

# UWMC Echo Lab Rotation

## Echo 1

Overview

Expectations

# Rotation Components

- A. Learn to read transthoracic echocardiograms (the UW way)
  - A. Pre-read TTEs and review with feedback from attendings
  - B. Learn the principles and practice of transthoracic echocardiography
- B. TTE simulator***
- C. Scan patients with sonographers**
- D. Supervise and pre-read stress tests and review with feedback from attendings
- E. Provide feedback to referring clinicians
- F. Be available to sonographer and nursing staff for for clinical questions/pt management (be a doctor)
- G. Learn how to be pushy: Ultrasound Enhancing Agent pushes

# Rotation Components

## H. Self-directed learning

- A. Echo Guidelines/posters
- B. Echo Texts (Otto, Otto, Otto)
- C. Online learning

## I. Record interesting cases for case conference: “The Online Book”

**Specific  
Responsibilities/Expectations**

# Daily Timeline

**<7:25am: check in with nurses or sonographers prior to morning conferences**

**→ you may need to come in earlier to consent patients (e.g. treadmill stress test)**

**→ If scanning for ½ day or full day, identify which sonographer you are going to work with at this time.**

**Come back after conference**

**11:55am: leave for noon conference**

**1:15pm: return from conference (allow for QA after conference)**

**5:30-6pm: go home**



# Daily Timeline

## A. Caveats: Go home Later

- Assist with stat TTE
- Clinically unstable patients in echo lab

## B. Caveats: Go home Earlier

- “Light day”
- Research or other meetings (with permission\*--bribes accepted)
- Personal/family emergencies
- Educational sessions
- Clinic: call/come back if <5:30pm
- On-call and need to take sign out



\*primary reader

# Pretty Please:

- If a vacation is scheduled during a month in the Echo lab, the front desk must be told prior to the start of the rotation to adjust for scheduling if needed.
- ***In addition, tell the front desk and lead sonographer in advance if you will not be available in the lab (continuity clinic, vacation, meetings, etc).***



# What do I do?

## TTE

1. Simulator Training
2. Scan (goal 20-40/month)
3. Focus on simple patients (pre/during chemo (SCCA), pre renal/liver transplant)
4. Pre-read studies (work up to goal of 50/month)
5. (Rarely) contrast pushing and (commonly) form signing
6. Resource for nurses, EKG techs, sonographers

