



## INTRODUCTION

Over the past 30 years, point-of-care ultrasound (POCUS) has become standard practice for meeting the diagnostic and therapeutic needs of acutely ill patients in the emergency department, intensive care unit, medical wards, and operating rooms<sup>1</sup>.

POCUS has evolved from its origins in trauma with the use of FAST scans<sup>2</sup> to hemodynamic assessments guiding complex clinical decisions during resuscitations<sup>3</sup>.

POCUS is a well tolerated, non-invasive tool that does not require patient transport, contrast agents, or ionizing radiation. It has been proven to decrease time to accurate diagnosis and commonly leads to targeted interventions based on its findings<sup>4</sup>.

There is an important counter-narrative to the value of POCUS that we will explore in this clinical case report: the role of POCUS in helping acute care providers to de-escalate invasive interventions at end-of-life or in the face of unsurvivable pathophysiology.

## LEARNING OBJECTIVES

To highlight the utility of POCUS in identifying end-stage disease and illustrate an example of using POCUS to frame meaningful end of life and goals of care conversations.

To highlight the non-invasive nature of POCUS assessments that allow for the rapid acquisition of information.

To highlight how POCUS can create opportunity to avoid invasive medical investigations and procedures at the end of life.

## THE CASE

An 87-year-old woman presented to a community hospital with a 6-month history of generalized weakness, weight-loss and progressive shortness of breath.

She had a past medical history of hypertension, dyslipidemia, and paroxysmal atrial fibrillation. She resided in an assisted living complex; however, she had a 6-month period of functional decline requiring increased support for activities of daily living.

She had three recent admissions to general internal medicine for volume overload of unknown etiology, resulting in escalation of diuretics. As she was being managed in an under-resourced community hospital, an echocardiogram to assess her cardiac function was not available.

She re-presented in cardiogenic shock evidenced by hypotension, cool peripheries, elevated lactate and low central venous oxygen saturation. ICU was called for inotropic support.

## AUTHORS

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## MANAGEMENT AND OUTCOME

The consulted ICU attending completed a bedside cardiac ultrasound exam which revealed severe valvular disease in the aortic, mitral and tricuspid valves (See figure 1, 2 and 3).

Without leaving the patient's hospital room, the ICU physician was able to unmask the underlying pathology accounting for the patient's clinical deterioration and multiple previous presentations. This bedside assessment provided a definitive diagnosis to the patient and her family which revealed severe aortic insufficiency, severe mitral regurgitation and severe tricuspid regurgitation. After a full assessment of the patient which included cardiac POCUS, it was clear that her valvular disease was at the limits of medical management. Given her age, functional deterioration, and frailty, she was deemed not a cardiac surgery candidate. Sharing the information gained with the use of POCUS sparked a meaningful conversation regarding diagnosis, overall prognosis and end-of-life values, with a decision to pursue comfort-focused care instead of an ICU admission and its associated invasive interventions.

