



# Enriched Ultrasound Elective (EUE)

*Andrew Schaffrinna*

*Nicholas Langan*

*David Bahner MD, RDMS*

*Saturday April 30<sup>th</sup>, 2011*



# Enriched Ultrasound Elective

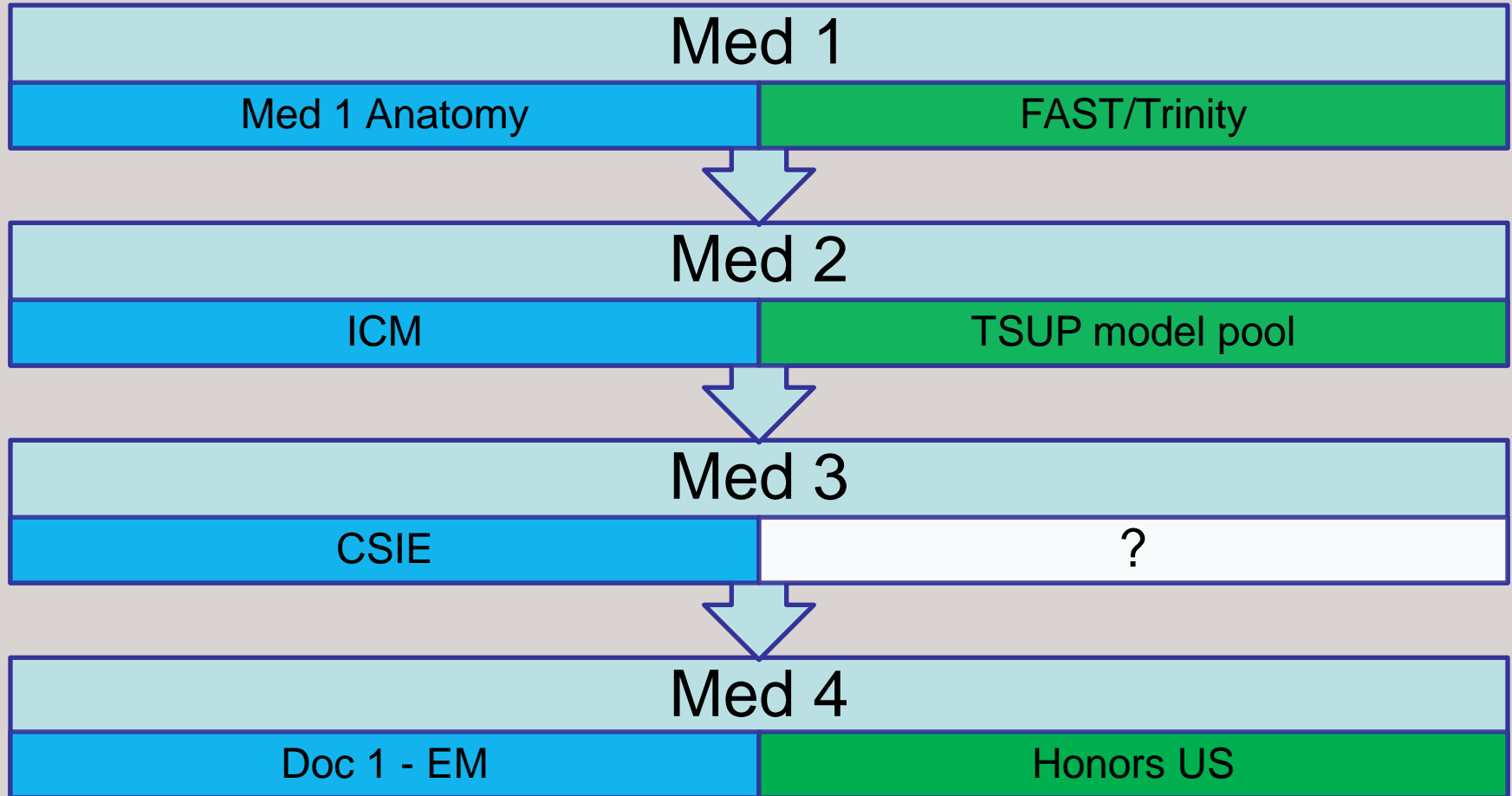
- Novel accelerated ultrasound course for 3<sup>rd</sup> year medical students at OSU
- Based on a program of student-to-student structured mentorship



