

WHERE DO WE GO FROM HERE IN ULTRASOUND (POINT-OF-CARE) - ACADEMIC PERSPECTIVE

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Disclosures

- None

Stethoscope

- *“That it will ever come into general use, notwithstanding its value, is **extremely doubtful**; because its beneficial application **requires much time** and **gives a good bit of trouble** both to the patient and the practitioner; because its hue and character are foreign and opposed to all our habits and associations.”*

John Forbes, MD The London Times 1834

Ultrasound

- *"As we look to the proliferation of ultrasound instruments into the hands of untrained physicians, we can only come to the unfortunate realization that **diagnostic sonography truly is the next stethoscope**: used by many, understood by few."*

Roy Filly, MD Radiology 1988

Point of care US has become an extension of the physical exam

- Emergency Medicine
- Critical care
- Anesthesia
- Vascular medicine
- OB/Gyn
- Rheumatology
- Resource limited setting
- During COVID-19



POCUS answers a specific question

Definition

- Goal-directed, bedside US examination performed by a healthcare provider to answer a specific diagnostic question or to guide an invasive procedure
- Specific POCUS applications
 - FAST (Focused Assessment with Sonography in Trauma) in ED
- Performed by non-radiologists
 - Can be performed by any qualifying healthcare professional (e.g. physicians, nurses, advanced practitioners)

Acquisition

- Performed *immediately* at bedside (no order, no technologist)
- Performed and interpreted by treating healthcare provider who bills for study
 - Make decision on treatment
- Billing requires archiving, QA, specific CPT code for reimbursement
- Smaller probes and reduced costs of equipment facilitates use

The genie is out of the bottle



Radiology



Emergency Medicine

POCUS needs to be performed with the same rigor and competence as in radiology department

- Clear distinction between POCUS and conventional US performed in radiology
- Standards for training, assessment, QA
- Credentialing guidelines
- Purchasing and maintenance of equipment
- Patient safety

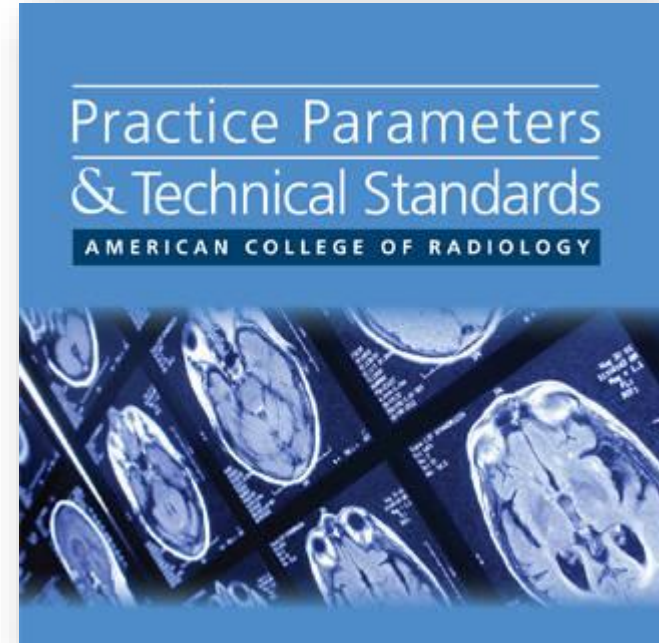


Where do we go from here?



