



Management of PACU Hypotension using Echocardiography Assessment of Subcostal-only-view (EASy) Point-of-Care Ultrasound (POCUS)



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INTRODUCTION

- Post-operative hypotension is associated with an increased risk of adverse cardiac and cerebrovascular events¹
- Can we implement POCUS to assess hypotension?
- We propose the EASy exam, a simplified POCUS protocol to tailor management to patient physiology²

METHODS

- Retrospective, single-center study, PACU
- 69 hypotensive (MAP < 65 mmHg) patients
- EASy Exams performed by anesthesia residents trained on 4-day POCUS course

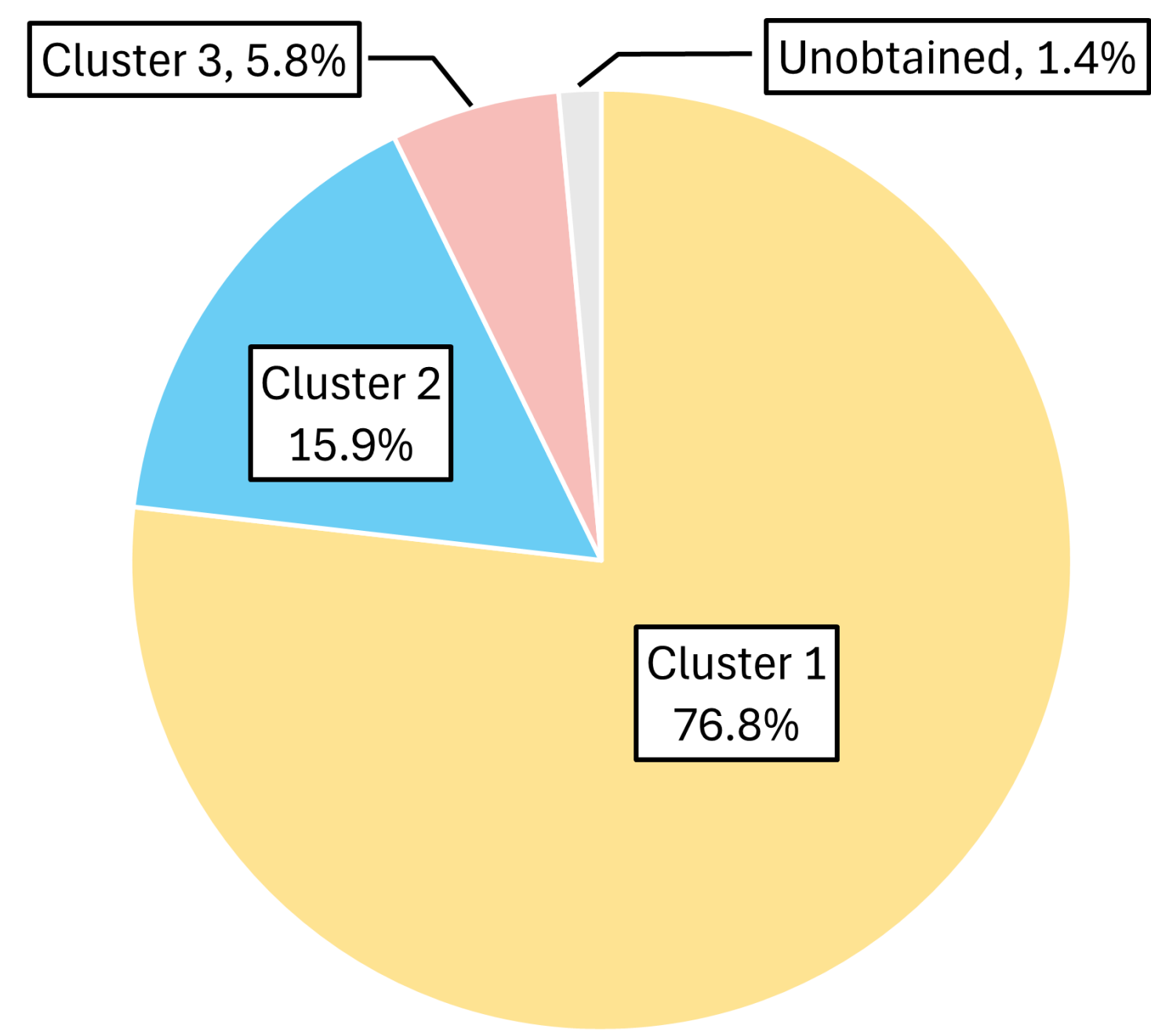
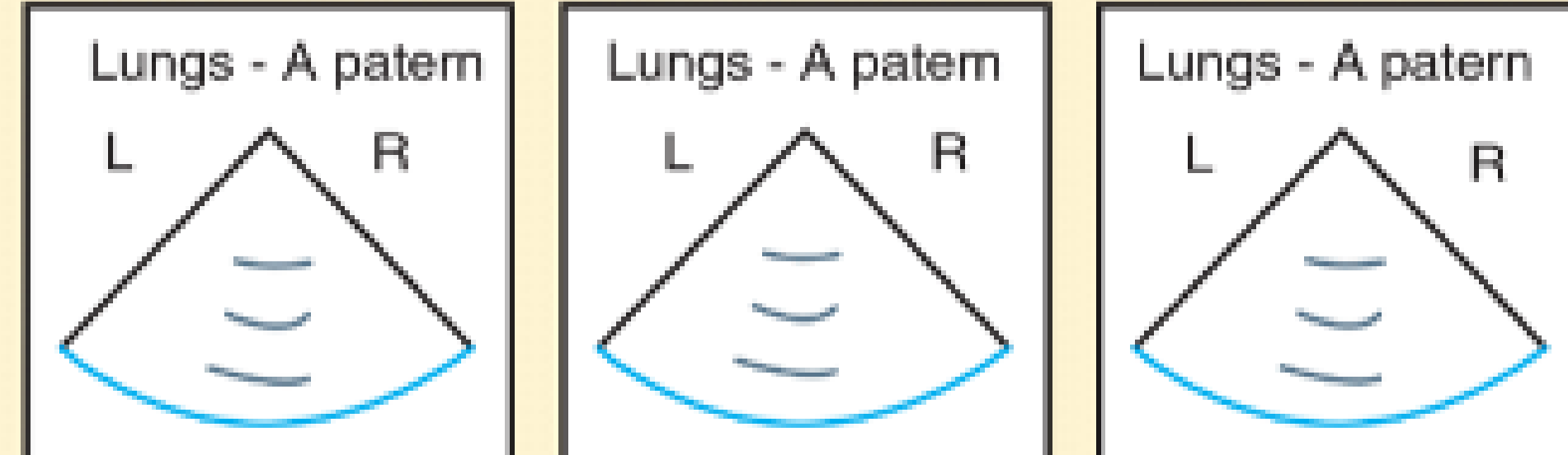
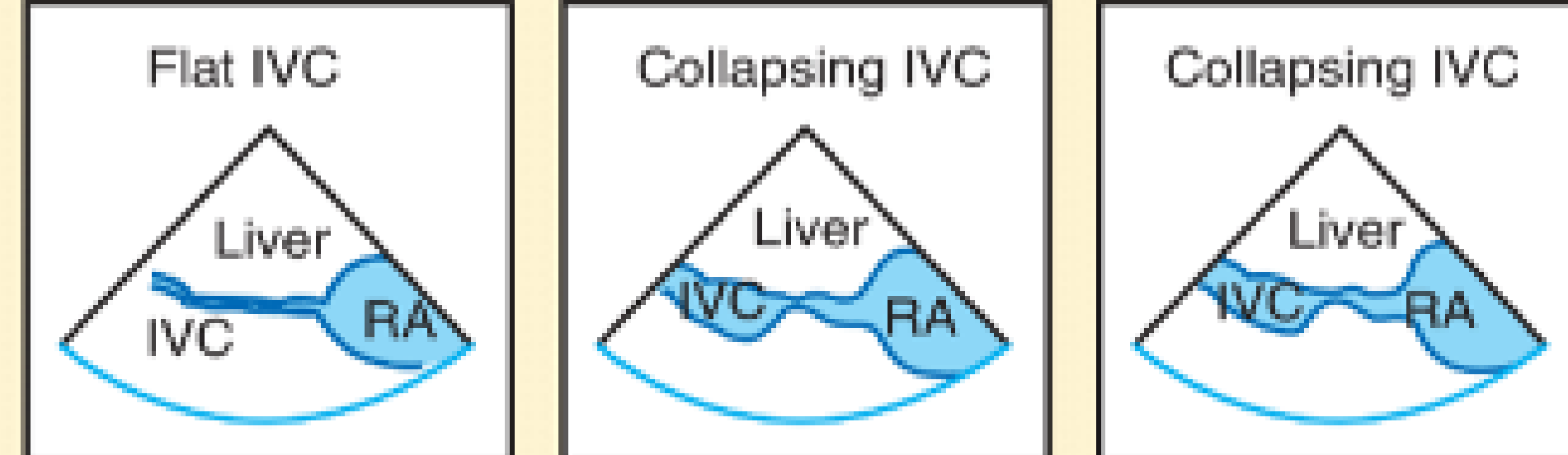
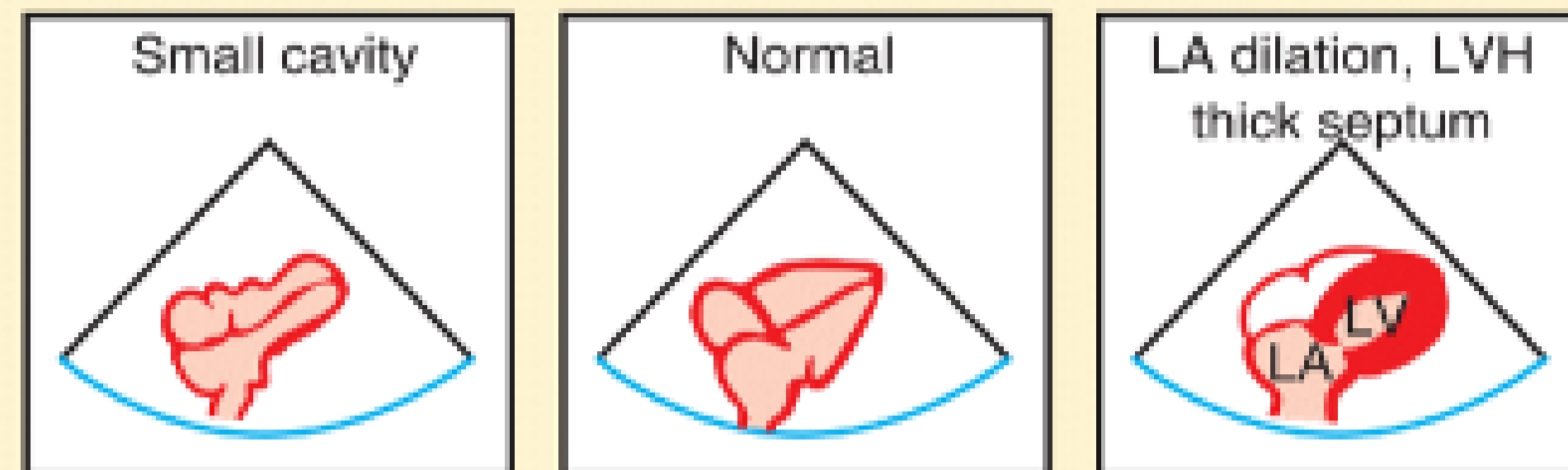