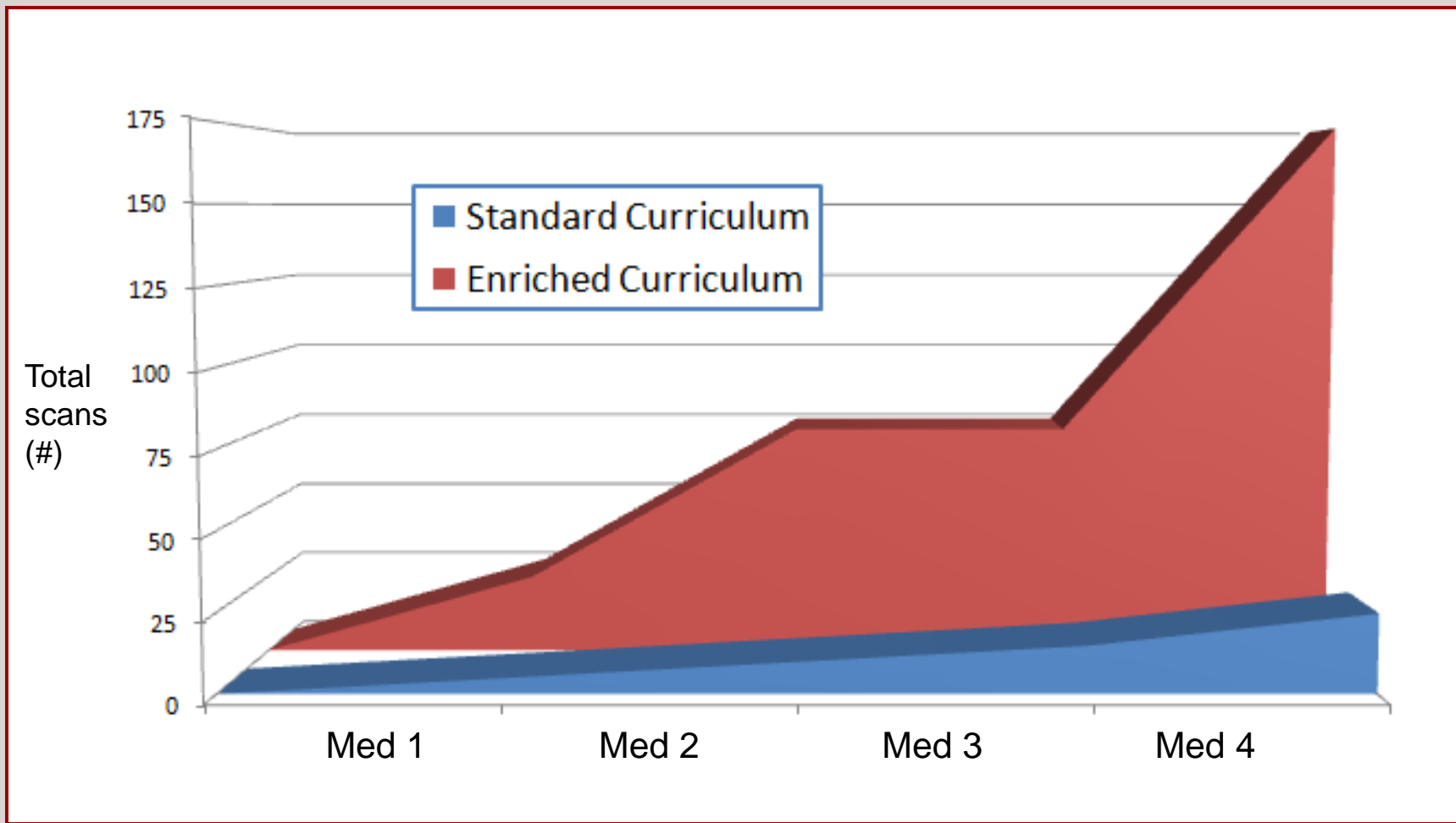
# **Why an enriched course for 3<sup>rd</sup> year students?**