POCUS requires policies and guidelines

- ACR – Practice Parameters for Diagnostic US
 - Qualification for Physicians
 - Residency in radiology or interventional radiology
 - For non-radiologists focusing on a specific anatomic area (e.g. obstetrical, thyroid, vascular): 200 hrs CME, 500 cases
 - **No mention of POCUS**
 - ACR Commission on US and Society of Radiologists in US proposal on POCUS
 - ACR Digest of Council Actions 2022-2023
 - *The ACR believes that targeted point of care ultrasound examinations without formal training, adequate standards, and documentation can be detrimental to patient care, including the risk of the patient receiving an incorrect diagnosis from an improperly performed sonographic examination; adopted 2013 (Res. 22).*
- 9 – New POCUS Working Group (2022)



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¹⁰ – New POCUS Working Group (2022)

ORIGINAL ARTICLE ■ Clinical Practice Management

Check for updates

Mapping the Ultrasound Landscape to Define Point-of-Care Ultrasound and Diagnostic Ultrasound: A Proposal From the Society of Radiologists in Ultrasound and ACR Commission on Ultrasound

SA-CME

Maitray D. Patel, MD^{a,b,c}, Mindy M. Horrow, MD^{a,d}, Aya Kamaya, MD^{a,e}, Mary C. Frates, MD^{a,f}, Nirvikar Dahiya, MD^{a,g}, Lauren Golding, MD^{b,i}, Wui K. Chong, MBBS^{b,j,k}, Marielia Gerena, MD^{b,l}, Sujata Ghate, MD^{b,m,n}, Phyllis Glanc, MD^{b,o}, Alyssa R. Goldbach, DO^{b,p}, Sonia Gupta, MD^{b,q}, Paul A. Hill, MD^{b,r}, Stephen I. Johnson, MD^{b,s}, Madison R. Kocher, MD^{b,t}, Eric Rubin, MD^{b,u,v}, Roya Sohaey, MD^{b,w}, Jeffrey T. Waltz, MD^{b,t}, Darcy J. Wolfman, MD^{b,x,y}, William D. Middleton, MD^{a,z}

J Am Coll Radiol 2021

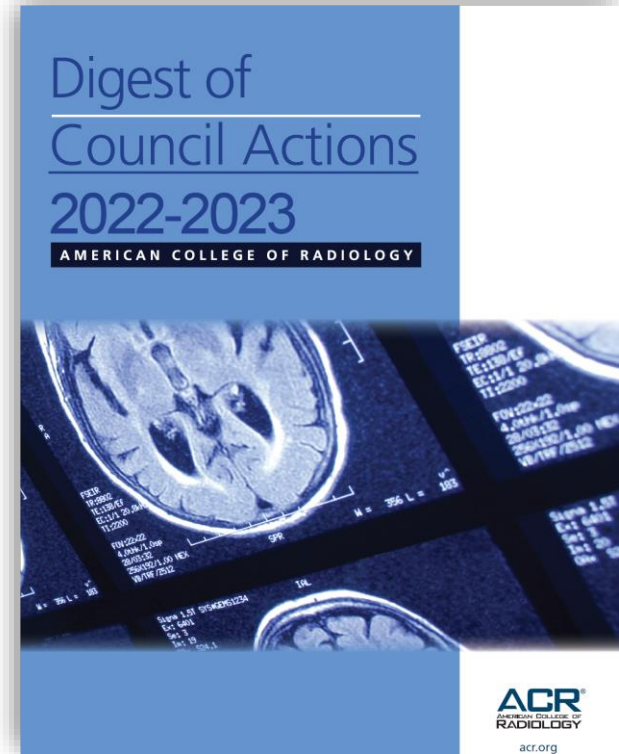
Framework with 4 distinct categories based on setting, comprehensiveness, completeness

- POCUS (part of patient E/M)
- Noncomprehensive Diagnostic US
- Partial-Comprehensive Diagnostic US
- Complete-Comprehensive Diagnostic US