## Exercise, Bicycle and Dobutamine Stress tests

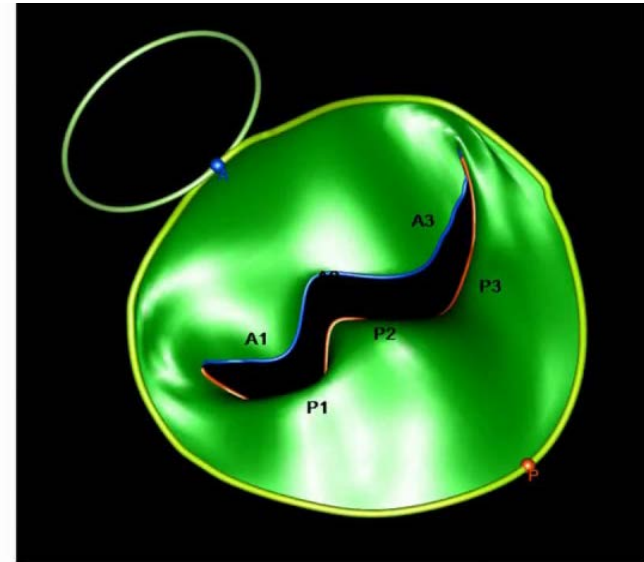
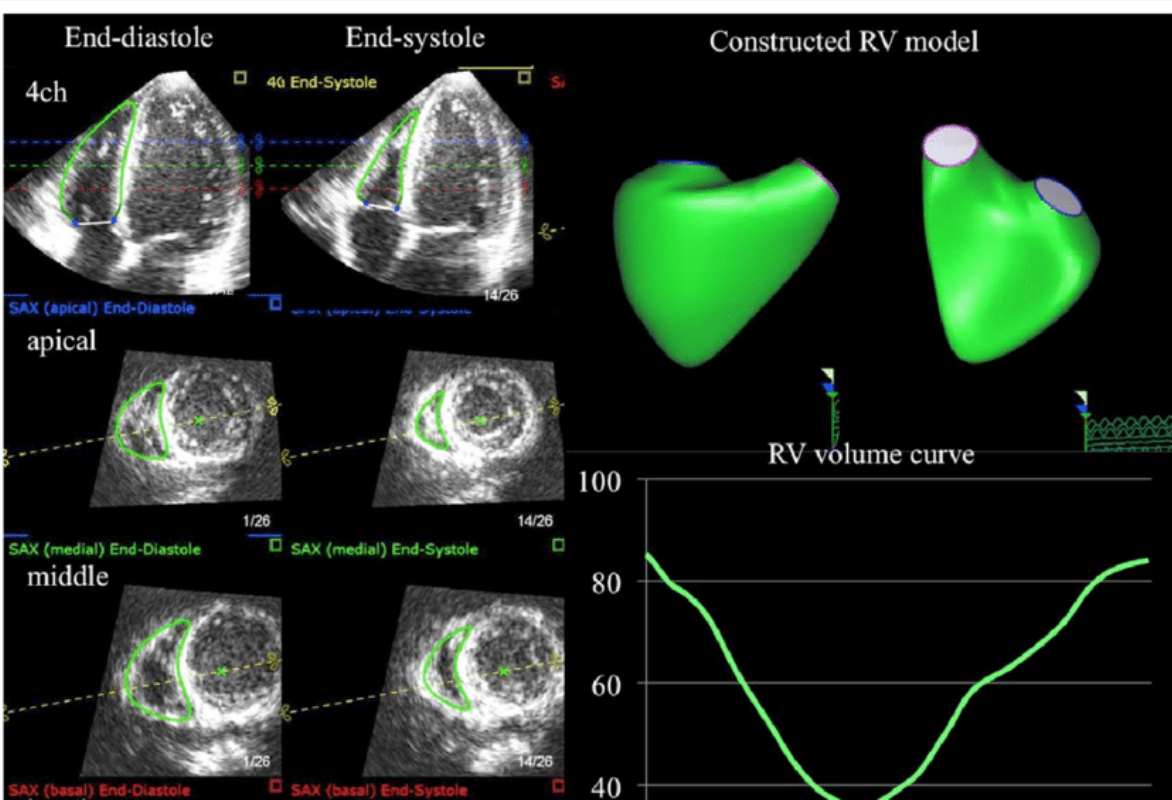
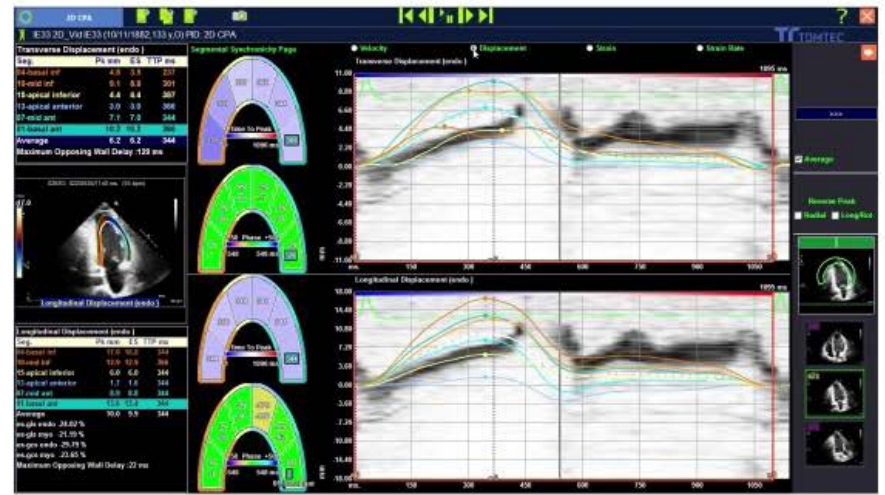
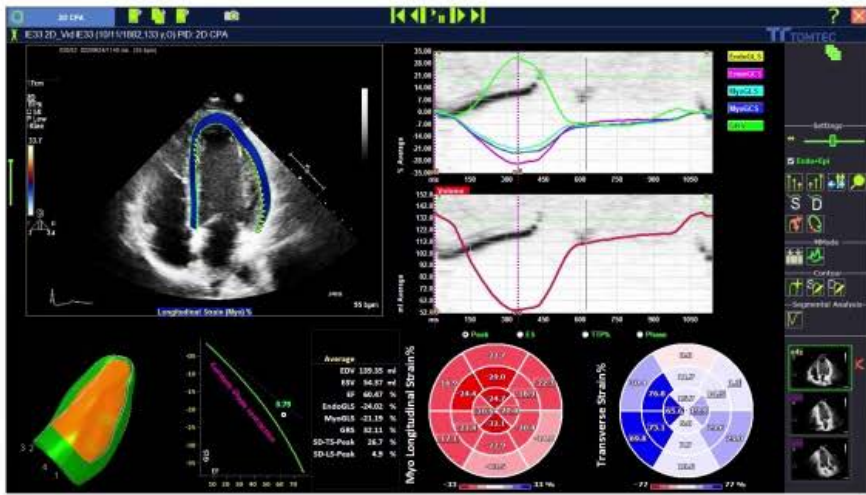
1. Supervise Dobutamine Stress Echos
  - A. FAMILIARIZE SELF WITH CONSENT FORM BEFORE TALKING TO PATIENT
  - B. CHECK IN WITH STRESS NURSES PRIOR TO DEPARTING FOR CONFERENCE
  - C. MAKE SURE:
    1. NPO for 6 hours
    2. Beta blocker (or other rate agent) held
  - D. CAUTION: Arrhythmia
2. Back-up for nurses, EKG Techs and Sonographers
3. Pre-read stress tests (EKG and images)



