

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

Mena Ramos, MD

Neil Jayasekera, MD

Kevin Bergman, MD

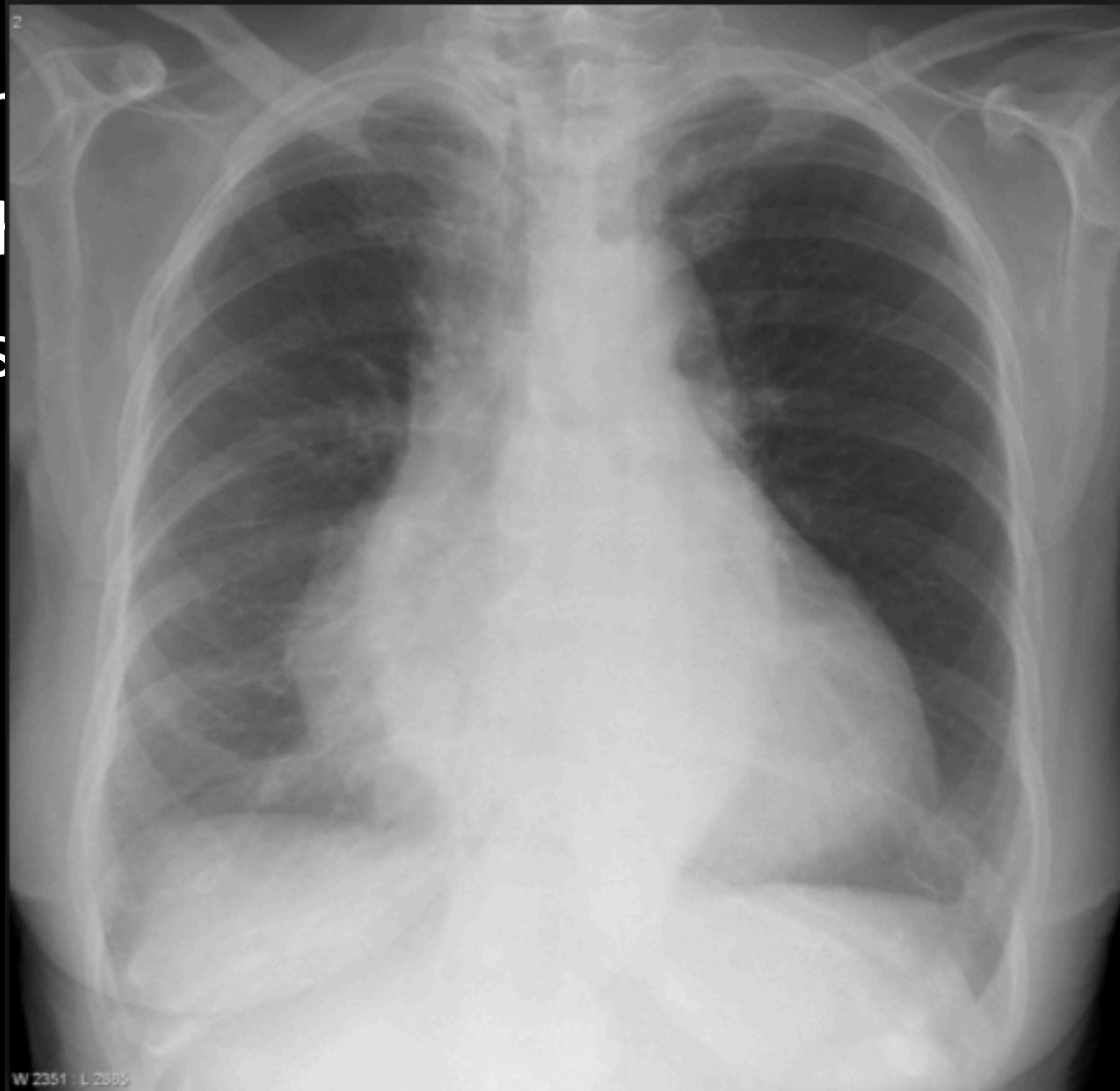
Contra Costa Family Medicine Residency

# My story with ultrasound ....