Review of “limited US” CPT codes

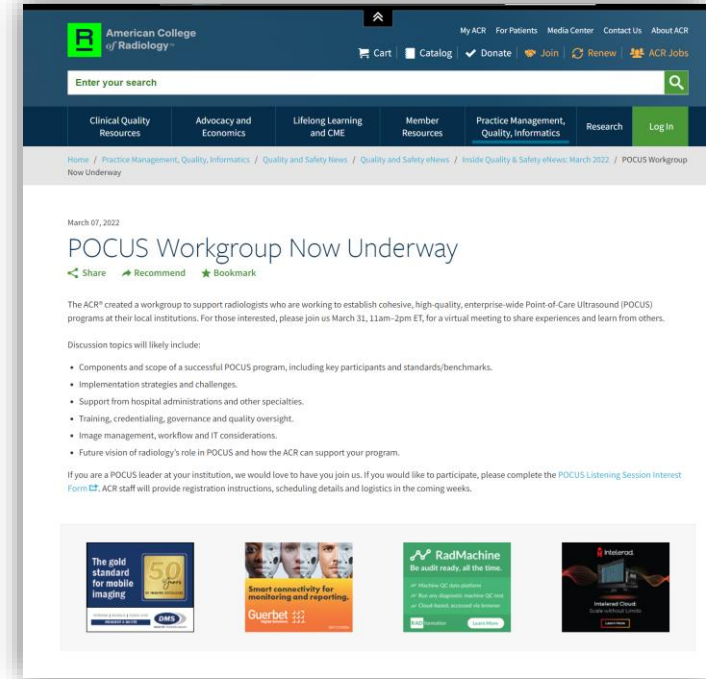
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Several societies have developed POCUS guidelines



Canadian Association of Radiologists Journal 70 (2019) 219–225
www.carjonline.org

Health Policy and Practice / Santé : politique et pratique médicale
Canadian Association of Radiologists Position
Statement on Point-of-Care Ultrasound

Tanya P. Chawla, MRCP, FRCR, FRCPC^{a,b}, Mark Cresswell, MD, FRCPC^b,
Sukhvinder Dhillon, MB ChB, MRCP, FRCR^c, Mary-Louise C. Greer, MBBS, FRANZCR^d,
Angus Hartery, MD, FRCPC^e, Valerie Keough, MD, FRCPC^d,
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^eDepartment of Radiology, St Clare's Hospital and Memorial University of Newfoundland, St Johns, Newfoundland, Canada
^fDepartment of Radiology, McMaster University, Hamilton, Ontario, Canada

Guidelines & Recommendations Thieme

Emergency Point-of-Care Ultrasound Stewardship – A Joint Position Paper by EuSEM and EFSUMB and Endorsed by IFEM and WFUMB
Verantwortungsbewusste bettseitige Notfallsonografie – ein gemeinsames Positionspapier von EuSEM, EFSUMB und unterstützt von IFEM und WFUMB


Authors
Joseph Osterwalder¹, Senad Tabakovic², Christian Jenssen³, Christoph F. Dietrich⁴, Jim Connolly⁵, Effi Polyzogopoulou⁶, Vito Cantisani⁷, Matthias Wüstner⁸, Bob Jarman⁹, Beatrice Hoffmann⁹

Intensive Care Med (2011) 37:1077–1083
DOI 10.1007/s00134-011-2246-9

EXPERT PANEL

Expert Round Table
on Ultrasound in ICU

International expert statement on training standards for critical care ultrasonography



CHEST

Consensus Statement

**American College of Chest Physicians/
La Société de Réanimation de Langue
Française Statement on Competence in
Critical Care Ultrasonography***

Paul H. Mayo, MD; Yannick Beaulieu, MD; Peter Doelken, MD;
David Feller-Kopman, MD; Christopher Harrod, MS; Adolfo Kaplan, MD;
John Oropello, MD; Antoine Viellard-Baron, MD; Olivier Axler, MD;
Daniel Lichtenstein, MD; Eric Maury, MD; Michel Slama, MD;
and Philippe Vignon, MD

JAMA Network | **Open** 🔒

Original Investigation | Statistics and Research Methods

Adherence to the Standards for Reporting of Diagnostic Accuracy (STARD) 2015 Guidelines in Acute Point-of-Care Ultrasound Research

Ross Prager, MD; Joshua Bowdridge, MD; Hashim Kareemil, MD; Chris Wright, MD; Trevor A. McGrath, MD; Matthew D. F. McInnes, MD, PhD

