Convincing Deans that Ultrasound should be in the Medical Student Curriculum

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Arguments Against Adding Ultrasound

• No place in an already crowded curriculum
• Students will not develop physical exam skills
• Finding pathology in students – what to do?
• Just more technology between the doctor and the patient
• Lack of proven educational value of ultrasound
• Inadequate faculty trained in ultrasound to teach
• Inadequate resources to invest in a new curriculum
Reasons to Add Ultrasound

• Mounting evidence of point-of-care ultrasound to improve quality of care and patient safety

• Improve access to care for those in greatest need

• Applications across almost all specialties – a core clinical skill

• It is time medicine put adequate technology and autonomy in the hands of front-line healthcare providers
What you (and ultrasound) can do for your Dean

• Admissions: an ultrasound program can separate your school from the competition
• Student satisfaction: almost all deans want students to be happy with their education
• Grants: there is tremendous potential for grants – education, quality, patient safety, best practices
• Patents & Licenses: ultrasound technology, teaching materials, simulation, phantoms
• Donors: ultrasound is very attractive to donors
Strategy

- There is no substitute for one-on-one interaction with the dean with an ultrasound machine
- Find champions in multiple departments
- Start small – do not ask for too much too fast – introduce ultrasound into the curriculum where course and clerkship directors are most receptive
Strategy Con’t

• Get frequent student feedback – students can drive the process – give the dean, associate deans, curriculum committee, and admissions committee annual reports

• Volunteer to help the director of the simulation center with ultrasound (widespread acceptance)

• Consider other health professions involvement such as nurse practitioners
Strategy Con’t

• Reach out to rural physicians – also potential for grants – access, healthcare disparities - state legislators will support it

• Potential for CME courses- source of revenue, build referral base, offer courses to alumni, etc

• Ultrasound is coming and in many ways it is already here – it is our responsibility to see that it is done right
Integrated Ultrasound Curriculum (iUSC)

First (M1) and Second (M2) Year Medical Students

- Didactic classroom lectures
- Web-based learning modules
- Scheduled hands-on laboratory scanning sessions
- Open ultrasound laboratory practice sessions
- Integration of ultrasound into gross anatomy, physiology, and physical diagnosis.
Physiology Ultrasound Labs

• Three ultrasound labs have been integrated into the physiology course for M1 students

• Cardiac lab: normal heart function (4-chamber apical view). Wall and valve motion; flow through the cardiac chambers

• Hemodynamics lab: doppler principles, pulse wave forms (venous / arterial systems)

• Cardiogenic Shock: gross LV/RV function, pericardial effusion, RV strain from a PE
M2 Ultrasound Curriculum: Coordinated with Physical Diagnosis and Pathophysiology

• Focused ultrasound examinations, clinical scenarios, and ultrasound guided procedures
  – Cardiac views: parasternal long and short axis, 4-chamber apical, subcostal
  – Abdomen: organ size, abdominal fluid, AAA screen
  – Vascular: DVT screen, IVC and volume status, central line placement
  – Neck: thyroid, carotid, and jugular exam
  – Pelvic ultrasound (female gynecology)
Third Year (M3) Students

• Ultrasound (“Gel”) rounds at the bedside with an attending physician on Internal Medicine Clerkship

• Clinical clerkship directors have introduced ultrasound into the clerkship curriculum and OSCE evaluations

• Ultrasound in the ICU: 2 week block on Internal Medicine
M3 Clerkship OSCEs

**Internal Medicine:**
- thyroid scan
- central line placement with ultrasound guidance

**Family Medicine:**
- Abdominal Aortic Aneurysm (AAA) screen

**OB/GYN:**
- third trimester pregnancy with bright red vaginal bleeding - transabdominal scan

**Pediatrics:**
- Assess volume status of a 9 year old using the aorta / IVC ratio

**Surgery:**
- Trauma patient – FAST exam
Fourth Year (M4) Students

• Four week Emergency Medicine Ultrasound Elective

• Hands-on ultrasound experience added to Radiology Elective

• Two day Capstone course to prepare for residency: FAST for trauma, RUSH for shock, ultrasound guided procedures

• Ultrasound Independent Study: research, further develop US skills, help with M1/M2 labs
Recent Additions to the Curriculum

- Introduced pocket devices into the curriculum
- Web-based Portal for evaluation and archiving all ultrasound images for students
- Physiology pilot with EKG and Ultrasound
- Heart sounds and ECHO on IM clerkship
Student Satisfaction – M1
(scale: strongly agree, agree, undecided, disagree, strongly disagree)

- The use of ultrasound enhanced my ability to learn basic anatomy.
  - Agree or strongly agree = 81%
- The use of ultrasound enhanced my ability to learn basic physiology.
  - Agree or strongly agree = 70%
- I found the overall educational experience in ultrasound enhanced my medical education.
  - Agree or strongly agree = 95%
- I would like to see more ultrasound in the curriculum.
  - Agree or strongly agree = 78%
Student Satisfaction – M2

(scale: strongly agree, agree, undecided, disagree, strongly disagree)

- Use of ultrasound in Introduction to Clinical Medicine has allowed for increased clinical correlation with basic science instruction.
  - Agree or strongly agree = 91%

- Ultrasound has enhanced my understanding of the physical exam.
  - Agree or strongly agree = 92%

- I found the overall educational experience in ultrasound enhanced my medical education.
  - Agree or strongly agree = 94%

- I would like to see more ultrasound in the curriculum.
  - Agree or strongly agree = 73%
M1 Comments

• Ultrasound was a great way to reinforce the information we learned in anatomy.

• It was nice to be able to see how our knowledge taken from class can be put to use with real skill and equipment.

• Probably my favorite part of the semester.

• I enjoyed interacting with the patients.

• It’s the reason I choose to come here and I have not been disappointed.
M2 Comments

• Great addition to the curriculum.

• We are fortunate to be exposed to ultrasound this early in our education.

• I really looked forward to ultrasound labs and was impressed with changes in the curriculum based on student suggestions.
Student Satisfaction – M3

• Ultrasound enhanced my overall educational experience during my clinical clerkship.
  – Agree or strongly agree = 91%

• Ultrasound is an important clinical skill that will enhance my ability to care for my patients.
  – Agree or strongly agree = 96%

• I would like to see more ultrasound training in the third year curriculum.
  – Agree or strongly agree = 92%
Grants

• “Ultrasonography Training and Patient Safety” - The Fullerton Foundation: $228,000 (2007)

• “Development of Ultrasonography in Rural Primary Care Setting to Enhance the Quality and Safety of Patient Care” – The Duke Endowment: $645,000 (2008)

• “Using Point-of-Care Ultrasound in the Management of Hypertensive Heart Disease in Free Medical Clinic Patients” – The Sisters of Charity: $75,000 (2009)

• “Hand-Held Ultrasound Units to Enhance Primary Care Clerkships” and “Primary Care Screening for AAA in Veterans” – Fullerton Foundation: $290,000 (2011)
Parasternal Long Axis View

NORMAL

CONCENTRIC LVH
Donors

• Renovation contribution: $100,000 (2007)
• Endowed Professorship in Ultrasound: $500,000 (2008)
• Global Ultrasound: $75,000 (2008)
• Primary Care Ultrasound: $100,000 (2011)
• University Annual Giving: contributions now can be made to the Ultrasound Institute
Ultrasound makes medicine fun