How to create a Point-of-Care Ultrasound Program in Your Family Medicine Residency

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Neil Jayasekera, MD
Kevin Bergman, MD
Contra Costa Family Medicine Residency
My story with ultrasound ....

45 y/o male with cough, subjective fever, SOB

Vitals: HR 105, RR 24, BP 100/70, T 37.5

Decreased breath sounds throughout
Ah Ha!
Ultrasound, Why the Big Push?

- Efficiency (Timely Diagnosis)
- Less invasive/radiation
- Safety (Guided procedures)

Better Patient Care
Substitution of MSK Ultrasound for MRI could save Medicare $6.9 billion from 2006-2020

https://www.sonosite.com/uk/evidence/ultrasound-first-msk
Technology has come a long way...

... and rapidly advancing
OB
Cardiology
Emergency Medicine
Anesthesia
Critical Care
Family Medicine

POCUS in Family Medicine

- FP’s have been doing ultrasound in OB for decades
- Great utility in resource limited settings
- More outpatient applications
  - procedural guidance, musculoskeletal

Rotator cuff tear  Central line placement  Gallbladder
An integrated ultrasound curriculum (iUSC) for medical students: 4-year experience.


First World Congress on ultrasound in medical education hosted by the University of South Carolina School of Medicine.

Hoppmann RA, Riley R, Fletcher S, Howe D, Poston MB, Rao V, Harris S.

Integrated medical school ultrasound: development of an ultrasound vertical curriculum.

Bahner DP, Adkins EJ, Hughes D, Barrie M, Boulger CT, Royall NA.
The Sea Change...

Undergraduate Medical Education

Postgraduate Residency Training

Family Medicine Practice
Catch the Wave

Point of Care Ultrasound in Family Medicine Residency Programs: A CERA Study

Jeffrey W.W. Hall, MD; Harland Holman, MD; Paul Bornemann, MD; Tyler Barreto, MD; David Henderson, MD; Kevin Bennett, PhD; Jeff Chamberlain, MD; Douglas M. Maurer, DO, MPH

• 2.2% FM Programs with established programs
• 29% have started a program within last year
• 11.2% in process of starting program

Hall et al. Point of Care Ultrasound in Family Medicine Programs: A CERA Study. Fam Med 2015; 47 (9): 706-11
Becoming a Family Medicine POCUS champion

1. Love Pocus
   • One size does not fit all
2. Be a self-starter & teacher
3. Become an “expert”
4. Find allies
5. If you build it they will come
6. Get paid for your work!
How to Do It

Phase 1: Find and Groom a Champion

Phase 2: Obtain Institutional Buy In

Phase 3: Implement a Curriculum

Phase 4: Future Directions
Phase 1: Find a Champion

- Faculty member or Resident
- Ultrasound certified or not
- Inside or out of the hospital
Buy-in from Radiology

- Best use of our resources
- Eliminated unnecessary after hour ultrasounds
- Technicians embraced, less burnout
- Not a turf war
- POCUS and Radiology Dept -> complementary

Dr. Robert Leibig, Chief of Diagnostic Imaging
Buy-in from Cardiology

• Use in Primary Care Setting and ER

• More RAPID and Accurate Diagnosis

• Working in CONJUNCTION with specialists

• Don’t forget stethoscope!
2009 ACEP Guidelines on POCUS:
The Practice-Based Pathway to training, proficiency, and credentialing

1. **Didactics** — 16-24hr course
2. **Experiential** — # of ‘over-read’ core scans
3. **Proficiency** — documentation and review
4. **Credentialing** — by your medical staff office
5. **CME** — per your specialty guidelines

2. Experiential Training

The Numbers:
- 150-250 total scans
- 25-50 of each type of scan
- 10 procedural scans

How to get there?