ONLINE ONLY JANUARY 2, 2019—POSITION STATEMENT

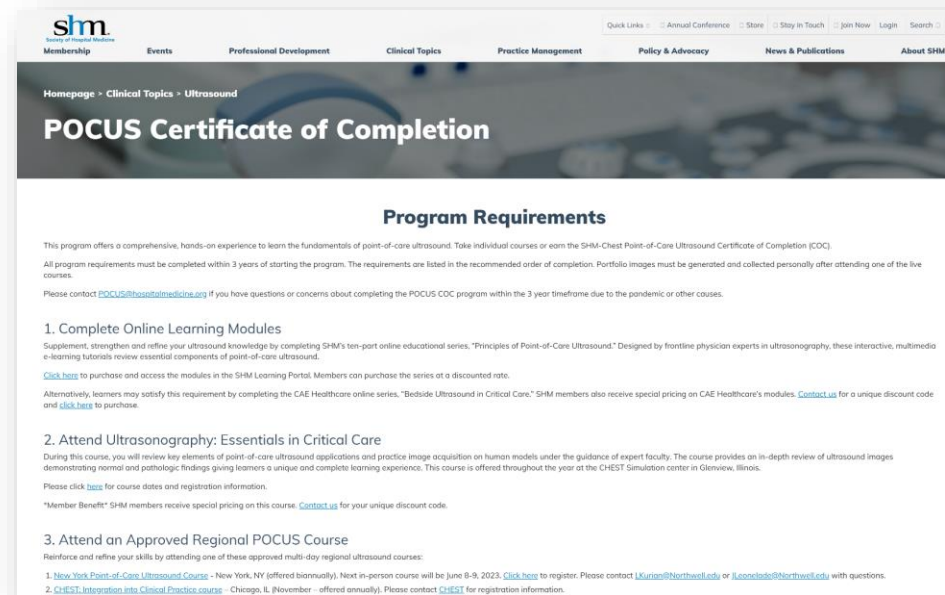
**Point-of-Care Ultrasound for Hospitalists:
A Position Statement of the Society of Hospital Medicine**

Nilam J. Soni, MD, MS^{1,2*}, Daniel Schnobrich, MD³, Benji K. Mathews, MD⁴, David M. Tierney, MD⁵, Trevor P. Jensen, MD, MS⁶,
Ria Dancel, MD^{7,8}, Joel Cho, MD, RDMS, RDCS⁹, Renee K. Dversdal, MD¹⁰, Gregory Mints, MD¹¹, Anjali Bhagra, MD¹²,
Kreegan Reiersen, MD⁴, Linda M. Kurian, MD¹³, Gigi Y. Liu, MD, MSc¹⁴, Carolina Candotti, MD¹⁵, Brandon Boesch, DO¹⁶,
Charles M. LoPresti, MD^{17,18}, Joshua Lenchus, DO¹⁹, Tanping Wong, MD¹¹, Gordon Johnson, MD²⁰, Anna M. Maw, MD, MS²¹,
Ricardo Franco-Sadud, MD²², Brian P. Lucas, MD, MS^{23,24}

Certificate programs require hands-on and e-learning

- Online Learning Module
- “Ultrasonography: Essentials in Critical Care” (3-day course)
- Approved regional 2-day courses
- Online Portfolio with POCUS images to be reviewed by expert
- Final Comprehensive Assessment
- Certificate of completion (not board certification)
 - can be used as guidance for credentialing and hospital privileges

American College of Chest Physicians & Society of Hospital Medicine



The screenshot shows the SHM (Society of Hospital Medicine) website. The header includes the SHM logo and navigation links for Membership, Events, Professional Development, Clinical Topics, Practice Management, Policy & Advocacy, News & Publications, and About SHM. The main content area is titled "POCUS Certificate of Completion" and "Program Requirements".