Figure 1. Cluster distributions of EASy exams

Cluster 1

Small/normal cavity
Increase or normal global contractility

Phenotype 1 Phenotype 2 Phenotype 3



1

Hypovolemic shock

2

Distributive shock

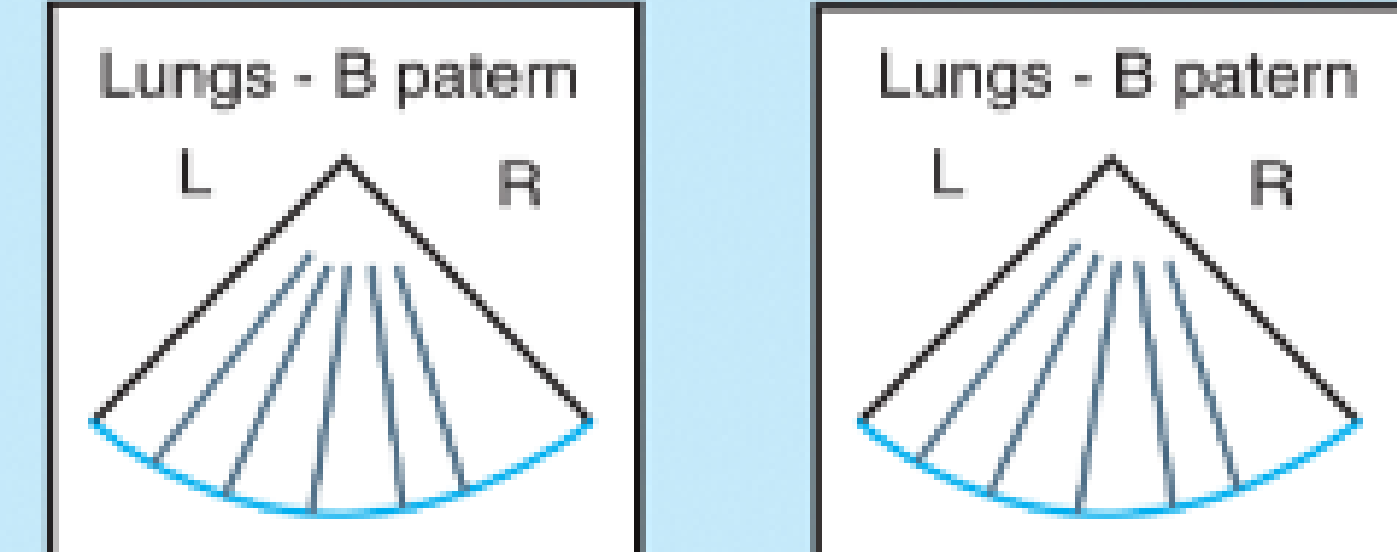
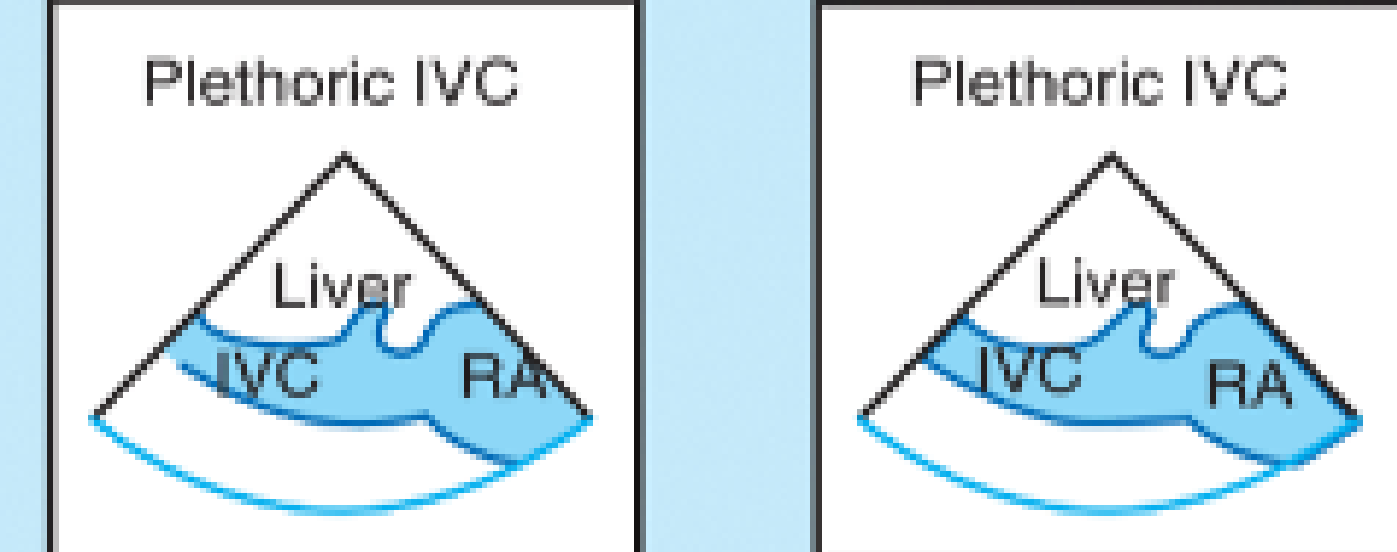
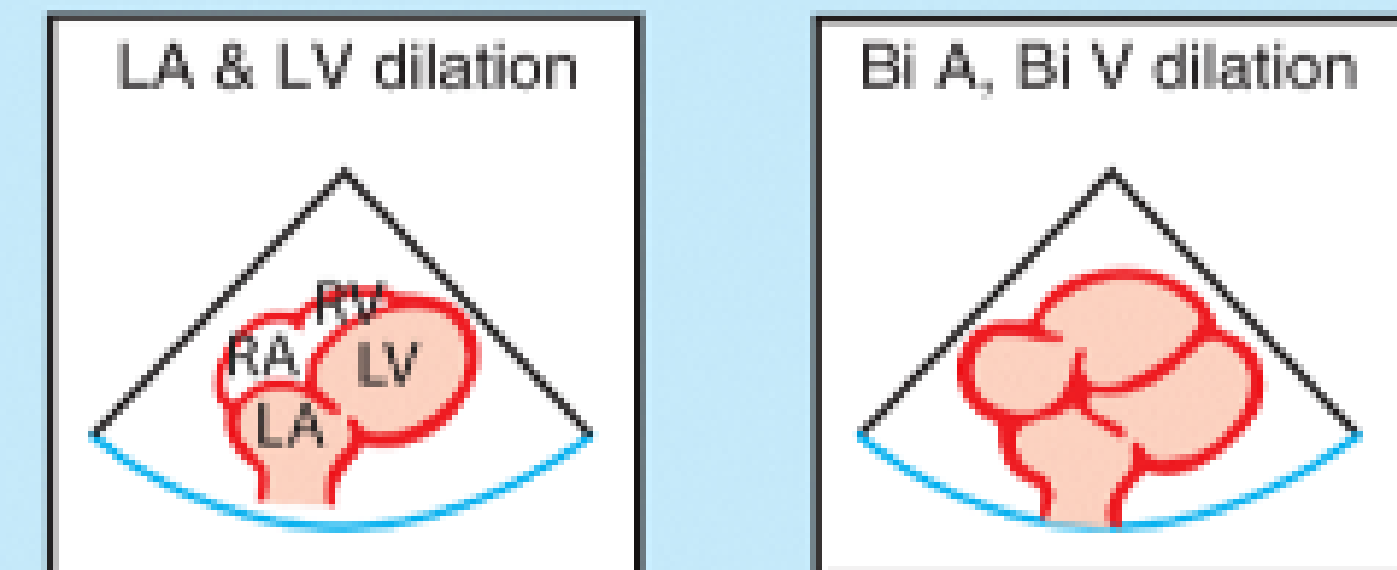
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Diastolic dysfunction
+/- Hypovolemic
+/- Distributive shock

