Convincing Deans that Ultrasound should be in the Medical Student Curriculum

Richard Hoppmann
Dean
University of South Carolina
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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

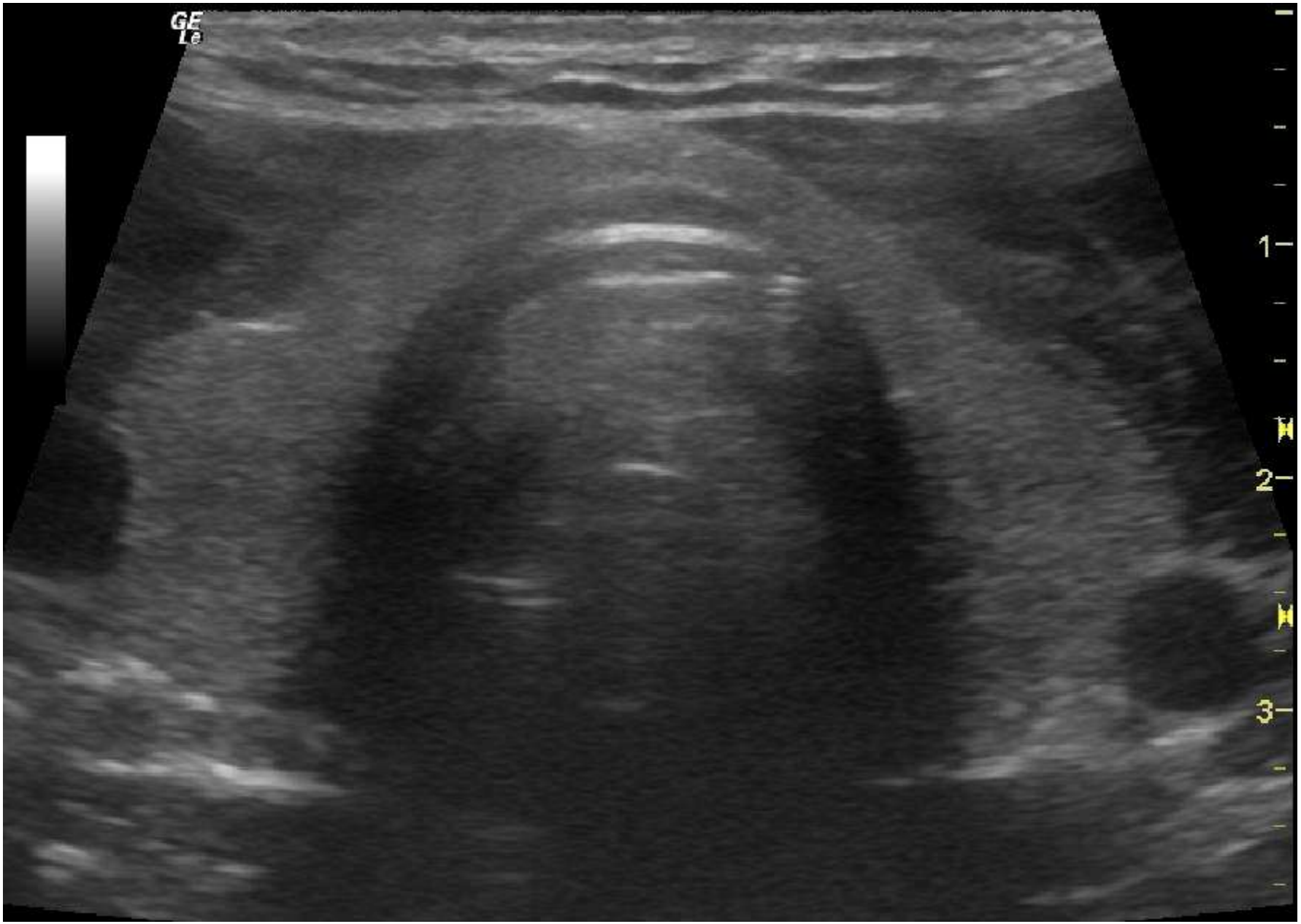
- Mounting evidence of point-of-care ultrasound to improve quality of care and patient safety
- Improve access to care for those in greatest need
- Applications across almost all specialties – a core clinical skill
- It is time medicine put adequate technology and autonomy in the hands of front-line 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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1
2
3

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 in 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