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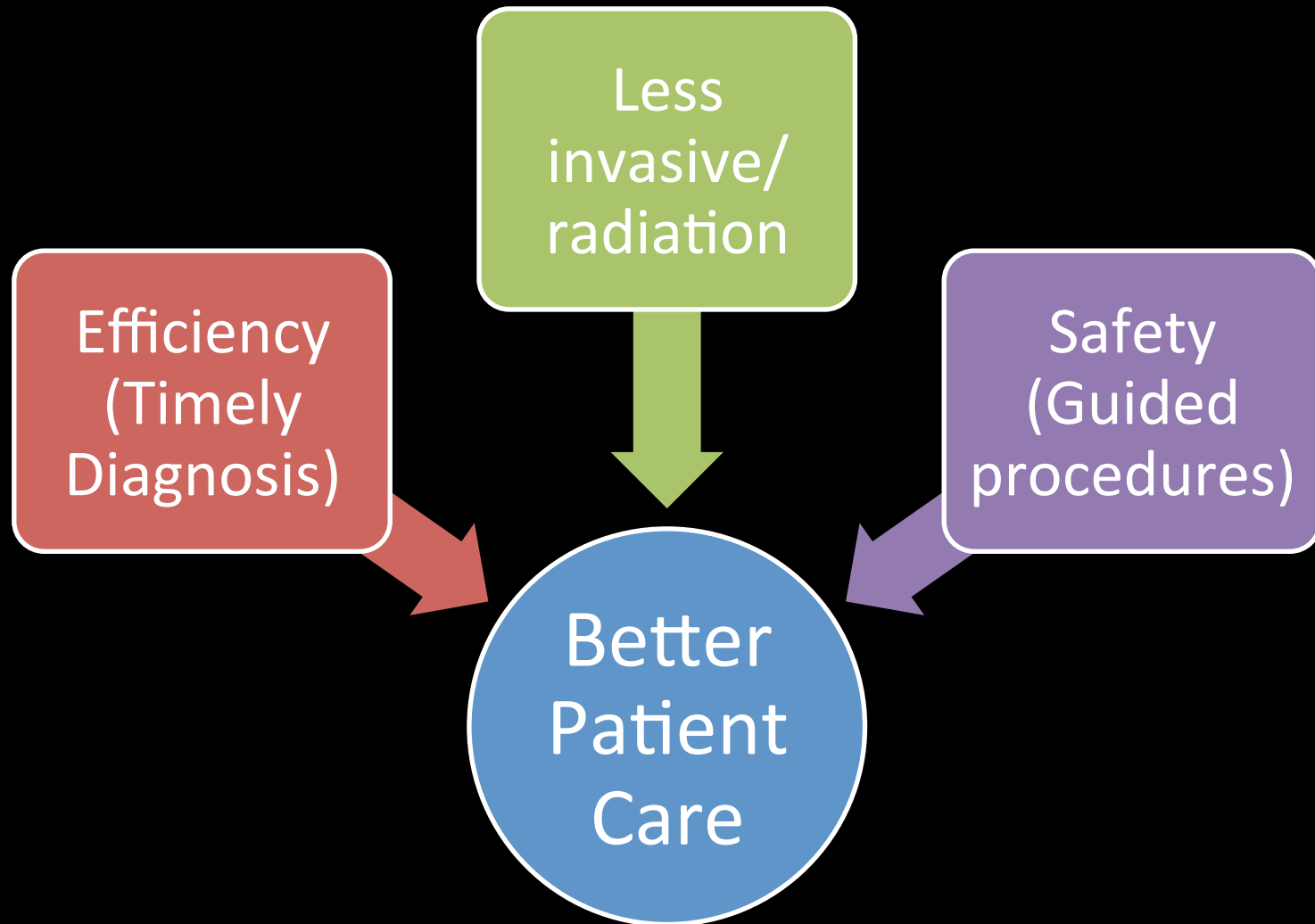
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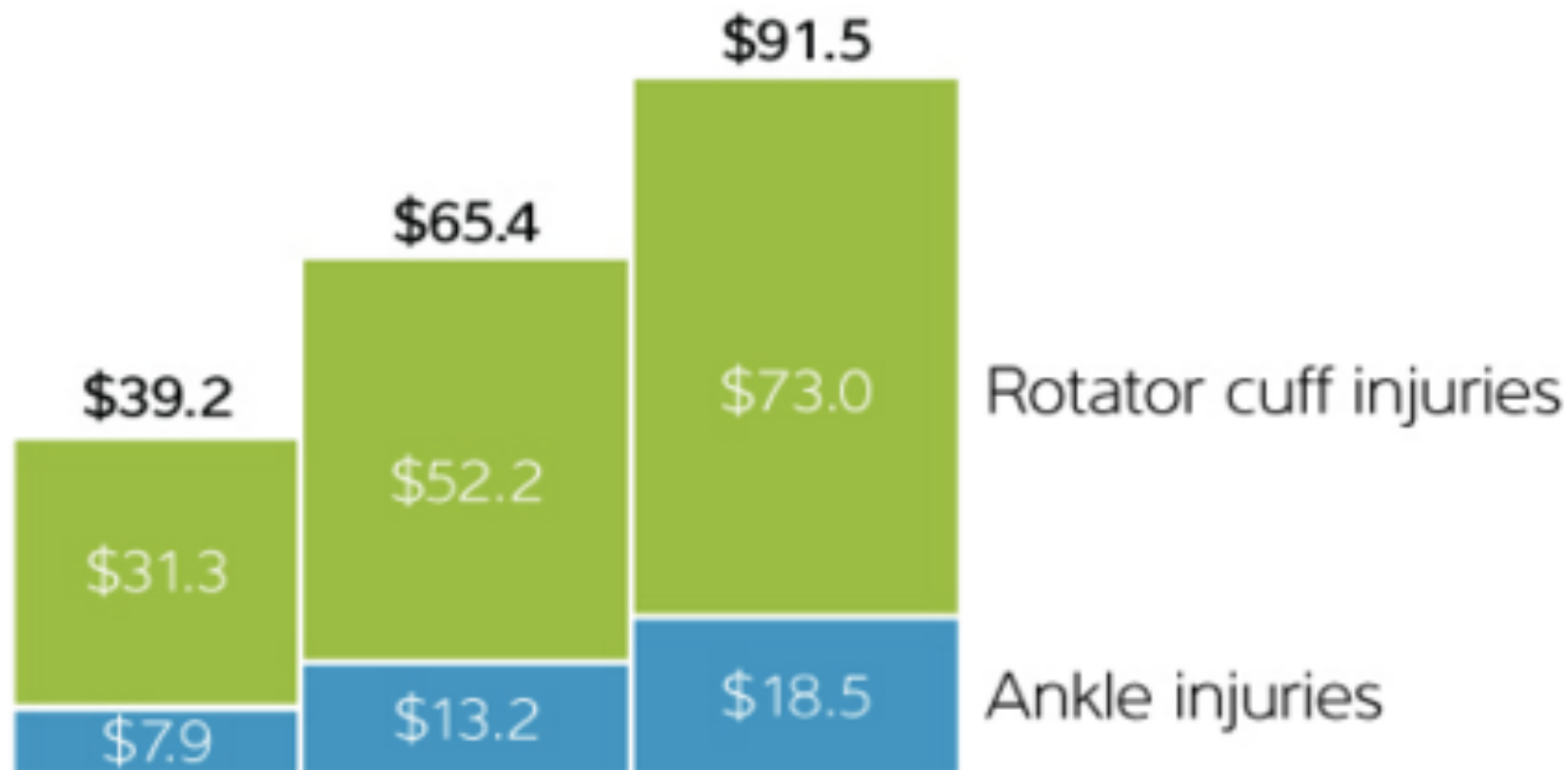
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Ah Ha!



