

## Draft recommendation (statement) details

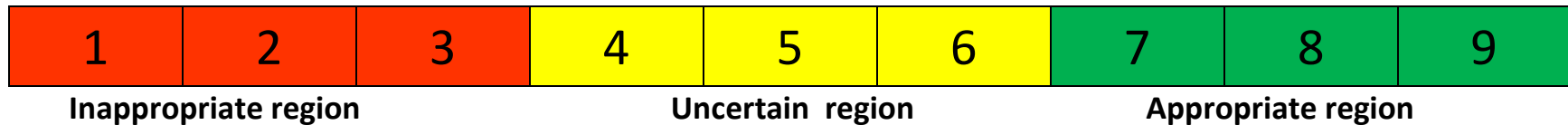
Phase- 1- Domain 1 - Scope

Serial# 1  
Code PID1.3

Recommendation **The integrated ultrasound curriculum for undergraduate medical education can serve as a resource for other healthcare professionals such as nurse practitioners, nurses, physician assistants, and emergency medicine technicians.**

Please rank the appropriateness of the above statement (*see footnotes*)

**My vote is** ([Click here to choose a number](#))



### Comments / Rationale

Considering the overlap in medical student educational content and skill with that of other healthcare professionals as set by their accrediting bodies such as nurse practitioners, nurses, physician assistants, mid-wives, dentists, and emergency medicine technicians an integrated ultrasound curriculum for medical students should prove to be a valuable and appropriate resource for the education of these other healthcare professional as well. (supported by standards of medical students (LCME), NP, Nurse, PA, EMT).

Considering the overlap in clinical responsibilities of physicians and these other healthcare professionals and the need to increase patient access to technology that improves patient care and patient safety, various clinical ultrasound applications in an integrated ultrasound curriculum for medical students would be appropriate for adoption into the curriculum of these other healthcare professionals. (supported by standards).

It has been demonstrated that non-physician providers such as nurse practitioners, nurses, physician assistants, and emergency medicine technicians can learn and competently use ultrasound in the clinical setting ([Ref X](#)).

With a common clinical skill like ultrasound, having a variety of health professionals involved in the care of the patient trained with a similar basic curriculum and even inter-professional training, will likely enhance the communication among members of the healthcare team, improve the coordination and continuity of care, and ultimately results in better patient care. In addition, the Liaison Committee on Medical Education (LCME), the accrediting body of all allopathic medical schools in the United States and Canada through its Standards for Accreditation encourages development of inter-professional collaborative skills and requires that “medical students have opportunities to learn in academic environments that permit interaction with students enrolled in other health professions” ([Ref Y](#)).

| Reference#<br>PMID<br>(linked to<br>article)   | Title  | Article Summary  | Graded for<br>Level of<br>Evidence -<br>L Melniker<br>to complete | Tied to<br>Recommen-<br>dations<br>(list all) | Comments |
|--|--|--|---|---|----------|
| Ref X<br><br>PMID:<br><a href="#">26945396</a> | Accuracy of nurse-performed lung ultrasound in patients with acute dyspnea | <ul style="list-style-type: none"> <li>• Study Design</li> <li>• Aims/Study Question</li> <li>• Population</li> <li>• Intervention/Comparison</li> <li>• Results/Outcomes</li> <li>• Conclusions</li> <li>• Study Limitations</li> <li>• Points relevant to ICCUME</li> </ul><br><ul style="list-style-type: none"> <li>• Prospective Observational Study</li> <li>• Aims: assess accuracy of nurse-performed LUS in dx of cardiogenic dyspnea with secondary aim to assess accuracy of combining LUS and BNP</li> <li>• Population: 5 IM nurses; study population- 226 consecutive ED patients with dyspnea and plans for admission</li> <li>• LUS training: 4 wk course = 8 hrs lectures, 20 hrs practice on live models, 4 hrs chest US image review</li> <li>• Nurses performed LUS blinded to history, other clinical assessment, and treatment – made determination of cardiogenic dyspnea based on bilateral B-lines in two or more areas and lack of other significant LUS findings such as consolidation</li> <li>• Reference comparison was final assessment of two physicians using all available data except LUS finding – Hx, PE, labs, imaging other than LUS, clinical course – if disagreement a 3<sup>rd</sup> physician adjudicated the case</li> <li>• Outcomes: physician identified cases of cardiogenic dyspnea = 107 with nurses-performed LUS diagnosis showing a sensitivity of 95.3%, specificity of 88.2%, positive predictive value of 87.9%, negative predictive value of 95.5%; adding BNP results increased sensitivity to 98.9%, negative predictive value to 98.8%, and gave a negative likelihood ratio of 0.01</li> <li>• Conclusions: nurse-performed LUS has a good accuracy for cardiogenic dyspnea and combining LUS with BNP would be a useful rule-out combination</li> <li>• Limitations: observational study, small number of learners at a single site, no information on how nurses were selected, patient population was already set for admission so represented more severe cases of dyspnea and heart failure, LUS was the only US application assessed and is relatively easy to learn</li> <li>• Relevant points: nurses learned and successfully applied an important clinical ultrasound application that will likely be one of the core applications in medical curricula</li> </ul> | To be completed   | P1D1.3<br><br>others                          |          |

