MONTHLY FEATURE CPG SOPR SUMMARY

CPG Citation: Qaseem A, Etxeandia-Ikobaltzeta I, Mustafa RA, Kansagara D, Fitterman N, Wilt TJ. for Clinical Guidelines Committee of the American College of Physicians. Appropriate Use of Point-of-Care Ultrasonography in Patients with Acute Dyspnea in Emergency Department or Inpatient Settings: A Clinical Guideline from the American College of Physicians. Annals Int Med 2021. doi:10.7326/M20-7844

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Scope of Guideline: All ED clinicians who take care of adult dyspnea patients.

Inclusion: Adult ED patients with acute dyspnea, later confirmed with 1 of the following: acute CHF +/- pulmonary edema, pulmonary embolism (PE), pleural effusion, pneumonia, or pneumothorax (PTX).

Exclusion: Patients in outpatient settings. Dyspnea from acute asthma/COPD, acute coronary syndromes, trauma. Does not apply to handheld US devices.

Key Words: ED point-of-care ultrasonography, acute dyspnea

Key Recommendations: *Each recommendation is accompanied by the "strength" of recommendation and the level of evidence (LoE) supporting that recommendation*

Recommendations	Strength, LoE
NEUTRAL Clinical Action Clinicians may use point-of-care ultrasonography **in addition to the standard diagnostic pathway** when there is diagnostic uncertainty in patients with acute dyspnea in the ED. There was insufficient evidence to make a recommendation for use of ED POCUS to **replace** standard Dx pathway (no direct results for health outcomes of interest).	Conditional (Low Certainty)

Overall, the addition of ED POCUS (to standard Dx pathway) increased the proportion of correct ED dyspnea diagnoses from 59-91% (ARD 31.9%, 95%CI 22.4-53.8%); moderate certainty evidence.

Diagnosis	Prevalence (%)	Evidence Certainty	Sens Range (%)*	Spec Range (%)*	False Neg*	False Pos*
CHF (3 RCTs)	50	Low	38-83 [79-100]	68-92 [95-99]	85-310 [0-105] **15-205 fewer	40-160 [5-25] **35-155 fewer
Pleural Effusion (2)	5	Low	17-18 [89-100]	98-100	41 [0-5] 41-36 fewer	0-19 [0-19]
Pneumonia (2)	40	Low	14-83 [92-92]	72-97 [63-98]	68-344 [32] **36-312 fewer	18-168 [12-222] 6 fewer – 54 more
Pulmonary Embolism (2)	5	Low	0-80 [89-100]	97-99 [95-100]	10-49 [0-5] **10-44 fewer	9-28 [0-47] 9 fewer – 19 more

*Std Diagnostic alone, and [Std Dx + POCUS added). Summarized from **Table 1** of guideline.

Overall, as the pretest probability of the 4 key diagnoses increased, so did the false negative test range (and false positive test range decreased); see **Figure 2**.

Table 2 of the report summarizes the **lack of utility** of ED POCUS as a replacement test for standard Dx pathways for the 4 key conditions.

No studies examined the following POCUS outcomes: Quality of life, ICU admissions, disease-specific outcomes (unnecessary antibiotics use, respiratory support, referral times, use of lung CT). There was insufficient information to analyze the impact of POCUS on mortality, ED time to diagnosis nor time to treatment.

Benefits of Recommendations: More rapid diagnosis of key acute dyspnea conditions in the early ED assessment phase. Substantially increases the correct diagnoses of key conditions (CHF, pleural effusion, pneumonia, PE) in **addition** to standard Dx testing (not as a replacement). Added ED POCUS also generally lowers the false negative and positive rates for these diagnoses. The CPG Public Panel members were in favour of adding POCUS to standard Dx pathways, in order to improve Dx accuracy.

Harms/Adverse Effects of Recommendations: No direct complications of POCUS. No reporting of downstream consequences of false-positives or –negatives, nor additional interventions from incidental findings. May delay definitive interventions in patients who are clinically unstable, and should not interfere with life-saving care. Public Panel members were NOT in favour of using POCUS to replace standard Dx pathways.

Barriers to Uptake: Access to formal US devices. Appropriate training/experience of ED POCUS users (not defined in included review studies).

Facilitators of Uptake: Increased training/access to formal POCUS opportunities in ED settings.

CLINICAL COMMENTARY:
Use of POCUS has improved the timely diagnosis of many urgent conditions in the ED setting, which allows for more rapid interventions for treatment. A number of ED dyspnea diagnoses have been studied for POCUS accuracy, and found to be benefitted by early use of POCUS, especially if a patient is too unstable to be transported for more definitive formal diagnostic testing.

The **addition** of ED POCUS to standard Dx pathways increased diagnostic accuracy, was acceptable to patients, and likely added minimal incremental cost to overall care. **Replacement** of standard Dx pathways, however, was NOT supported by the evidence to improve overall diagnostic accuracy, not acceptable to patients, and was not recommended by authors.

Use of POCUS did not affect hospital LOS nor readmissions in the studies included in the supporting systematic reviews.

No studies reported on the costs of POCUS compared with standard Dx pathways.

Disclaimer (if any stated): None

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Grading System Used: GRADE; a "Conditional" recommendation states the following:
1) Benefits probably outweigh the risks and burden, or vice versa, but there is appreciable uncertainty.
2) Applies to many patients but may differ depending on circumstances or patients' values and preferences.
3) Policymaking will require substantial debates and involvement of many stakeholders. Policies are also more likely to vary between regions. Quality indicators would have to focus on the fact that adequate deliberation about the management options has taken place.

Moderately confident *in the effect estimate: The true effect is likely close to the estimated effect, but there is a sizeable possibility that it is substantially different.*

Institute of Medicine 2011 Trustworthiness Standards

Rating Domain	Rating (Good/Fair/Poor)
Establishing transparency	**Good**
Managing conflict of interest in CPG development group	**Good**; full disclosures/management of CoI reported. None significant.
Group composition (range of stakeholders involved)	**Good**; 2 patient representatives to confirm values/preferences, and comments on CPG recomendations
Critical evaluation of supporting evidence	**Good;** separate published SR
Framing recommendations based on supporting evidence	**Good;** use of GRADE methods
Clear articulation of recommendations	**Good;** single rec presented in pg 1 summary
External review by relevant stakeholders/ organizations	**Good;** international review and comment analysis prior to final publication
Updating schedule	**Good;** automatically invalid after 5yrs, or once an update is published.
Implementation issues	**Fair;** some comments around training/experience of POCUS users