## Standard Curriculum

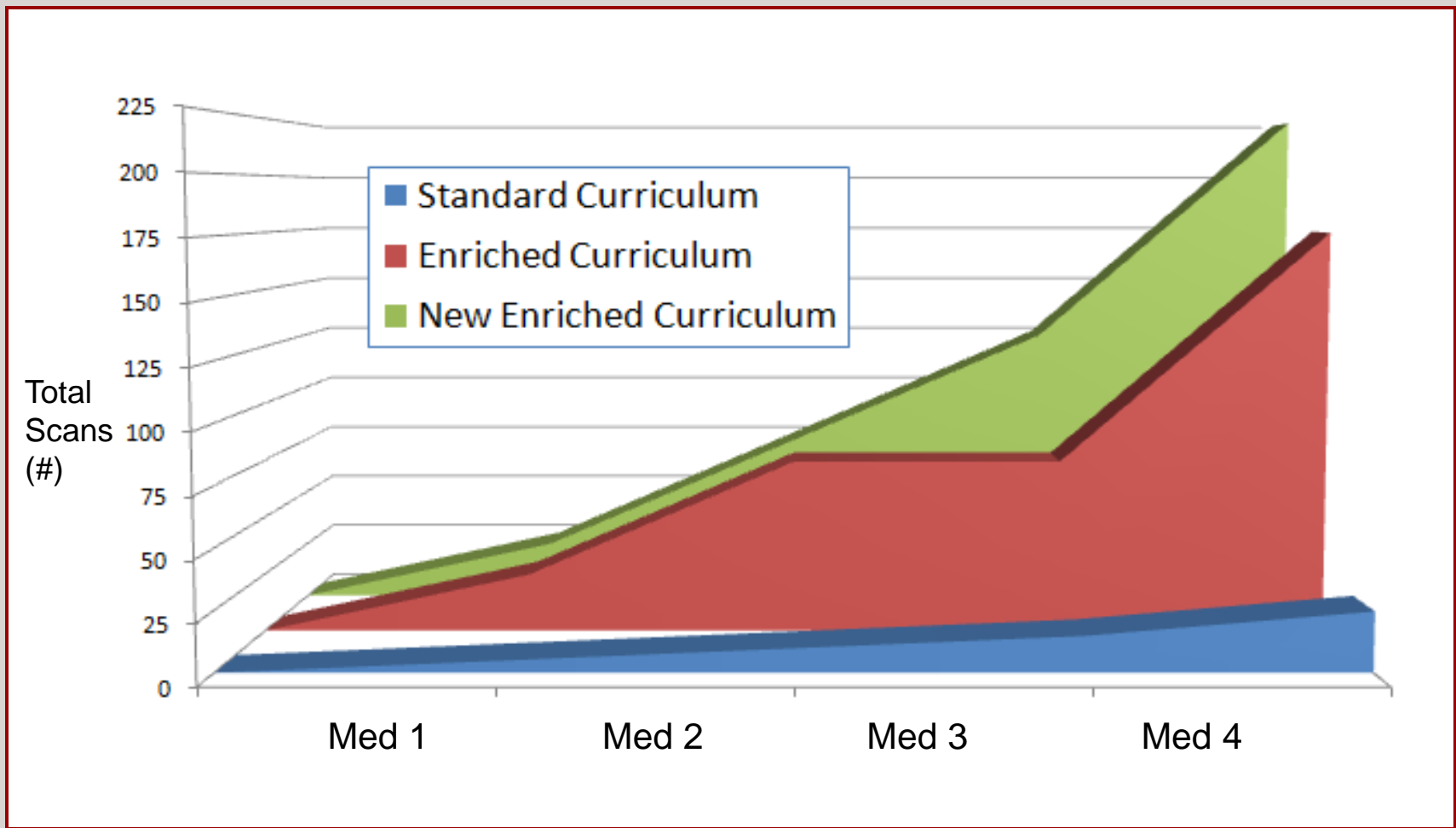
## Enriched Curriculum



## Estimated number of US scans each student performs under current OSUCOM curriculum



## Estimated number of US scans performed by students in enriched ultrasound elective

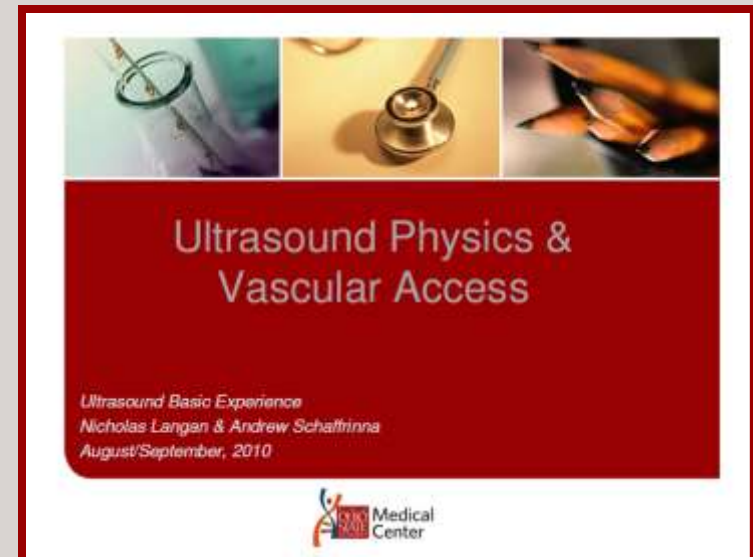


# Challenge #1:

**3<sup>rd</sup> year medical students  
are too busy**

# 'Buffet Style' Lectures

- Open invitation, no requirements for course
  - Students are free to pick and choose from the various lecture topics as they please
- 
- US physics & vascular access
  - FAST and Critical Care
  - Abdominal Aortic Aneurysm
  - 1<sup>st</sup> Trimester OBGYN
  - Focused Gallbladder and Renal





# Specialty Pathways



## Emergency Medicine

- Practical Scanning/US Physics
- Vascular Access
- FAST
- Aorta
- 1<sup>st</sup> Trimester OB
- Gallbladder
- Critical Care



## Internal Medicine

- Practical Scanning/US Physics
- Vascular Access
- Aorta



## Surgery

- Practical Scanning/US Physics
- Vascular Access
- FAST
- Aorta
- Gallbladder
- Critical Care



## OB/Gyn

- Practical Scanning/US Physics
- Vascular Access
- 1<sup>st</sup> Trimester OB