• Supervision over-reads by sonologist
• *Log comparing your training scans to:
  - other imaging results
  - surgical findings
  - patient outcome review
Core Skills for Family Medicine

- OB/GYN
- Cardiac
- Pulmonary
- Musculoskeletal
- Renal
- DVT
- Soft tissue
- Trauma (FAST)
- AAA
- Ocular
- Procedural Guidance

Billing for POCUS

SHOW ME THE MONEY!
<table>
<thead>
<tr>
<th>CPT Code</th>
<th>CPT Code Descriptor</th>
<th>Medicare Physician Fee Schedule - National Average*</th>
<th>Hospital Outpatient Prospective Payment System (OPPS)†</th>
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<tbody>
<tr>
<td>10022</td>
<td>Fine needle aspiration; with imaging guidance</td>
<td>$142.95</td>
<td>5072</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$67.36</td>
<td>$480.64</td>
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<tr>
<td>20604</td>
<td>Arthrocentesis, aspiration and/or injection; small joint or bursa (e.g., fingers, toes) with ultrasound guidance, with permanent recording and reporting</td>
<td>$73.81</td>
<td>5441</td>
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<td>$47.29</td>
<td>$223.76</td>
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<tr>
<td>20606</td>
<td>Arthrocentesis, aspiration and/or injection; intermediate joint or bursa (e.g., temporomandibular, acromioclavicular, wrist, elbow or ankle, olecranon bursa) with ultrasound guidance, with permanent recording and reporting</td>
<td>$81.69</td>
<td>5441</td>
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<td>$54.46</td>
<td>$223.76</td>
</tr>
<tr>
<td>20611</td>
<td>Arthrocentesis, aspiration and/or injection; major joint or bursa (e.g. shoulder, hip, knee joint, subacromial bursa) with ultrasound guidance, with permanent recording and reporting</td>
<td>$93.51</td>
<td>5441</td>
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<td>$63.42</td>
<td>$223.76</td>
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CPT® five digit codes, nomenclature and other data are Copyright 2015 American Medical Association. All rights reserved. No fee schedule, basic units, relative values or related listings are included in CPT. The AMA assumes no liability for the data contained herein. Applicable FARS/DFARS restrictions apply to government use.


Reimbursement rates shown for payment of services under the Physicians Fee Schedule reflect a conversion factor of $35.8279.
Statement on Ultrasound Billing

Approved 11/11/2012

Any qualified physician who interprets an indicated, appropriately-performed, and documented ultrasound examination, should be allowed to bill for imaging services rendered. Representative guidelines for qualifications, performance, and documentation are located at http://www.aium.org
Image Archiving

• Residents log each scan in New Innovations
• Link to patient MR#
• Make accessible
  • Delineate as training study
• Where to archive?
  – Upload to PACS
  – Upload to ‘middleware’: Qpath, Ultralink, etc
    • interface with EHR
• Reporting results
  – In PACS or in medical record
Which Machine?
Supporting Documentation

AMA affirms that ultrasound imaging is within the scope of practice of appropriately trained physicians;

AMA policy on ultrasound acknowledges that broad and diverse use and application of ultrasound imaging technologies exist in medical practice;

AMA policy on ultrasound imaging states that each hospital medical staff should review and approve criteria for granting ultrasound privileges based upon background and training for the use of ultrasound technology and strongly recommends that these criteria are in accordance with recommended training and education standards developed by each physician’s respective specialty. (Res. 802, F99; Reaffirmed: Sub. Res. 108, A-00)

Focused Cardiac Ultrasound in the Emergent Setting: A Consensus Statement of the American Society of Echocardiography and American College of Emergency Physicians
12. Other Diagnostic and Therapeutic Procedures: Goal-directed Focused Ultrasound (Diagnostic/Procedural) (PC12)
Uses goal-directed focused Ultrasound for the bedside diagnostic evaluation of emergency medical conditions and diagnoses, resuscitation of the acutely ill or injured patient, and procedural guidance.