Program Requirements

This program offers a comprehensive, hands-on experience to learn the fundamentals of point-of-care ultrasound. Take individual courses or earn the SHM-Chest Point-of-Care Ultrasound Certificate of Completion (COC). All program requirements must be completed within 3 years of starting the program. The requirements are listed in the recommended order of completion. Portfolio images must be generated and collected personally after attending one of the live courses.

Please contact POCUS@hospitalmedicine.org if you have questions or concerns about completing the POCUS COC program within the 3 year timeframe due to the pandemic or other causes.

- 1. Complete Online Learning Modules**

Supplement, strengthen and refine your ultrasound knowledge by completing SHM's ten-part online educational series, "Principles of Point-of-Care Ultrasound." Designed by frontline physician experts in ultrasonography, these interactive, multimedia e-learning tutorials review essential components of point-of-care ultrasound.

[Click here](#) to purchase and access the modules in the SHM Learning Portal. Members can purchase the series at a discounted rate.

Alternatively, learners may satisfy this requirement by completing the CAE Healthcare online series, "Bedside Ultrasound in Critical Care." SHM members also receive special pricing on CAE Healthcare's modules. [Contact Us](#) for a unique discount code and [click here](#) to purchase.
- 2. Attend Ultrasonography: Essentials in Critical Care**

During this course, you will review key elements of point-of-care ultrasound applications and practice image acquisition on human models under the guidance of expert faculty. The course provides an in-depth review of ultrasound images demonstrating normal and pathologic findings giving learners a unique and complete learning experience. This course is offered throughout the year at the CHEST Simulation center in Glenview, Illinois.

Please click [here](#) for course dates and registration information.

Member Benefit SHM members receive special pricing on this course. [Contact us](#) for your unique discount code.
- 3. Attend an Approved Regional POCUS Course**

Reinforce and refine your skills by attending one of these approved multi-day regional ultrasound courses:

 1. [New York Point-of-Care Ultrasound Course](#) - New York, NY (offered biannually). Next in-person course will be June 8-9, 2023. [Click here](#) to register. Please contact LKurjan@Northwell.edu or RConcannon@Northwell.edu with questions.
 2. [CHEST, Inspiration into Clinical Practice course](#) - Chicago, IL (November - offered annually). Please contact CHCST for registration information.

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What are the image portfolio requirements?

Cardiac Images (20 studies with the following views per study)

1. Parasternal long-axis view
2. Parasternal short-axis view at the mid-ventricle/papillary level
3. Apical four-chamber view
4. Subcostal 4-chamber view
5. Inferior vena cava longitudinal view

Lung & Pleural Images (5 studies with the following image views per study)

1. Normal sliding with A-lines
2. Consolidation (with high suspicion for pneumonia)
3. Pleural effusion
4. B-lines (minimum of 1 B-line)

Abdominal Images (5 studies with the following image views per study)

1. Right kidney longitudinal view with hepatorenal recess
2. Left kidney longitudinal view with splenorenal space
3. Abdominal aorta transverse view
4. Abdominal aorta longitudinal view
5. Bladder transverse view
6. Bladder longitudinal view
7. Ascites in right or left lower quadrant

Lower extremity DVT Images (5 studies with the following views per study)

All images should be acquired in a transverse orientation and demonstrate compression at each level.

1. Right common femoral vein
2. Right common femoral vein – Greater saphenous vein junction
3. Right femoral vein (superficial) – Deep femoral vein junction
4. Right mid-/distal femoral vein (superficial)
5. Right popliteal vein
6. Left common femoral vein
7. Left common femoral vein – Greater saphenous vein junction
8. Left femoral vein (superficial) – Deep femoral vein junction
9. Left mid-/distal femoral vein (superficial)
10. Left popliteal vein

Skin & Soft Tissue Images (3 studies with the following image views per study)