# Specialty Pathways



## Primary Care

- Practical Scanning/US Physics
- Vascular Access
- Aorta
- 1<sup>st</sup> Trimester OB



## Hospitalist

- Practical Scanning/US Physics
- Vascular Access
- Aorta
- Critical Care



## Radiology

- Practical Scanning/US Physics
- Vascular Access
- FAST
- Aorta
- Gallbladder
- Critical Care



## Comprehensive

- Practical Scanning/US Physics
- Vascular Access
- FAST
- Aorta
- 1<sup>st</sup> Trimester OB
- Gallbladder
- Renal
- Critical Care

# Staggered Lecture Schedule

**July/August**

- Session 1: US Physics/Vascular
- Session 2: US Physics/Vascular

**September/October**

**November/December**

**January/February**

**March/April**

# Staggered Lecture Schedule

## July/August

- Session 1: US Physics/Vasc
- Session 2: US Physics/Vasc

## September/October

- Session 3: US Physics/Vascular
- Session 1: FAST & Critical Care
- Session 2: FAST & Critical Care

## November/December

## January/February

## March/April

# Staggered Lecture Schedule

## July/August

- Session 1: US Physics/Vasc
- Session 2: US Physics/Vasc

## September/October

- Session 3: US Physics/Vasc
- Session 1: FAST & Critical Care
- Session 2: FAST & Critical Care