# Ultrasound, Why the Big Push?





**Substitution of MSK Ultrasound for MRI could save Medicare \$6.9 billion from 2006-2020**

diagnostic ultrasound for CT and MRI imaging (in Millions)

Parker, L. et al. Musculoskeletal Imaging: Medicare Use, Costs, and Potential for Cost Substitution. Journal of the American College of Radiology. 04/2008; 5 (3): 182-8 DOI 10:1016/j.jacr.2007.07.016  
<https://www.sonosite.com/uk/evidence/ultrasound-first-msk>

# Technology has come a long way



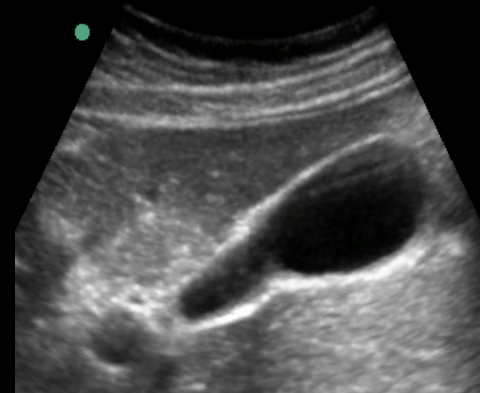
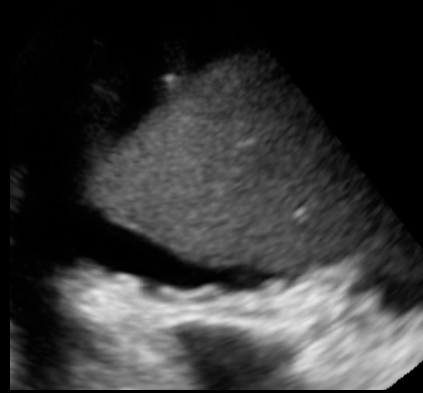
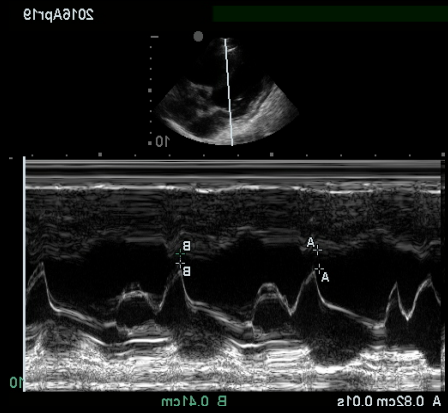
**FIGURE 1.1** Karl Theodore Dussik and the first medical ultrasound device in 1946. (From Frentzel-Beyme B. Vom Echolot zur Farbdopplersonographie. *Der Radiologe*. April 2005;45(4):363–370.)