|  |  |  |                        |                          |  |
|--|--|--|------------------------|--------------------------|--|
| <p>Ref Y</p> <p><a href="#">Link</a></p> | <p>LCME Functions and Structure of a Medical School – Standards for Accreditation of Medical Education Programs Leading to the MD Degree</p> | <ul style="list-style-type: none"> <li>• Official Accreditation Standards</li> <li>• Provides guidance and standards for conducting medical student education and for preparation of Accreditation Evaluations</li> <li>• Pertains to all allopathic medical schools in USA and Canada</li> <li>• Encourages development of inter-professional collaborative skills and requires opportunities for medical students to interact with students in other health professions</li> <li>• Relevant points: inter-professional training in ultrasound would be consistent with the LCME standards and can present additional opportunities for inter-professional training and development of inter-professional communication skills</li> </ul> | <p>To be completed</p> | <p>P1D1.3<br/>others</p> |  |
|--|--|--|------------------------|--------------------------|--|

Format: Abstract

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Medicine (Baltimore). 2016 Mar;95(9):e2925. doi: 10.1097/MD.0000000000002925.

## Accuracy of Nurse-Performed Lung Ultrasound in Patients With Acute Dyspnea: A Prospective Observational Study.

Mumoli N<sup>1</sup>, Vitale J, Giorqi-Pierfranceschi M, Cresci A, Cei M, Basile V, Brondi B, Russo E, Giuntini L, Masi L, Cociolo M, Dentali F.

### Author information

### Abstract

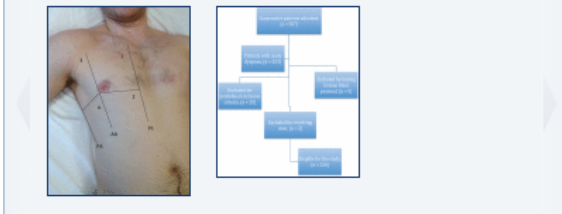
In clinical practice lung ultrasound (LUS) is becoming an easy and reliable noninvasive tool for the evaluation of dyspnea. The aim of this study was to assess the accuracy of nurse-performed LUS, in particular, in the diagnosis of acute cardiogenic pulmonary congestion. We prospectively evaluated all the consecutive patients admitted for dyspnea in our Medicine Department between April and July 2014. At admission, serum brain natriuretic peptide (BNP) levels and LUS was performed by trained nurses blinded to clinical and laboratory data. The accuracy of nurse-performed LUS alone and combined with BNP for the diagnosis of acute cardiogenic dyspnea was calculated. Two hundred twenty-six patients (41.6% men, mean age 78.7 ± 12.7 years) were included in the study. Nurse-performed LUS alone had a sensitivity of 95.3% (95% CI: 92.6-98.1%), a specificity of 88.2% (95% CI: 84.0-92.4%), a positive predictive value of 87.9% (95% CI: 83.7-92.2%) and a negative predictive value of 95.5% (95% CI: 92.7-98.2%). The combination of nurse-performed LUS with BNP level (cut-off 400 pg/mL) resulted in a higher sensitivity (98.9%, 95% CI: 97.4-100%), negative predictive value (98.8%, 95% CI: 97.2-100%), and corresponding negative likelihood ratio (0.01, 95% CI: 0.0, 0.07). Nurse-performed LUS had a good accuracy in the diagnosis of acute cardiogenic dyspnea. Use of this technique in combination with BNP seems to be useful in ruling out cardiogenic dyspnea. Other studies are warranted to confirm our preliminary findings and to establish the role of this tool in other settings.

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## Accuracy of Nurse-Performed Lung Ultrasound in Patients With Acute Dyspnea

A Prospective Observational Study

Nicola Mumoli, MD, Josè Vitale, MD, Matteo Giorgi-Pierfranceschi, MD, Alessandra Cresci, RN, Marco Cej, MD, Valentina Basile, RN, Barbara Brondi, RN, Elisa Russo, RN, Lucia Giuntini, RN, Lorenzo Masi, MD, Massimo Cociolo, MD, and Francesco Dentali, MD

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