Cluster 2

Enlarged LV +/- RV cavity
Decreased global contractility

Phenotype 4 Phenotype 5



4

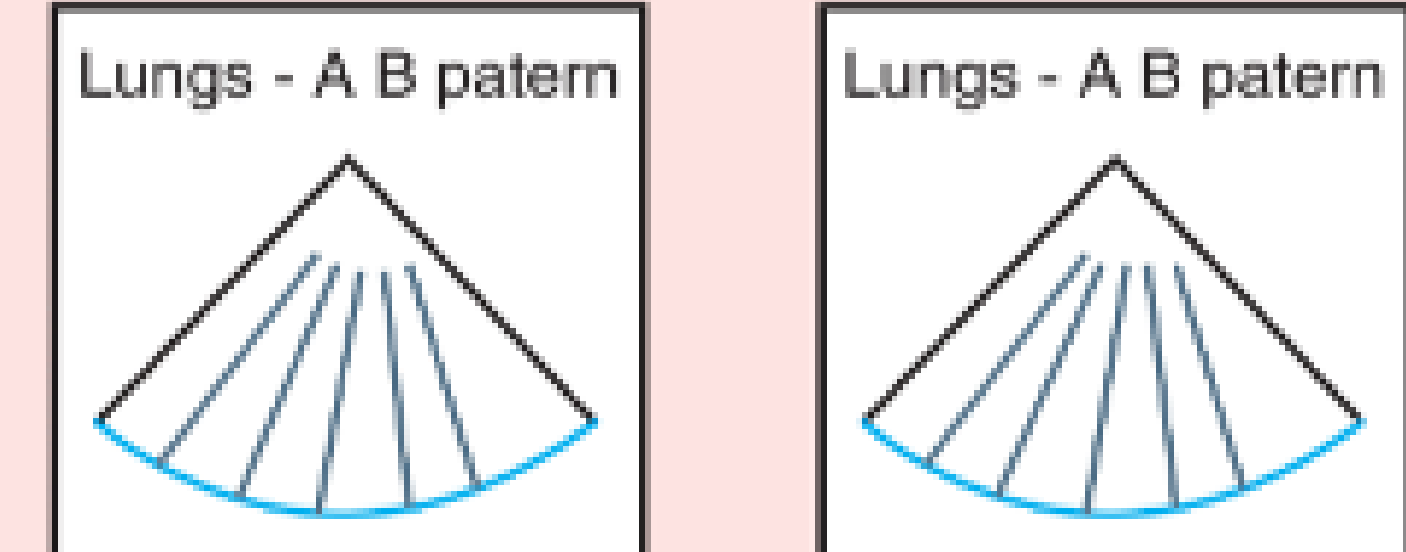