## November/December

- Session 3: FAST & Critical Care
- Session 1: 1<sup>st</sup> Trimester OB
- Session 2: 1<sup>st</sup> Trimester OB

## January/February

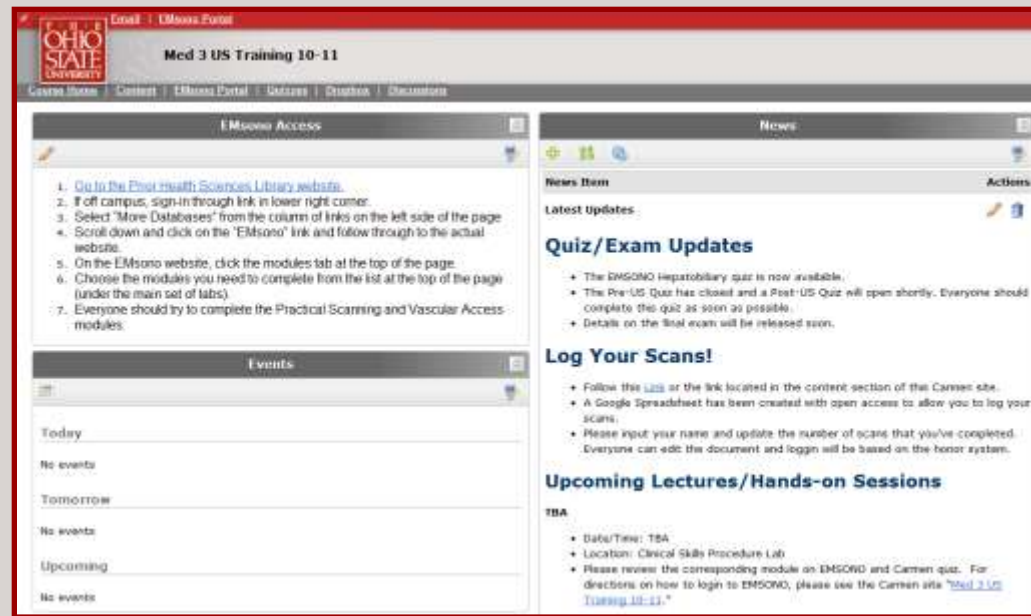
- Session 3: 1<sup>st</sup> Trimester OB
- Session 1: Abdominal Aorta
- Session 2: Abdominal Aorta

## March/April

- Session 3: Abdominal Aorta
- Session 1,2,3: Focused Gallbladder/Renal

# Online Learning Modules

- Large independent study component
- All lectures designed to summarize and supplement online training modules from EMSONO.



The screenshot displays the EMSONO portal interface. At the top, it shows the Ohio State University logo and the title "Med 3 US Training 10-11". Below the header, there are navigation tabs for "EMSONO Access", "News", and "Events".

**EMSONO Access** section contains a numbered list of instructions:

1. Go to the [Prevent Health Sciences Library website](#).
2. If off campus, sign-in through link in lower right corner.
3. Select "More Databases" from the column of links on the left side of the page.
4. Scroll down and click on the "EMSONO" link and follow through to the actual website.
5. On the EMSONO website, click the modules tab at the top of the page.
6. Choose the modules you need to complete from the list at the top of the page (under the main set of tabs).
7. Everyone should try to complete the Practical Scanning and Vascular Access modules.

**News** section includes:

- Quiz/Exam Updates**
  - The EMSONO Hepatobiliary quiz is now available.
  - The Pre-US Quiz has closed and a Post-US Quiz will open shortly. Everyone should complete this quiz as soon as possible.
  - Details on the final exam will be released soon.
- Log Your Scans!**
  - Follow the [link](#) or the link located in the content section of the Carmen site.
  - A Google Spreadsheet has been created with open access to allow you to log your scans.
  - Please input your name and update the number of scans that you've completed. Everyone can edit the document and login will be based on the honor system.
- Upcoming Lectures/Hands-on Sessions**
  - **TBA**
  - Date/Time: TBA
  - Location: Clinical Skills Procedure Lab
  - Please review the corresponding module on EMSONO and Carmen quiz. For directions on how to login to EMSONO, please see the Carmen site "[Med 3 US Training 10-11](#)."