# TEEs: Who Does?

If TEE 2<sup>nd</sup> year or 3<sup>rd</sup> year are not available:

**→ Other second or third year fellows on consult rotations (consult, EP) or on clinical services which ordered the TEE will have the opportunity to do these special procedures if available**



# Education



# Echo on Clinical Services

First year fellows who have performed >40 transthoracic echocardiograms may use the CX50 or Lumify devices on clinical services. They are advised to record images for correlation with full feature echocardiography and review with an echo attending.

# Conferences

- **Imaging conference** Thursdays, 8-9am
  - Coordinated by 3<sup>rd</sup> year fellows and advanced imaging fellow
    - *Topical Cases* (and mini review)
    - Imaging lectures
    - Non echo case review
- **Thursday MRI and CT conference, 12-1pm Chest radiology reading room**
- **Wednesday morning Cards/CTS (please ask for help in getting best images to show)**
- **Wednesday Research**
- **Friday didactics**
- **Sonographer “Lunch and Learns”**
- **Echo Research Conferences (monthly)**

# Educational Scanning Requirements

- \*Complete Simulator Training Module (TTE and TEE)
- \*(Scanning and Pizza Party!: late July, COVID permitting)
- \*Comprehensive TTE using HMC or UWMC protocol twice per year
  - Recommended: CX50 machine (HMC and UWMC CCU)
  - Inpatients (with permission)
  - Send to Xcelera
  - Do prelim read
  - Complete by January 1, 2020 and June 30, 2020
    - Images adjudicated by sonographer, formal feedback
  - When completed, email mrn and date to [echen@uw.edu](mailto:echen@uw.edu)