... and rapidly advancing

Soni et al

ersion-tank ultrasound

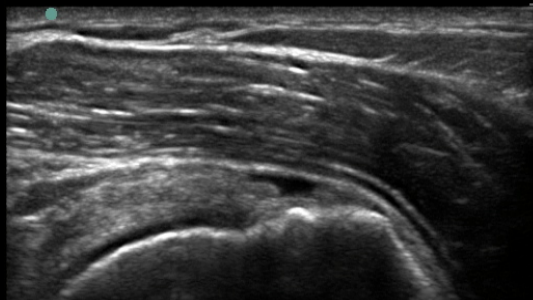




# POCUS in Family Medicine

- 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



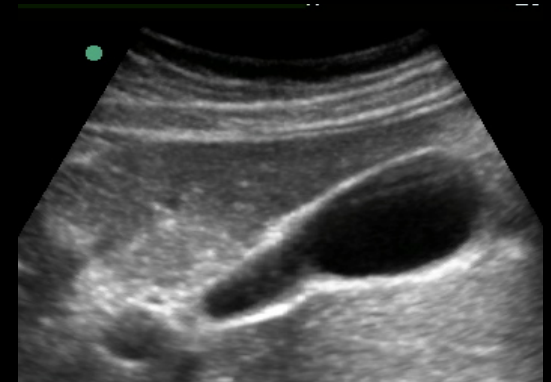
LONG. AXIS  
SUPRASP. TEAR

2.7

Central line placement



Gallbladder

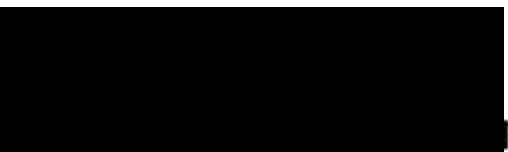




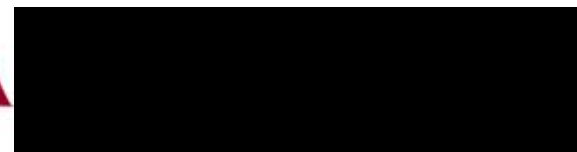
Crit Ultrasound J. 2011 Apr;3(1):1-12. Epub 2011 Feb 1.

**An integrated ultrasound curriculum (iUSC) for medical students: 4-year experience.**

Hoppmann RA<sup>1</sup>, Rao VV, Poston MB, Howe DB, Hunt PS, Fowler SD, Paulman LE, Wells JR, Richeson NA, Catalana PV, Thomas LK, Britt Wilson L, Cook T, Riffle S, Neuffer FH, McCallum JB, Keisler BD, Brown RS, Gregg AR, Sims KM, Powell CK, Garber MD, Morrison JE, Owens WB, Carnevale KA, Jennings WR, Fletcher S.



UNIVERSITY OF  
**SOUTH CAROLINA**  
School of Medicine



J S C Med Assoc. 2011 Oct;107(5):189-90.

**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.



Crit Ultrasound J. 2013 Jul 2;5(1):6. doi: 10.1186/2036-7902-5-6.

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

Bahner DP<sup>1</sup>, 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

- 22% FM Programs with established programs
- 29% have started a program within last year
- 11.2% in process of starting program