1. Normal skin and subcutaneous tissue (thigh or abdominal wall)
2. Subcutaneous edema (“cobblestoning”)

Radiology needs to work with other specialties to advance POCUS

- Can help with shortage of radiologists
- Education
 - Part of medical education
 - US training during residency
 - POCUS fellowships
- Quality & Safety
 - Credentialing guidelines
 - QA pathways



The screenshot shows a webpage from Health Imaging, a publication under InnovateHealthcare. The page features a navigation bar with links for COVID-19, IMAGING, TECHNOLOGY, MANAGEMENT, VIDEOS, CONFERENCES, CUSTOM CONTENT, and SUBSCRIBE. The main article is titled "Radiologists must ditch 'illusion' of handling all POCUS exams, work with clinicians on path forward" and is dated March 31, 2021, by Matt O'Connor. Below the title is a social media sharing bar with icons for Twitter, Facebook, LinkedIn, Email, and Print. The article's main image shows a person in a white lab coat using an ultrasound probe on a patient's arm. The text below the image states: "Radiologists must put turf wars aside and work with clinicians to accelerate the use of point-of-care-ultrasonography (POCUS), two imaging experts argued in a new editorial."

Hospital credentialing requires collaboration between radiology and other departments

- Training requirements
- Competency assessments:
 - Basic knowledge
 - Image acquisition
 - Image interpretation
- Clinical Integration
- Quality & Safety
- Image storage
- Purchasing and maintenance of equipment

Policy for Credentialing and Privileging in Point-of-Care Ultrasound by Internal Medicine Physicians Massachusetts General Hospital

January 20, 2018

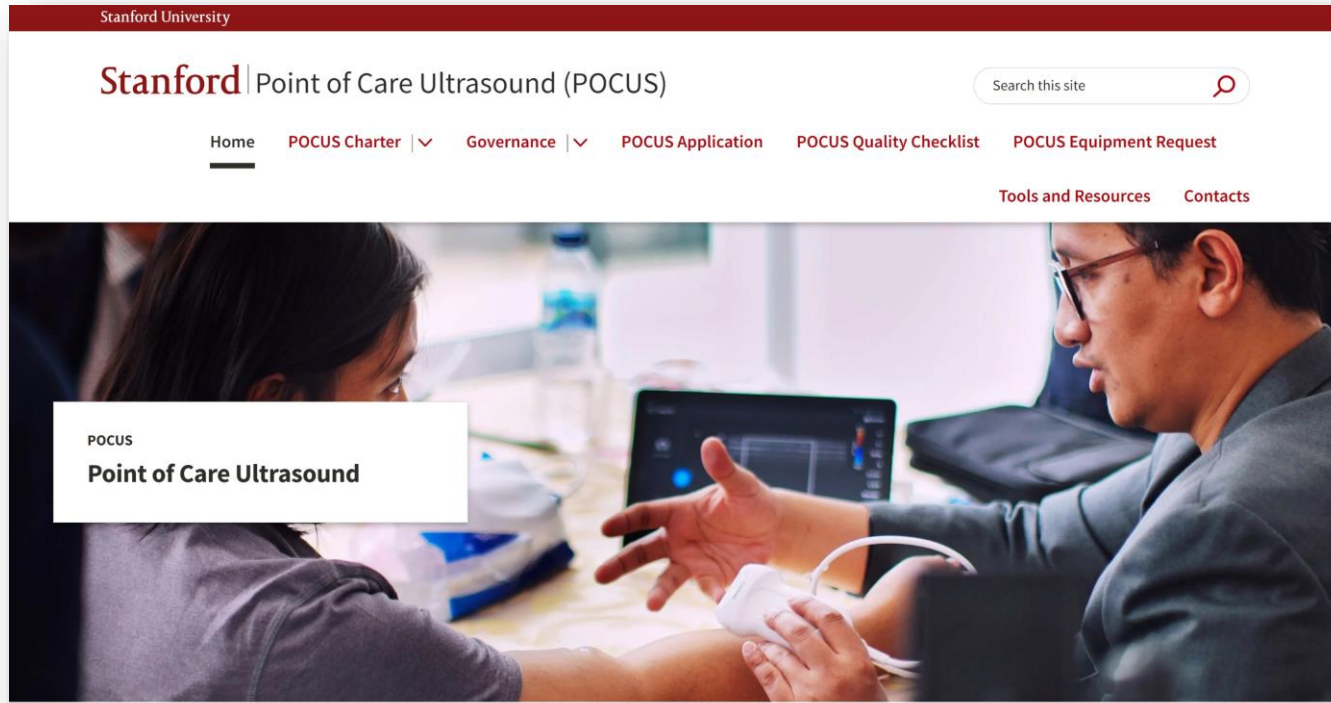
Thomas Heyne, MD, MSt., Dept. of Medicine
Andrew Liteplo, MD, Dept. of Emergency Medicine