# Scanning with sonographers

- Focused and topical (e.g. LV, RV, echo swan, AV/MV/TV)
- DSE
- Portables

## Echo Imaging Focus Areas

### Aortic Valve

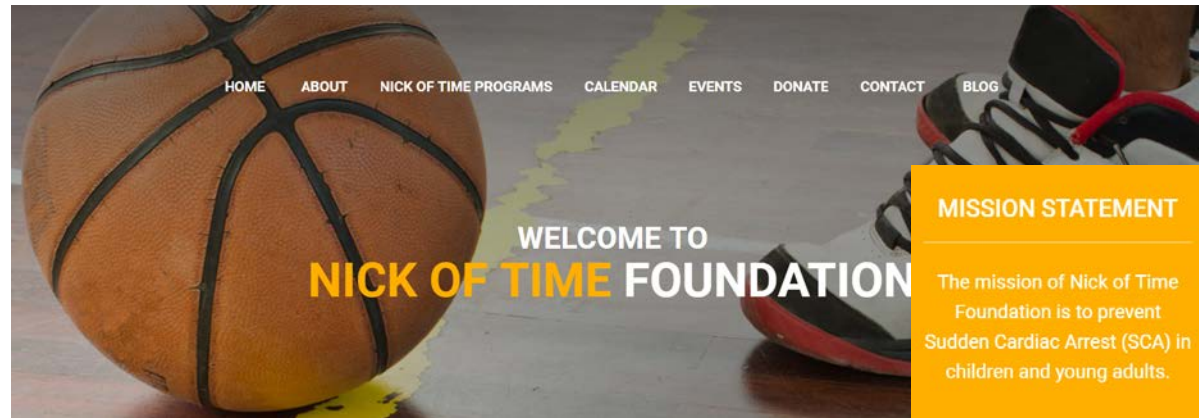
1. PLAX/SAX 2D
2. PLAX/SAX Color, AR vena contracta
3. LVOT diameter
4. LVOT PW A5c, apical long
5. AV CW gradients A5c, apical long
6. AV CW regurgitation A5c, apical long
7. Pedoff AV CW A5c, apical long, RSB
8. PWD for flow reversal in AR: DA and AA

### Mitral Valve

1. PLAX/SAX 2D
2. PLAX/SAX Color
3. MR vena contracta
4. 3D MV PLAX for MVA planimetry
5. A4c, A2c, apical long 2D
6. A4c, A2c, apical long color
7. A4c, A2c or apical long PISA
8. A4c, A2c or apical long CW for MR peak and VTI
9. A4c, A2c or apical long CW for MV mean gradient, Pressure 1/2 time
10. A4c, A2c or apical long PWD for MV mean gradient, Pressure 1/2 time
11. PWD pulmonary veins

# Scanning with Sonographers

\*Nick of Time



\*Saturday SCCA patients

Not on call



Fred Hutch · Seattle Children's · UW Medicine

# RECORD YOUR SCANS AND READS

## Official COCATS Requirements

Level II: 150 TTE scans

**Table 1** Summary of Training Requirements for Echocardiography

Level	Duration of Training (Months)	Cumulative Duration of Training (Months)	Minimal No. of TTE Exams Performed	Minimal No. of TTE Exams Interpreted	TEE and Special Procedures
1	3	3	75	150	Yes*
2	3	6	150 (75 Add'l)	300 (150 Add'l)	Yes†
3	6	12	300 (150 Add'l)	750 (450 Add'l)	Yes

\*Exposure to TEE and other special procedures. †Completion of Level 2 and additional special training needed to achieve full competence in TEE and other special procedures.

Add'l – additional; TEE – transesophageal echocardiography; TTE – transthoracic echocardiography.