# 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



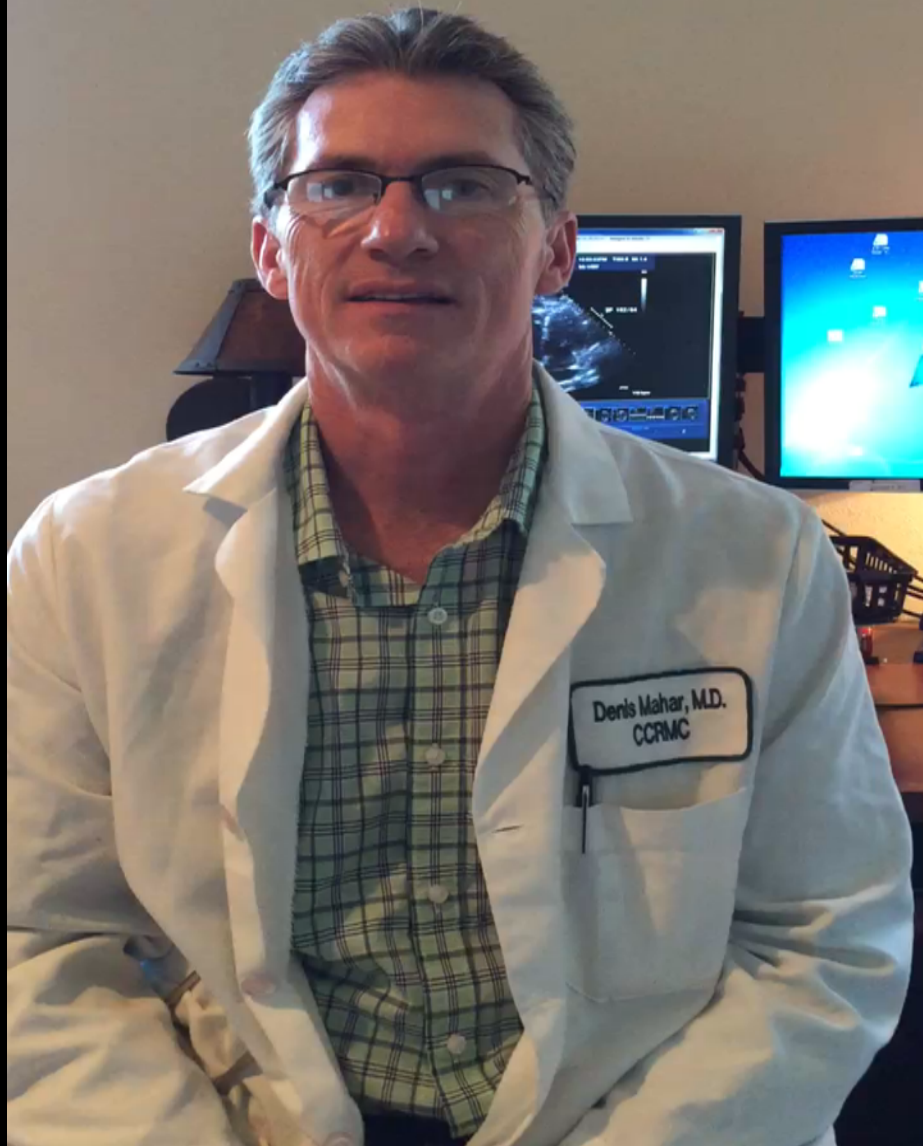
- Best use of our resources
- Eliminated unnecessary after hour ultrasounds
- Technicians embraced, less burnout
- Not a turf war
- POCUS and Radiology Dept -> complementary