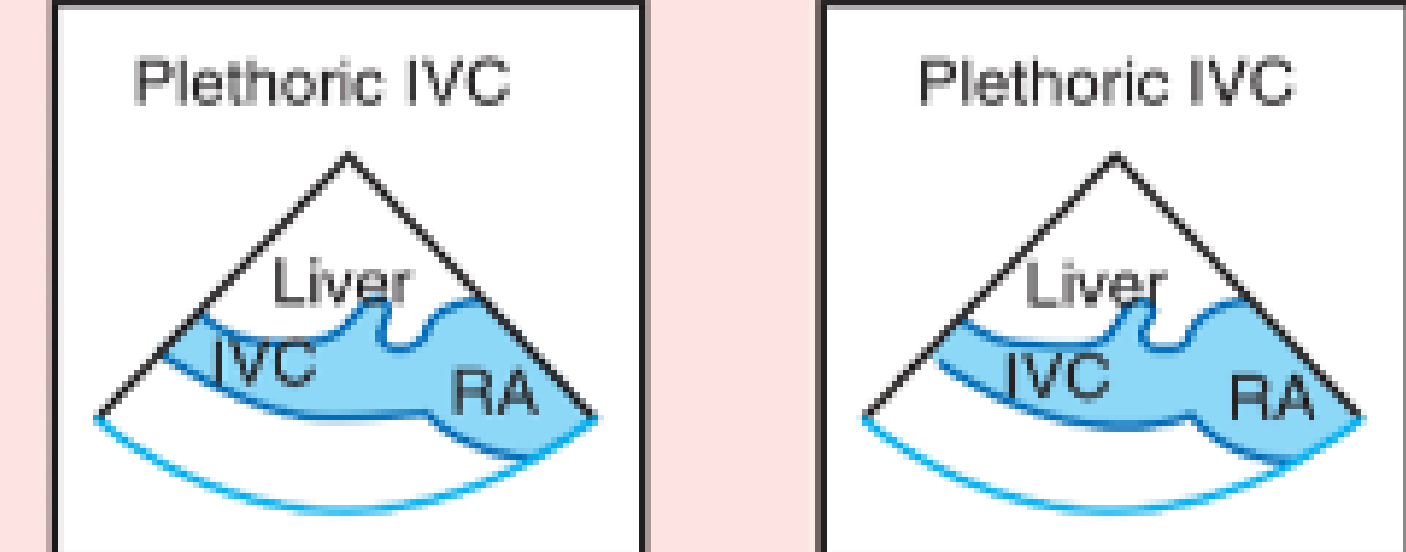
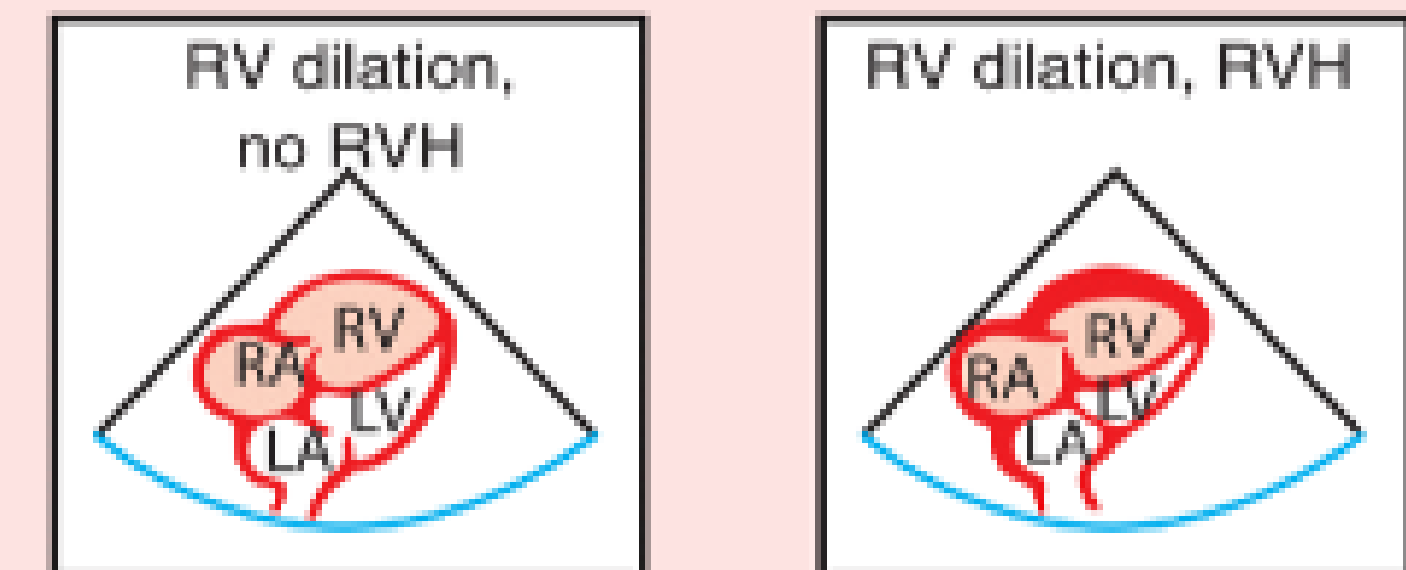
Cardiogenic shock (pump failure)
high pressure pulmonary edema