**Events** section shows a calendar view with "No events" listed for Today, Tomorrow, and Upcoming.

# Challenge #2:

**Who is gonna teach it?**



**“Ultrasound  
(Sonography) is  
stethoscope of the  
future”**

~Roy A Filly  
Editorial from  
Radiology 1988





If ultrasound is to become the  
stethoscope of the 21<sup>st</sup> Century...

Then ultrasound must be taught like  
the stethoscope in the 21<sup>st</sup> Century

## **Still Challenge #2:**

**Who is gonna teach it?**

Experienced  
Senior Level  
Medical  
Students



**'Student-to-Student  
Structured Mentorship'**

# EUE 2010-2011 Results

- 52 students initially enrolled
- 18 have or are on track to completion



\* Two such students were among OSU's Ultrasound Olympics medal winners!

# EUE Outgoing Survey

	<b>Very unskilled</b>	<b>Unskilled</b>	<b>Average</b>	<b>Skilled</b>	<b>Very Skilled</b>
Overall Skill			64%	27%	9%
Average All Topics	3%	8%	39%	36%	13%

## Student Averages:

# of Scans: 27  
Hours Lecture: 8.2  
Hours Scanning: 9.1  
Hours EMSONO: 5.9

## Subjective Assessment:

Effectiveness: 4.5/5  
Accommodation: 4.4/5  
Workload: 5/5

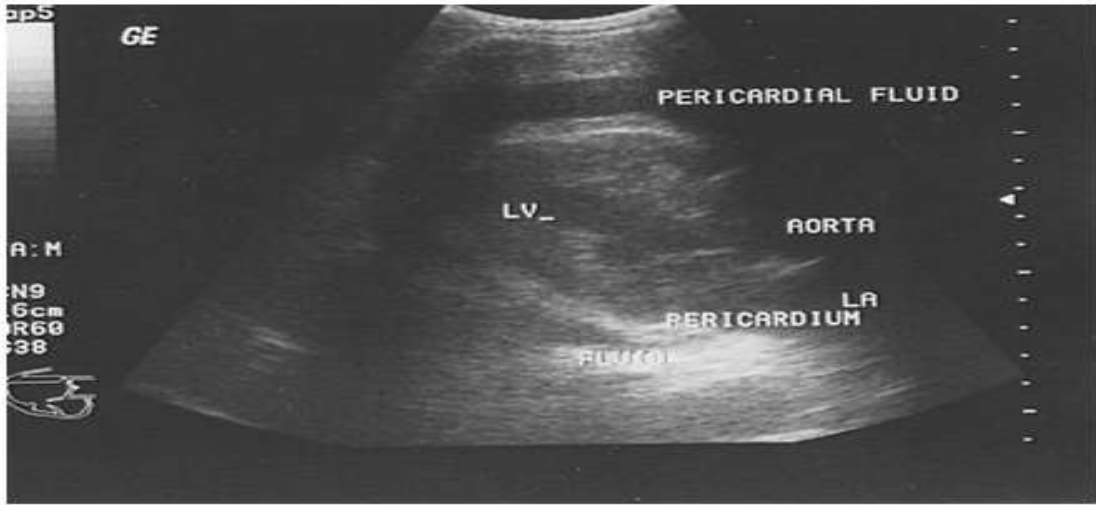
# EUE Outgoing Survey

	<b>Very unskilled</b>	<b>Unskilled</b>	<b>Average</b>	<b>Skilled</b>	<b>Very Skilled</b>
Overall			64%	27%	9%
CVC placement		9%	18%	64%	9%
FAST			27%	55%	18%

# Ultrasound Knowledge Quiz

- 20 basic ultrasound knowledge questions
- Facilitators had no knowledge of quiz questions

**Question 11 (Mandatory) (1 point)**



What is the structure that differentiates pericardial from pleural effusion on long axis parasternal view?