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

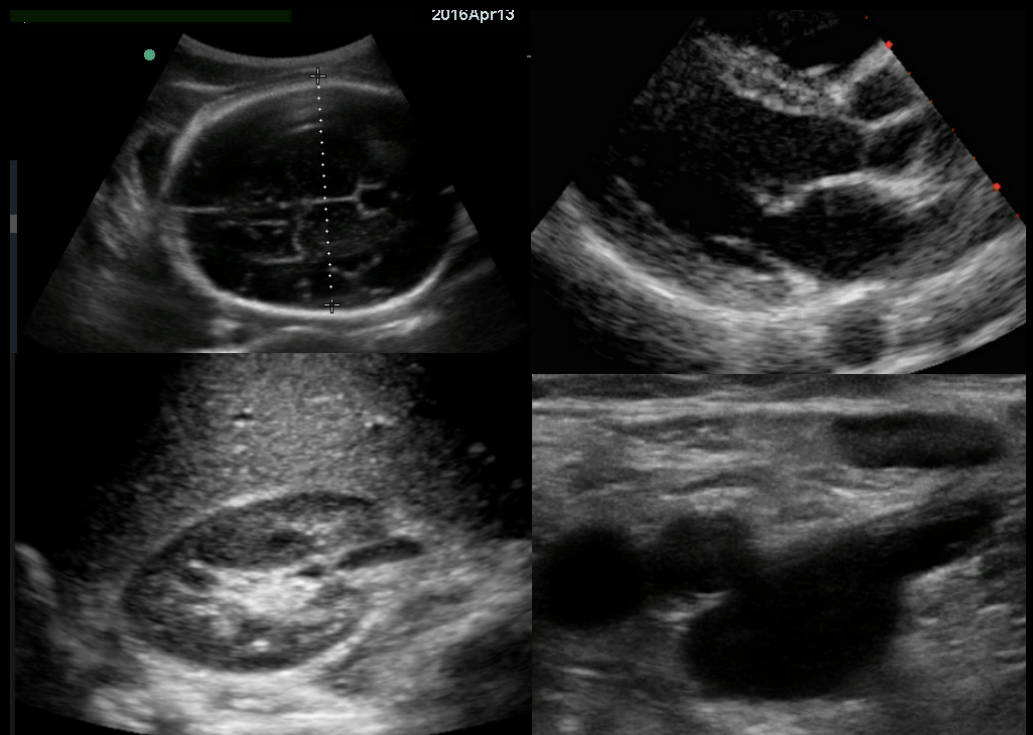


### How to get there?

- 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!**

## Procedures that include ultrasound guidance (Do NOT report 76942 in addition)

		Medicare Physician Fee Schedule - National Average*		Hospital Outpatient Prospective Payment System (OPPS)†	
CPT Code	CPT Code Descriptor	Non-Facility Payment	Facility Payment	APC Code	APC Payment
10022	Fine needle aspiration; with imaging guidance	\$142.95	\$67.36	5072	\$480.64
20604	Arthrocentesis, aspiration and/or injection; small joint or bursa (e.g., fingers, toes) with ultrasound guidance, with permanent recording and reporting	\$73.81	\$47.29	5441	\$223.76
20606	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	\$81.69	\$54.46	5441	\$223.76
20611	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	\$93.51	\$63.42	5441	\$223.76

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.

\*Federal Register November 2015 †Federal Register November, 2015.

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?



**PHILIPS**



**mindray**



**SIEMENS**

**terason**



# Supporting Documentation

**AMA**

HELPING DOCTORS HELP PATIENTS



## H-230.960 Privileging for **Ultrasound Imaging**

(1) AMA affirms that **ultrasound imaging** is within the scope of practice of appropriately trained physicians;

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

(4) 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, 1-99; Reaffirmed: Sub. Res. 108, A-00)

AMERICAN SOCIETY OF ECHOCARDIOGRAPHY CONSENSUS STATEMENT

Focused Cardiac Ultrasound in the Emergent Setting:  
A Consensus Statement of the American Society of  
Echocardiography and American College of  
Emergency Physicians

# The Emergency Medicine Milestone Project

*A Joint Initiative of*  
 The Accreditation Council for Graduate Medical Education  
 and  
 The American Board of Emergency Medicine



**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.

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

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



## Residency Program

[Mission, Vision, Values](#)

[Our People](#)

[Curriculum](#)

[Facilities](#)

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[Clerkships](#)

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# Point of Care Ultrasound (POCUS) at Contra Costa



[Related Links](#)

[Regional Medical Center](#)

“ Ultrasound is like **radiology in your pocket.** It can be used every single day with just about every patient that you see. It's the future of clinical practice and I think it is going to change the face of medicine.

- Dr. Erin Stratta

Global Health Fellow

## 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

## RESOURCES

- [Schedule](#)
- [Ultrasound Credentialing](#)
- [Educational Resources](#)

“ 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<sup>st</sup> year  
Didactic

Intro Course  
2 day  
Orientation

2<sup>nd</sup> year  
Experiential/  
Proficiency

ER, OB,  
Inpatient  
Rotations

3<sup>rd</sup> year  
Proficiency/  
Credentialing

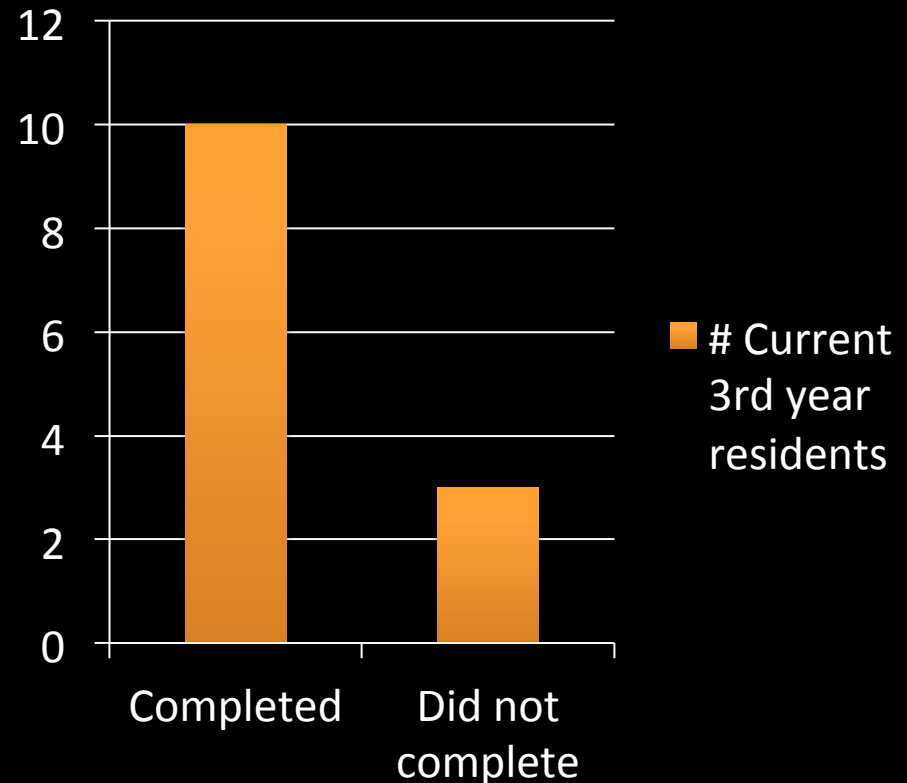
Ultrasound  
Rotation  
2 week Elective

New  
innovations

# Ultrasound elective

- 2 weeks
- 3<sup>rd</sup> year of residency
- online lecture videos
- Proctored scans
- Integrated learning
- Goal: get 150 scans