5

Cluster 3

Isolated enlarged right ventricle
Increase or normal LV contractility

Phenotype 6 Phenotype 7



6

Acute isolated
RV failure ARDS

7

Acute on chronic
isolated RV failure
ARDS
pulmonary HTN

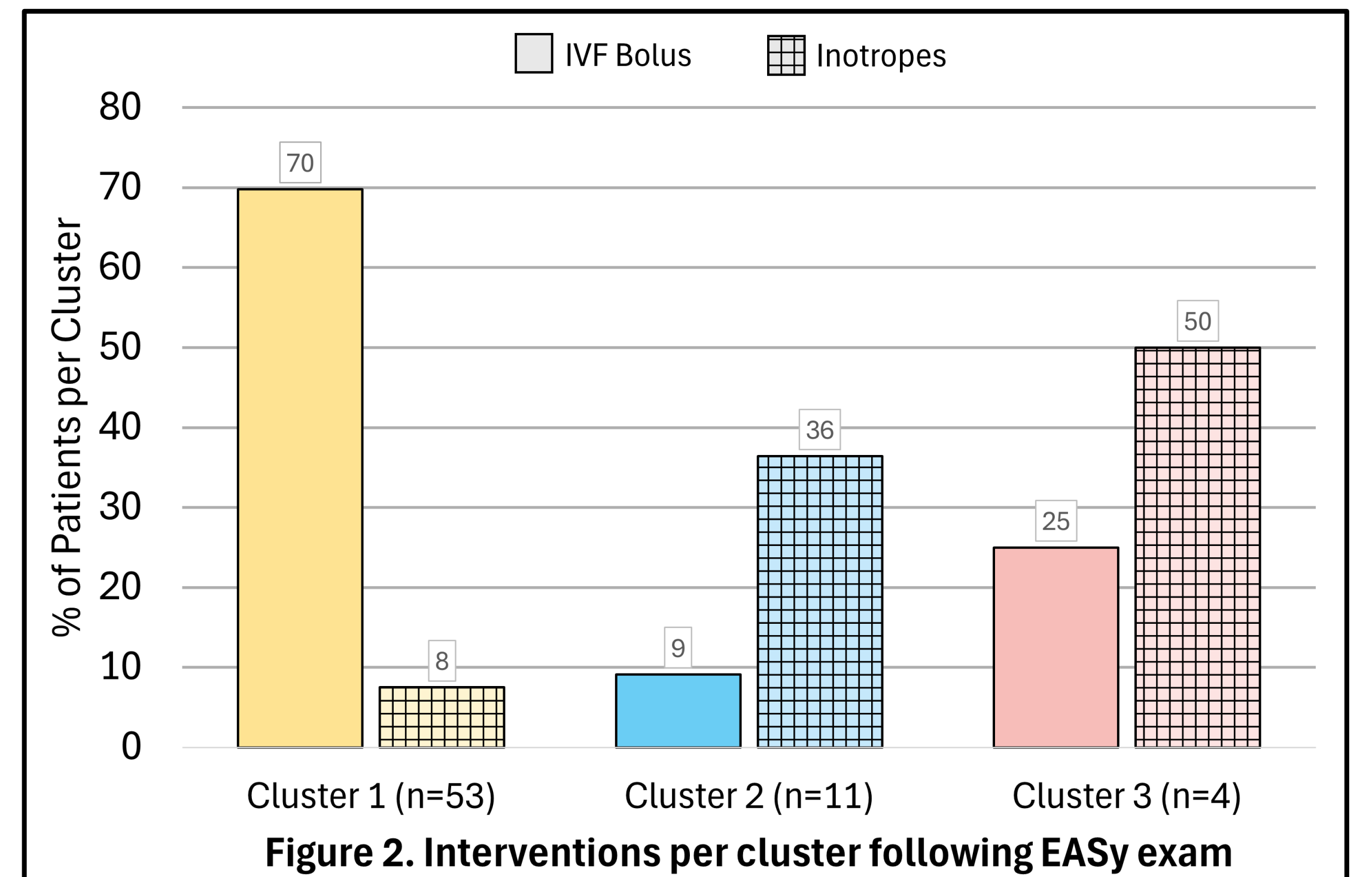


Figure 2. Interventions per cluster following EASy exam

RESULTS

- Average exam completion time: 3.9 min
- Adequate image quality in 59/69 patients
- Cluster 1 received IVF more so than inotropes, whereas Cluster 2 and 3 received inotropes more so than IVF

DISCUSSION

- Residents able to efficiently obtain accurate images
- Patients receiving IVF tend to be from Cluster 1, rarely from Cluster 2
- Patients receiving inotropes tend to be from Cluster 2 or Cluster 3
- EASy exam may be used to phenotype a hypotensive patient, phenotype could then be used to direct management of hypotension

¹Gregory A, Stapelfeldt WH, Khanna AK, Smischney NJ, Boero JJ, Chen Q, Stevens M, Shaw AD. Intraoperative Hypotension Is Associated With Adverse Clinical Outcomes After Noncardiac Surgery. Anesth Analg. 2021 Jun 1;132(6):1654-1665.

²Bughrara N, et al. Comparison of qualitative information obtained with the echocardiographic assessment using subcostal-only view and focused transthoracic echocardiography examinations: a prospective observational study. Can J Anaesth. 2022 Feb;69(2):196-204.