Reviewed by Javier Romero, MD and James Brink, MD, Dept. Radiology, Jan 20, 2018

The protocols and procedures will be outlined below to which all participating IM faculty will be expected to adhere.

- I. Decision making with respect to Point-of-Care Ultrasound Scanning
- II. Scope of Practice
- III. Training Guidelines
- IV. Documentation/Quality Assurance
- V. Continuing Education

Standard operating procedures will ensure quality



Co-leaders: radiology and emergency medicine
Governance committee: representation from all specialties using POCUS

Standard operating procedures will ensure quality

POCUS Application

New Departments Wanting POCUS Capabilities:

- Connect with Drs. Lobo, Shen, and Dot – meet and greet via email or Zoom
- Add representative to monthly governance committee meetings and share POCUS governance committee slide deck for background and reference
- Complete POCUS application link below (based on quality checklist) – this activity is not rate-limiting and can be done concurrently while activities to support capability continue. Goal is to understand current state and establish program structure correctly early on.
- Meet with team to review POCUS application – include POCUS leadership and IT/Biomed and possibly other core team members (revenue, infection control, MSO)
- Walk clinical space to observe how and where equipment will be used
- Present proposed program overview to POCUS governance committee
- Scope of practice (who, how, where)
- Training and credentialing requirements prior to use
- Imaging guidelines, archival, and exam documentation workflows
- Equipment management (inventory, cleaning)
- Billing

Department Name

Contact Information (Name/Phone No./Email)

Request Date

Are you using POCUS now?

Who are your local US leaders?

Which equipment are you currently using?

Where are exams being performed?

What are your projected annual POCUS volumes?

Is POCUS included under specialty certification?

Is a training/credentialing program established?

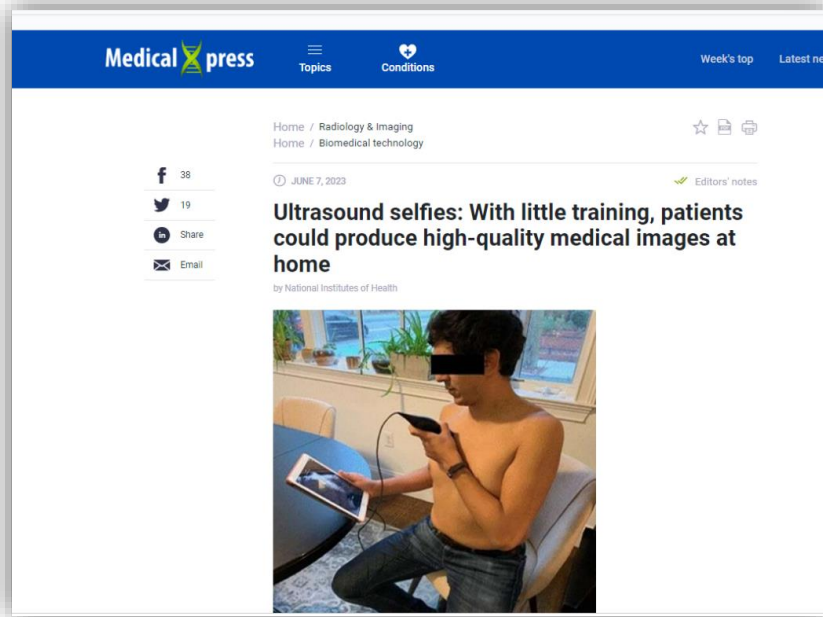
Is a QA/QC program established?