“Popular” Ultrasound elective

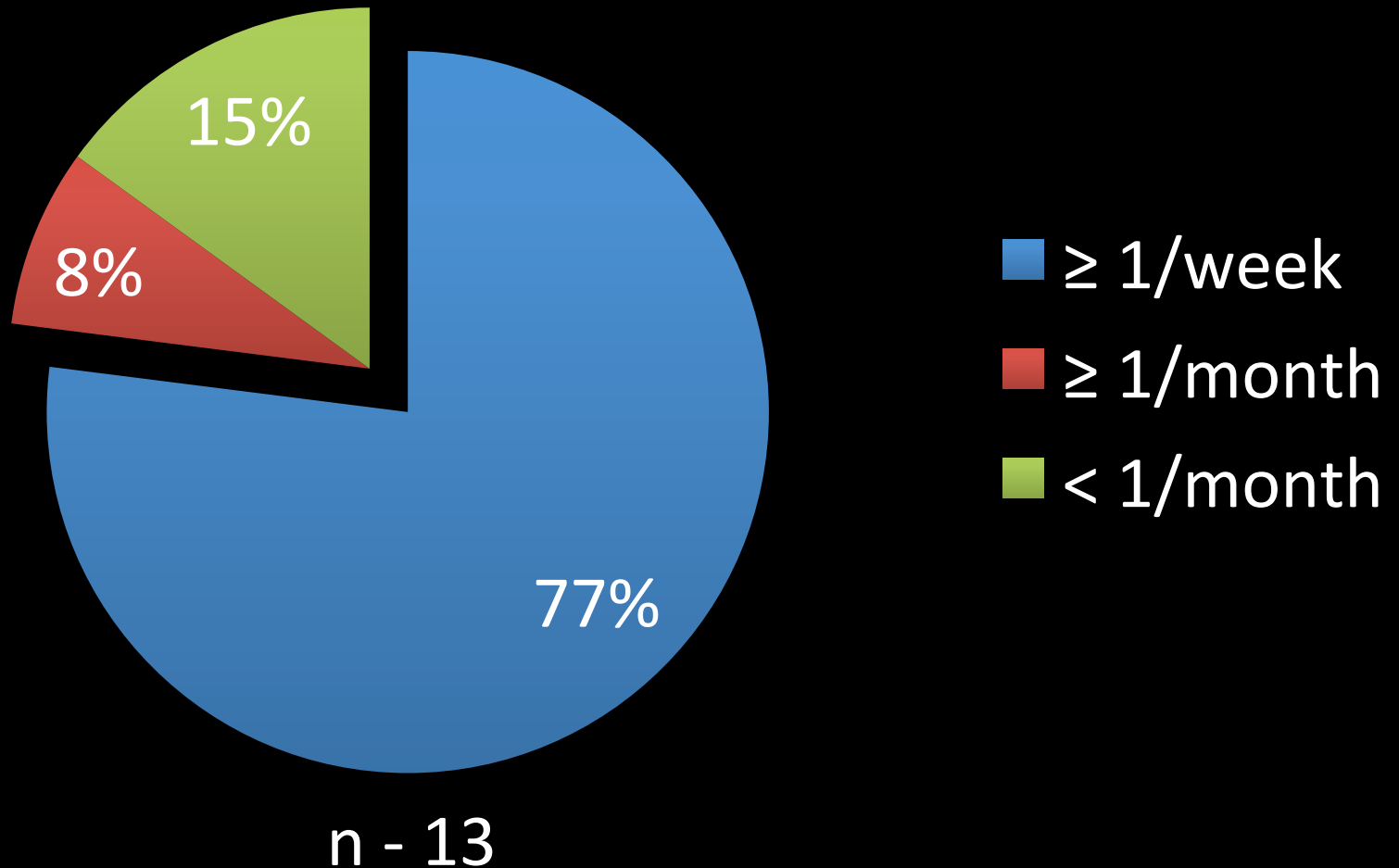


# Does it work?

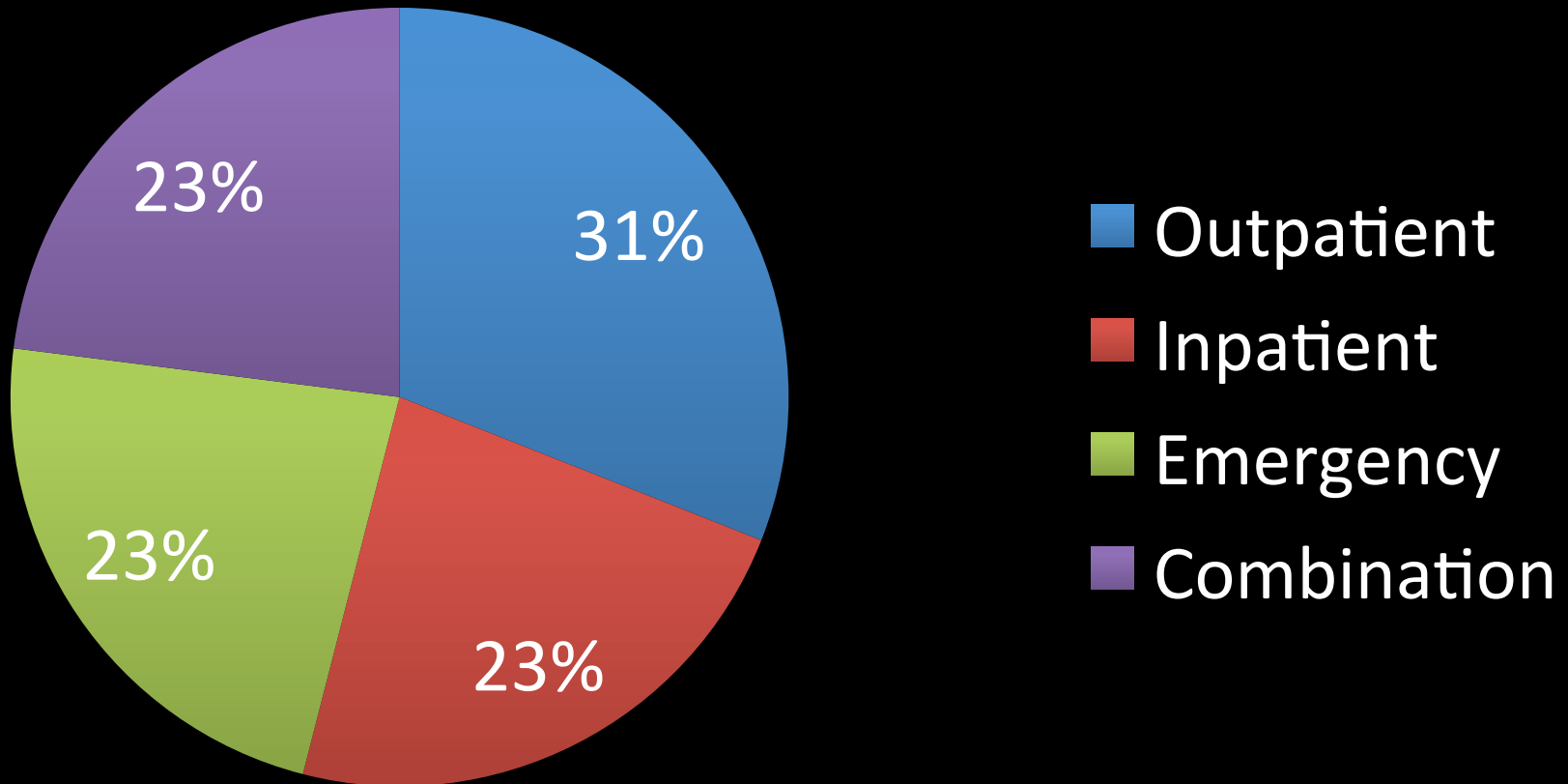


Contra Costa Family Medicine Residency Class of 2015

# Class of 2015 Frequency of Ultrasound Use



# Class of 2015 in Practice



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# From Students to Teachers...



# Future Directions

- CME for newer applications
  - Musculoskeletal
  - Global health
  - Procedural guidance



- Strengthen outpatient curriculum
- Residency based training

# Sources

Bahner, DP et al. Integrated medical school ultrasound: development of an ultrasound vertical curriculum. Crit Ultrasound J. 2013 Jul 2, 5(1): 6

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. An integrated ultrasound curriculum (iUSC) for medical students: 4-year experience. Critical Ultrasound J. 2011 Apr; 3 (1): 1-12. Epub 2011 Feb 1

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Policy Statement, "Emergency Ultrasound Guidelines", American College of Emergency Physicians, Annals of Emergency Medicine, Vol 53, No.4, pp 550- 570, April 2009

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

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

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

[http://www.emergencyultrasoundteaching.com/galleries/image\\_galleries/procedural\\_images/index.php](http://www.emergencyultrasoundteaching.com/galleries/image_galleries/procedural_images/index.php)



# Questions?