Level II: 300 TTE reads

**\*\*\*\*Can use reading programs to keep a backup record, but you need to keep your own**

# RECORD YOUR SCANS AND READS

TEE: 50

Stresses: 100

Don't let stresses "go to waste"!

**\*\*\*\*Can use reading programs to keep a backup record, but you need to keep your own**

# Other Educational Endeavors...

- Echo Jeopardy: Fellows v. Sonographers



On-call Echos

# Procedure Fellow Labor

It's Simple, Really:

\* Assess the situation, triage, and call the sonographer

\* General rule: Don't Argue,

A. Best for patient care

*"The best thing about an [on-call echo] is the cardiologist attached to one end of the probe"*

*--F. Silvestry, MD*

B. It takes longer to argue than to do the study

C. They (usually) are not out to get you

D. **Any issues: call attending, let her/him do the arguing**

*E. Please do not make the sonographer wait around for the patient.*



# How much is enough?

- **Official Policy**: comprehensive enough to answer clinical question
- *Occasional Reality*: Be reasonable about limited images. TEE if necessary for bad windows.



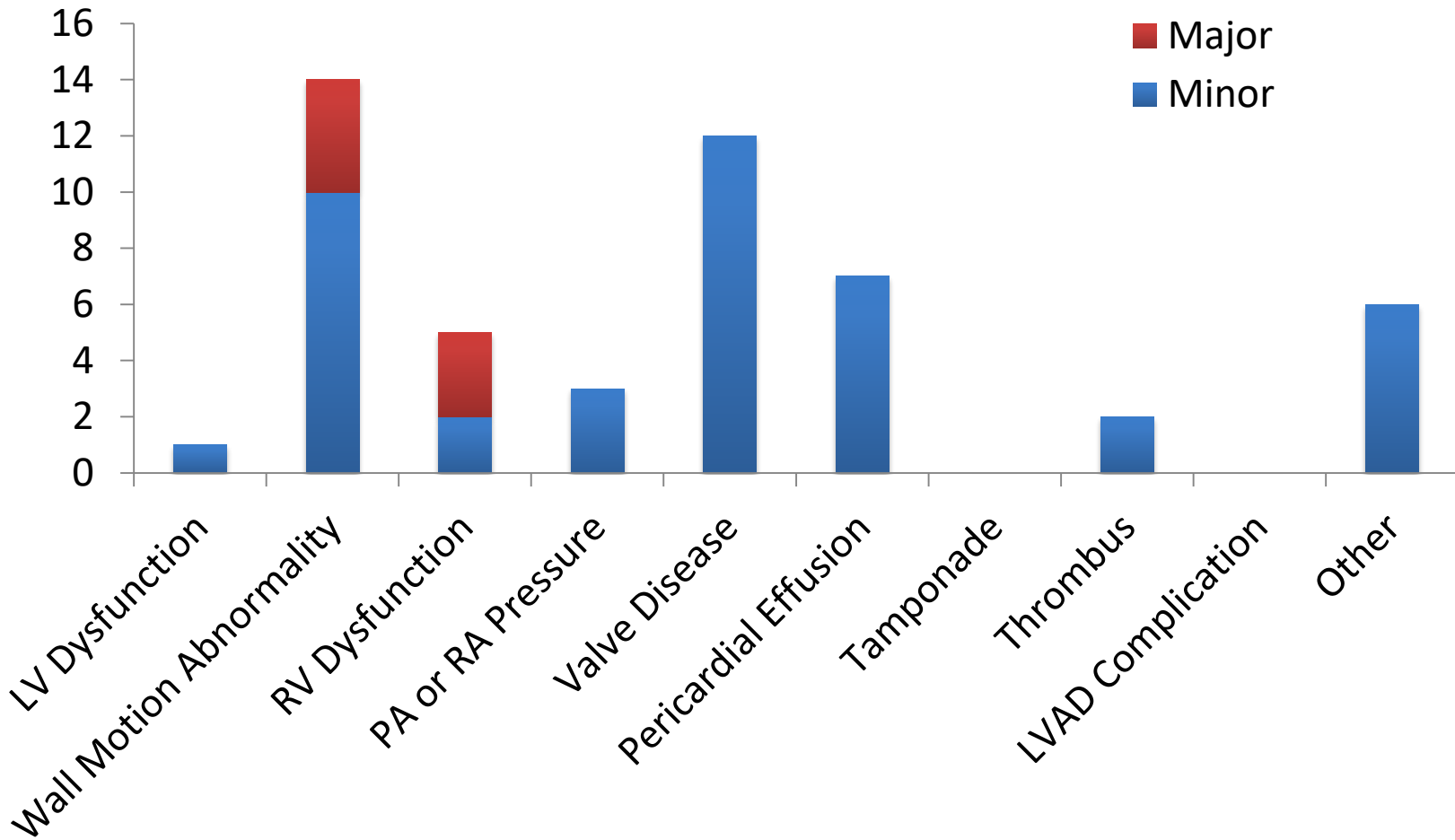
# Pre-reading Reports

- **Official Policy**: Fellows pre-read all on-call studies

→ If you need attending backup, use it!



# Pre-reading Reports



# On-call Echo Grades

- A+** Detailed preliminary report in system
- B** OK preliminary report in system
- C** Description of only obvious findings
- D** Mostly erroneous description of clinically insignificant findings
- F** Next day, attending finds random 5 clip study with un-interpretable images, no prelim report, and (interim) Chair of Medicine is calling down to ask why an official report is not in the system

# Research Opportunities

- **Novel Imaging Techniques/modalities**
  - 3D
  - Strain
  - Contrast
  - Focused Cardiac Ultrasound
