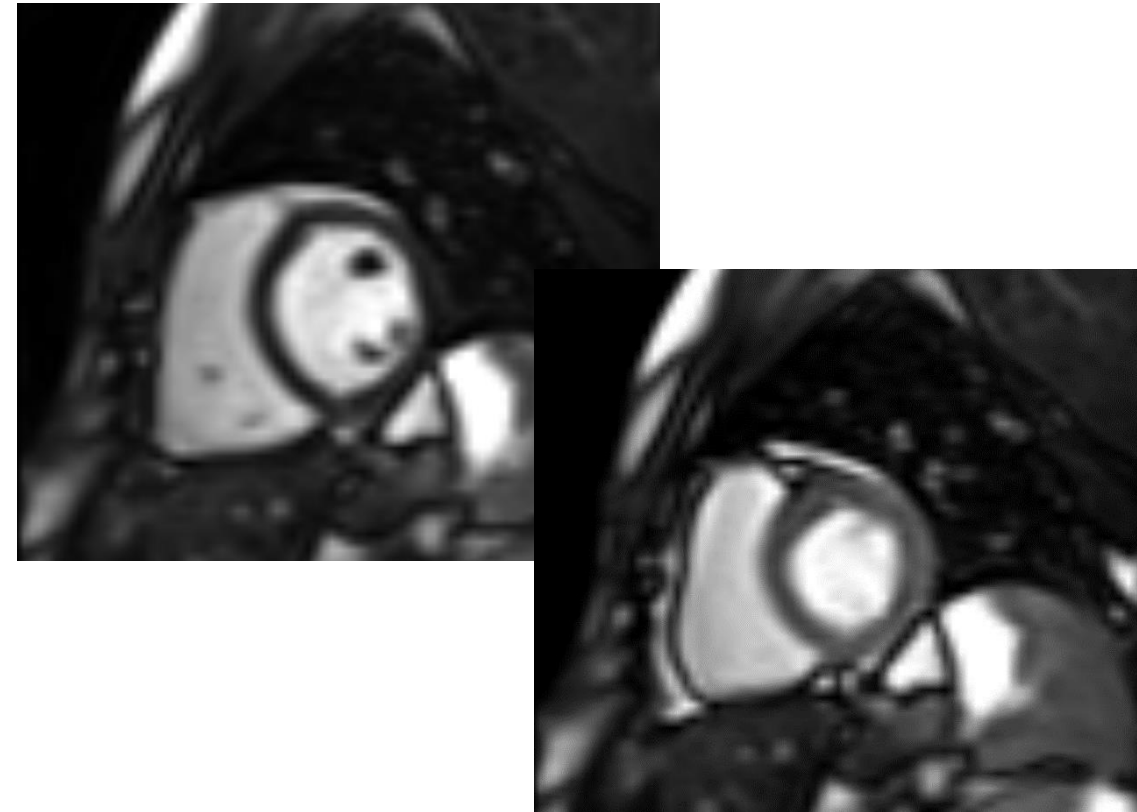
Instruct pt to use exaggerated breaths

SAX CINE

"Copy Image Position" to center slice in mid-ventricle



SAX cine_realtime



LAX cine realtime tf2d 8sl trig TPAT

*Optional pre-contrast sequence

*Like the Rest Perfusion, images are planned for two different planes

Addend sequence name to add plane.

1 slice, best demonstrating 2CH

1 slice, best demonstrating 4CH

Free Breathing Cine sequences

Small FOV's, approx 320mm.

Maximize phases (usually 511)

Do NOT capture cycle

Approx 10-15 sec

Instruct pt to use exaggerated breaths

2CH CINE & 4CH CINE → LAX cine_realtime

"Copy Image Position" to center slice in mid-ventricle

"Copy Image Position" to center slice in mid-ventricle



&