<table>
<thead>
<tr>
<th>Has not Achieved Level 1</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Describes the indications for emergency ultrasound</td>
<td>Explains how to optimize ultrasound images and identifies the proper probe for each of the focused ultrasound applications</td>
<td>Performs goal-directed focused ultrasound exams</td>
<td>Performs a minimum of 150 focused ultrasound examinations</td>
<td>Expands ultrasonography skills to include: advanced echo, TEE, bowel, adnexal and testicular pathology, and transcranial Doppler</td>
</tr>
<tr>
<td></td>
<td>Performs an eFAST</td>
<td>Correctly interprets acquired images</td>
<td></td>
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</table>

**Comments:**

**Suggested Evaluation Methods:** OSCE, SDOT, videotape review, written examination, checklist
Tips

• Keep a folder handy of supporting documentation
• Form Alliances
• Save the winning cases, and misses
• Use and solicit patient satisfaction & feedback
Phase 3: Implement a Curriculum

- Gathered from 6 years of experience
- Established curriculum, open source, and free
- Adopted from ACEP guidelines
Point of Care Ultrasound (POCUS) at Contra Costa
Mission
To promote the use of POCUS in family medicine by training family physicians with basic POCUS skills to provide quality, timely, patient centered and cost effective care.

Background
POCUS has rapidly established itself as the standard of care in many areas of medicine, and is especially well-suited for physicians who work in under-resourced settings locally and abroad. Since 2010, the Contra Costa Family Medicine Residency program has provided 2 day POCUS training during orientation for all Contra Costa interns, and is a recognized leader in POCUS training for family physicians.

Programs
- 2-day POCUS training in June for incoming residents and Global Health fellows, including:
  [ ] Trauma/FAST exam
  [ ] Echocardiography
  [ ] Pulmonary
  [ ] DVT
  [ ] Renal
  [ ] AAA
  [ ] Gallbladder
  [ ] 1st Trimester OB
  [ ] Rapid Ultrasound Evaluation of Shock (RUSH exam)
  [ ] Advanced applications, including ocular & intro to pediatric

Ultrasound is a game changer. It allows me to spend more time with patients at the bedside, building rapport, meanwhile arriving at potentially life-saving diagnoses in real time.

- Dr. Mena Ramos
Global Health Fellow
Curricular Layout

1\textsuperscript{st} year
Didactic

2\textsuperscript{nd} year
Experiential/ Proficiency

3\textsuperscript{rd} year
Proficiency/ Credentialing

Intro Course
2 day Orientation

ER, OB, Inpatient Rotations

Ultrasound Rotation
2 week Elective

New innovations
Ultrasound elective

- 2 weeks
- 3rd year of residency
- Online lecture videos
- Proctored scans
- Integrated learning

Goal: get 150 scans

“Popular” Ultrasound elective

<table>
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<tr>
<th>Completed</th>
<th>Did not complete</th>
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</thead>
<tbody>
<tr>
<td># Current 3rd year residents</td>
<td></td>
</tr>
</tbody>
</table>
Does it work?

Contra Costa Family Medicine Residency Class of 2015
Class of 2015 Frequency of Ultrasound Use

- ≥ 1/week: 77%
- ≥ 1/month: 15%
- < 1/month: 8%

n = 13
Class of 2015 in Practice

- Outpatient: 31%
- Inpatient: 23%
- Emergency: 23%
- Combination: 23%

n = 13
From Students to Teachers...
Future Directions

• CME for newer applications
  – Musculoskeletal
  – Global health
  – Procedural guidance

• Strengthen outpatient curriculum
• Residency based training
Sources


Hall et al. Point of Care Ultrasound in Family Medicine Programs: A CERA Study. Fam Med 2015; 47 (9): 706-11

Micks, T. Smith, A. Parsons, M. Point-of-care ultrasonography training for rural family medicine residents ~ its time has arrived. Can J Rural Med 2016; 21 (1)


Hoppmann, RA et al. First World Congress on ultrasound in medical education hosted by the University of South Carolina School of Medicine. J S C Med Assoc. 2011 Oct; 107 (5): 189-90


Soni et al, Point of Care Ultrasound. Saunders, 2015.


http://cchealth.org/residency/ghf/pocus.php

https://www.sonosite.com/uk/evidence/ultrasound-first-msk

Questions?