  - Multimodality
- **Disease Specific Echocardiography**
  - Systolic Heart failure
  - VADs
  - Diastolic Heart failure
  - Ventricular-vascular Coupling
  - EP and echo
  - Valve interventions
  - Cardio-oncology
  - CAD
  - Developing world (Nepal)
- **Appropriate Use/Indications**
- **Echocardiographic lab procedures/protocols**

# Cardiology Imaging Fellowship

Purpose: echo lab directors and academic cardiovascular imagers

**Echo**: strain, 3D, more TEEs, industry relations, low resource setting/overseas echo

**Interventional Echo**

**MRI**

**CT**

**Vascular**

**Nuclear**

**Research**

**Education**

**Administration**

*“That’s all Folks!”*



*Any Questions?*

MERRILL MELODIES & LOONEY TUNES

# TEEs: What do I do?

1. **TRIAGE and CONSENT** the day before (when possible)
  - Fill out triage form as needed
2. **COMMUNICATE** with nurse, lead sonographer  
--Decisions about anesthesia (d/w attending)
3. **REVIEW** prior study
  - Note during time out:
    - LV/RV dysfunction
    - Pressures
    - Severe valvular pathology

**NPO**

**No GI pathology**

**No loose teeth**

**No bad reactions to sedation**

**Prior TEE details**

**Conscious Sedation form**

# TEEs: What do I do?

**Don't let attending forget:**

- 1. Complete study, unless patient unstable (ASE guidelines)**
  - 1. Asc. and Desc. Ao biplane**
  - 2. PA biplane**
  - 3. IVC/SVC**
  - 4. Pericardial space**
- 2. 3D zoom AND full volume (4 beat) of LV/MV/LAA at least**
- 3. 3D of Impellas and VAD cannulae**
- 4. Doppler of VAD outflow**
- 5. Spectral Doppler as appropriate**
- 6. Document BP on screen for MR assessment**



# TEEs: What do I do?

## Reporting:

1. Crop and measure 3D images
2. “Something under every tab”
  - No RAA thrombus
3. Numerical EF (even if range)
4. Compare to prior studies (including TTE)