Question 11 options:

- A) Ascending Aorta
- B) Descending Thoracic Aorta
- C) Left Ventricle
- D) Descending Coronary Sinus



# Ultrasound Knowledge Quiz

Pre-Course Score

Post-Course Score

Increase of 5.74%

$p = 0.2515$



Success. 65.45%

77.19%

Pre-Course Score

Post-Course Score

Increase of 11.69%

$p = 0.0234$



65.45%

) = 77.14%

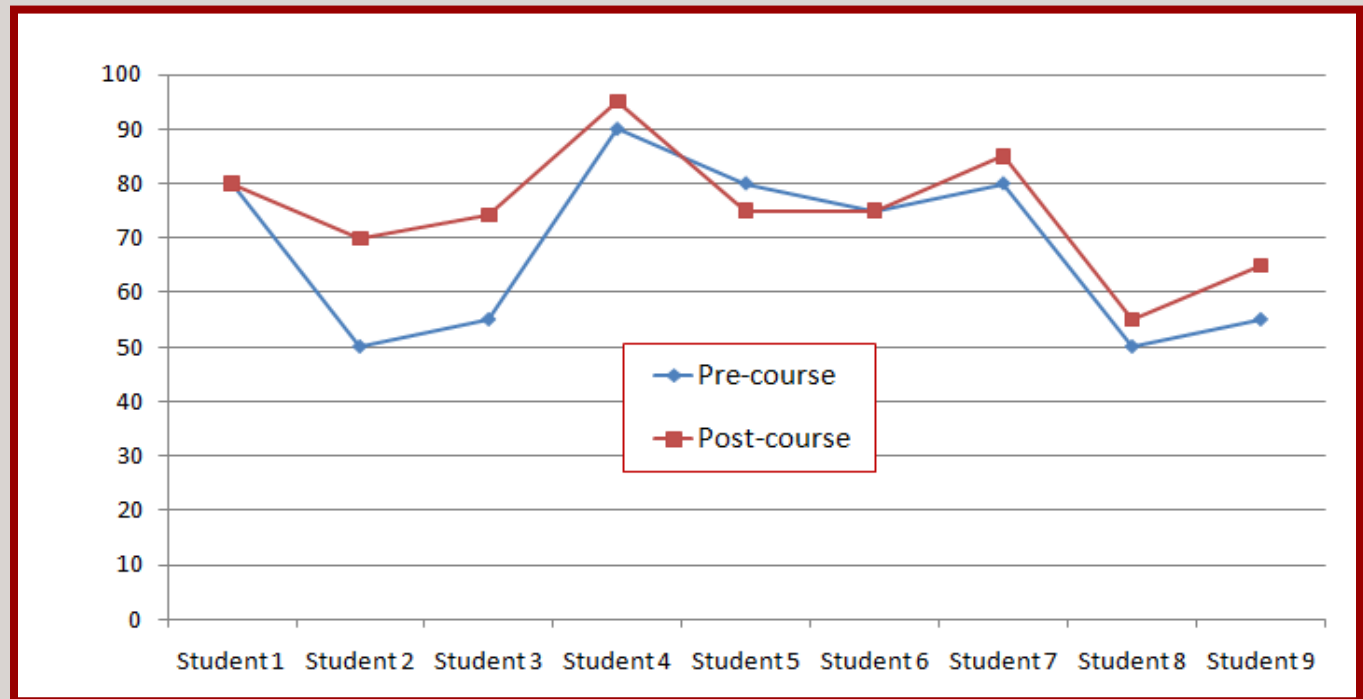
# Direct Comparison

Pre-Course Score (DC n=9) = 68.33%

Post-Course Score (DC n=9) = 74.92%

Increase of 6.59%

$p = 0.0491$



# Limitations:

- Pre-test score very high
- Poor voluntary reporting (9 out of 52)
- Ohio State Ultrasound curriculum highly advanced

# Conclusion:

- Ultrasound is a psychomotor skill
- Large gap during the busy clinical years needs to be addressed
- Ultrasound could best be taught using stethoscope as a model
- Student-to-Student Structured Mentorship