Are you billing for POCUS exams?

Detailed checklist facilitates implementation

1. Program supervision and outreach	Status
<p>Ultrasound program is communicated and supported by respective department or service leaders</p> <p>Local program leader(s) identified (MD/Ops)</p> <p>Program onboarding and reference education materials and/or site developed</p>	
<p>2. Department privilege/ permissions requirements</p> <p>Setting of use/scope of practice and credentialing guidelines are defined and documented</p> <ul style="list-style-type: none"> - Should align with national and or medical staff guidelines, - If no guidelines exists, a departmental/by service proposal is documented and approved <p>MOC requirements are defined, documented, and approved</p> <p>Examinations for diagnostic or procedural purposes are performed or supervised by credentialed and privileged providers</p>	
<p>3. Clinical Quality Assurance</p> <p>A Quality Assurance approach is documented and deployed</p> <p>Ultrasound exams are appropriately supervised</p> <p>Ultrasound exams are reviewed for feedback regarding image acquisition, interpretation and documentation</p> <p>A workflow is documented and followed to review exam and patient data and corrected if required (e.g. confirm correct exam-patient association)</p>	
<p>4. Equipment</p> <p>Equipment used in clinical setting is purchased and approved following clinical department and or Hospital processes</p> <p>Vendors have a current agreement including BAA on file signed by authorized SHC personnel (HIMS/Compliance/IT)</p> <p>Equipment is recorded through Stanford Biomedical engineering Department</p> <ul style="list-style-type: none"> -Equipment is following appropriate preventative maintenance as defined by manufacturer and administrated by Biomedical Engineering department <p>Tablet and cellphone used for clinical care are in compliance with SHC and regulatory policies (HIPAA-HITECH)</p> <ul style="list-style-type: none"> - Mobile device management software is activated (SHC is using airwatch) - Application downloaded is reviewed and approved by SHC IT 	
<p>5. Infection Control</p> <p>Guidelines for cleaning is communicated and followed as indicated by manufacturer or hospital guidelines</p> <p>Handheld ultrasound should not be used for invasive or use cases that requires High Level Disinfection (e.g. intraoral or endovaginal)</p>	
<p>6. IT - Image archival and electronic health record integration</p> <p>A workflow is defined for documentation of examinations findings and archival of associated images</p> <p>Vendor software application have been reviewed and approved by SHC IT security officer and Compliance/HIMS as appropriate</p> <p>Images are archived into a Hospital IT approved system (e.g. a PACS or enterprise image archive)</p> <p>Integration with the electronic medical record is supported by and according SHC IT guidelines</p>	
<p>7. Billing</p> <p>Billing requirements for performed ultrasound exams (for procedure and/or diagnostic purposes) are in compliance with Stanford, payers, local and federal requirements</p> <p>ICD-CPT coding accurately describes services performed and are reviewed with clinic management and or coding department</p> <p>Medical necessity, images, findings, interpretation and report must be documented in the medical record</p> <p>Images are stored and reproducible if requested</p> <p>The study must be performed and interpreted by qualified individuals</p>	
<p>8. Training</p> <p>A training/ curriculum is documented for attending and or supervising qualified providers (e.g. APPs)</p> <p>A training/ curriculum is documented for residents and or fellows</p>	

In the future patients could perform their own POCUS exam at home



Duggan NM et al Sci Rep 2022

Patients self-performing POCUS and obtaining interpretable images to aid in real-time decision-making could transform home-hospital care



THANK YOU

Questions?

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