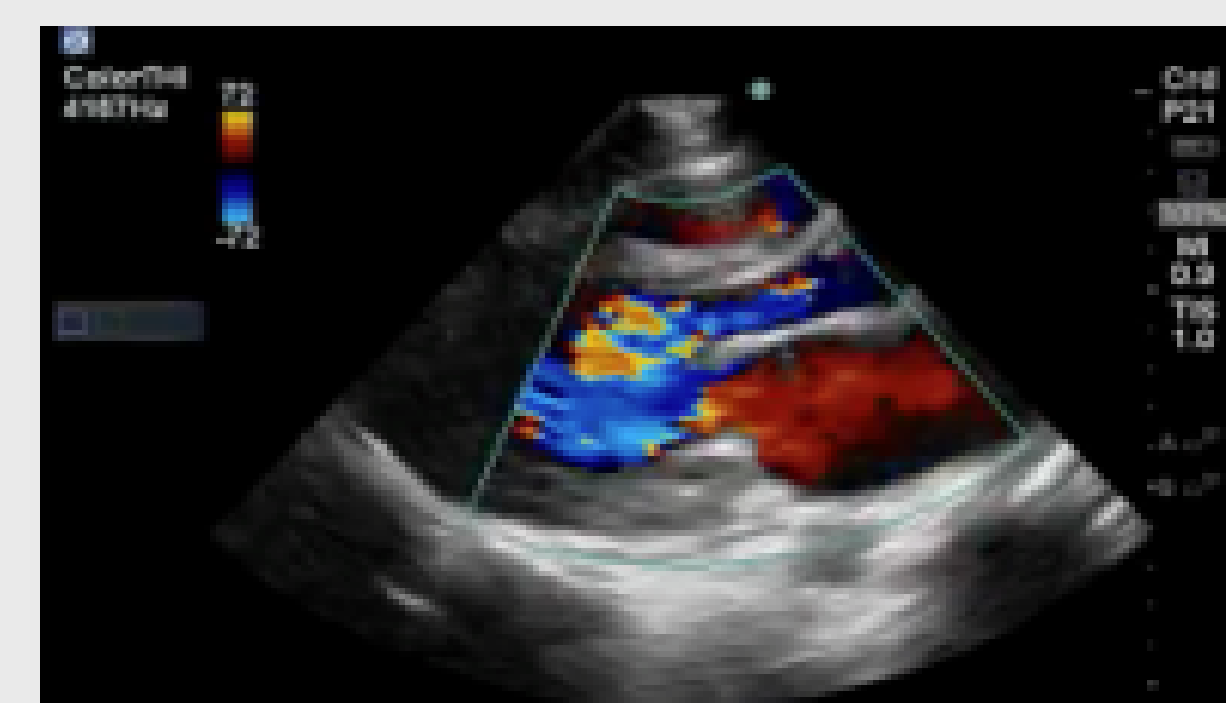


Figure 1. Severe aortic insufficiency

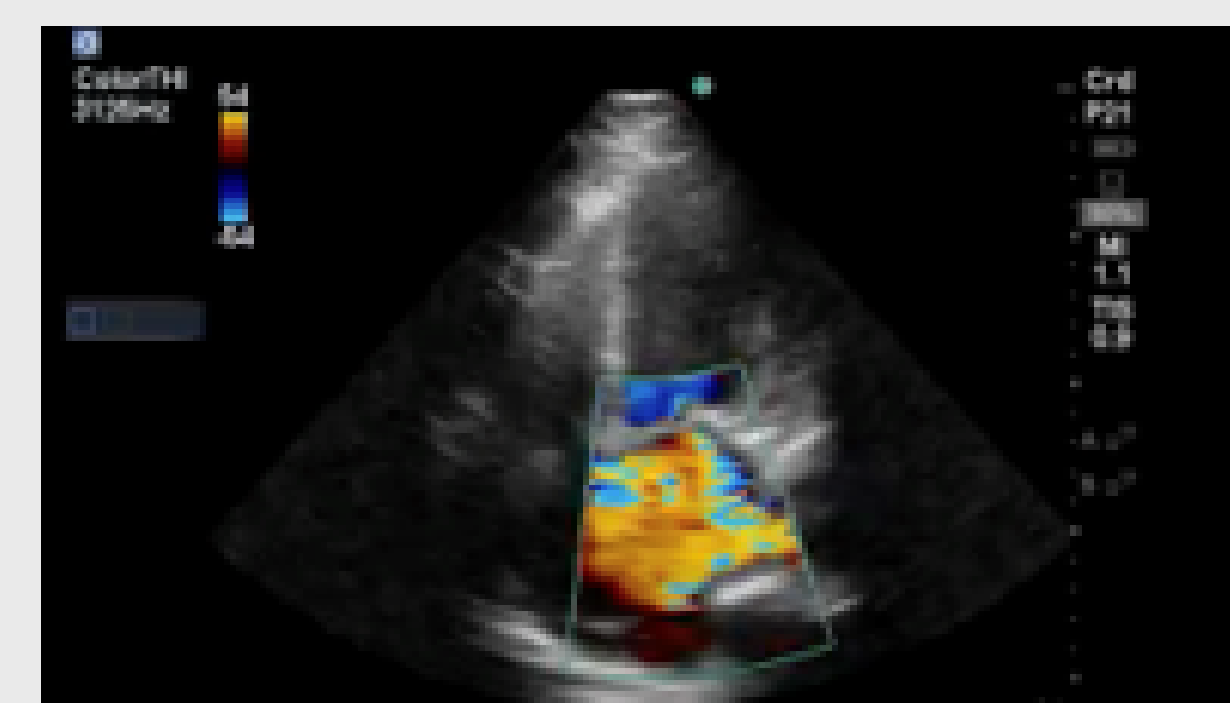


Figure 2. Severe mitral regurgitation

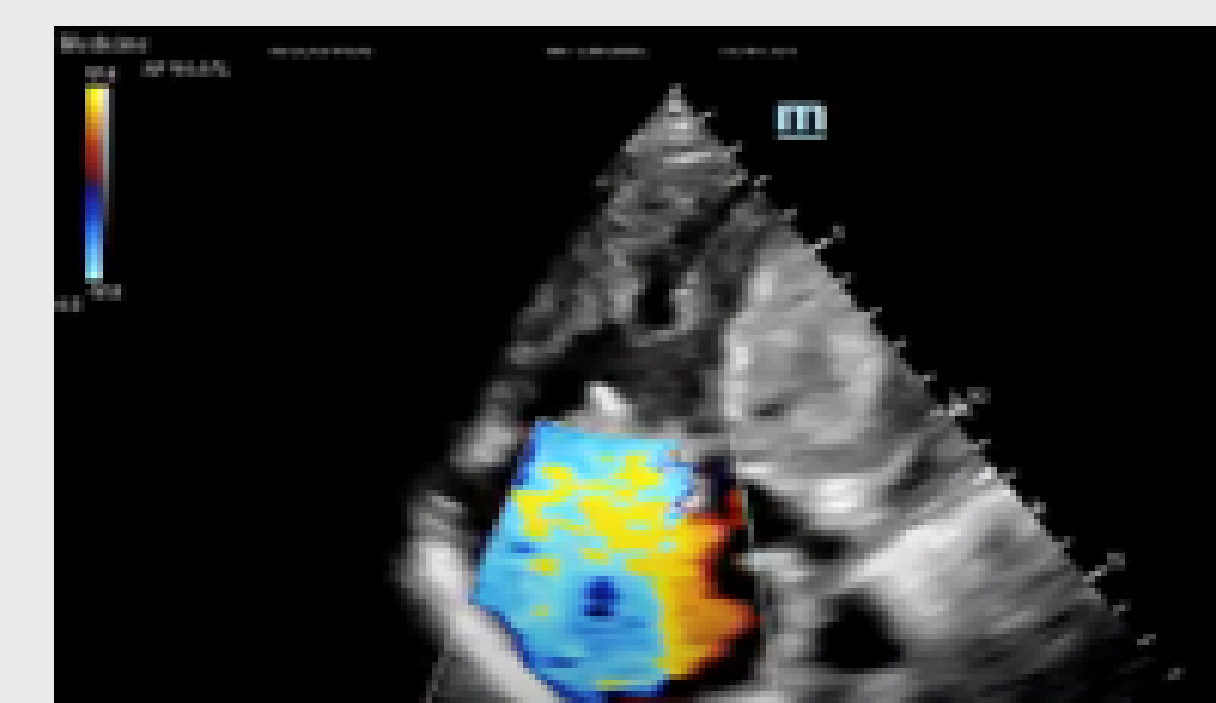


Figure 1. Severe tricuspid regurgitation

## CONCLUSION

To date, little has been published on the role of POCUS in uncovering non-survivable and end-stage disease states by acute care providers, its impact on goals of care conversations, and consequent avoidance of invasive interventions at end-of-life.

Highlighted by this illustrative case, we propose that the use of POCUS may, contrary to its typical application, be a tool of de-escalation and serve as an anchor for goals of care conversations and enhanced shared decision-making.

Pursuing comfort-focused care in a time sensitive manner can protect against the harms of over-medicalization<sup>5</sup>, translating to decreased pain and suffering at the end of life.

## CONTACT INFORMATION

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4. Zieskiewicz L, Lopez A, Hralech S, Baumstarck K, Pastene B, Di Bisceglie M, et al. Bedside POCUS during ward emergencies is associated with improved diagnosis and outcome: an observational, prospective, controlled study. *Crit Care*. 2021 Jan 22;25(1):34.
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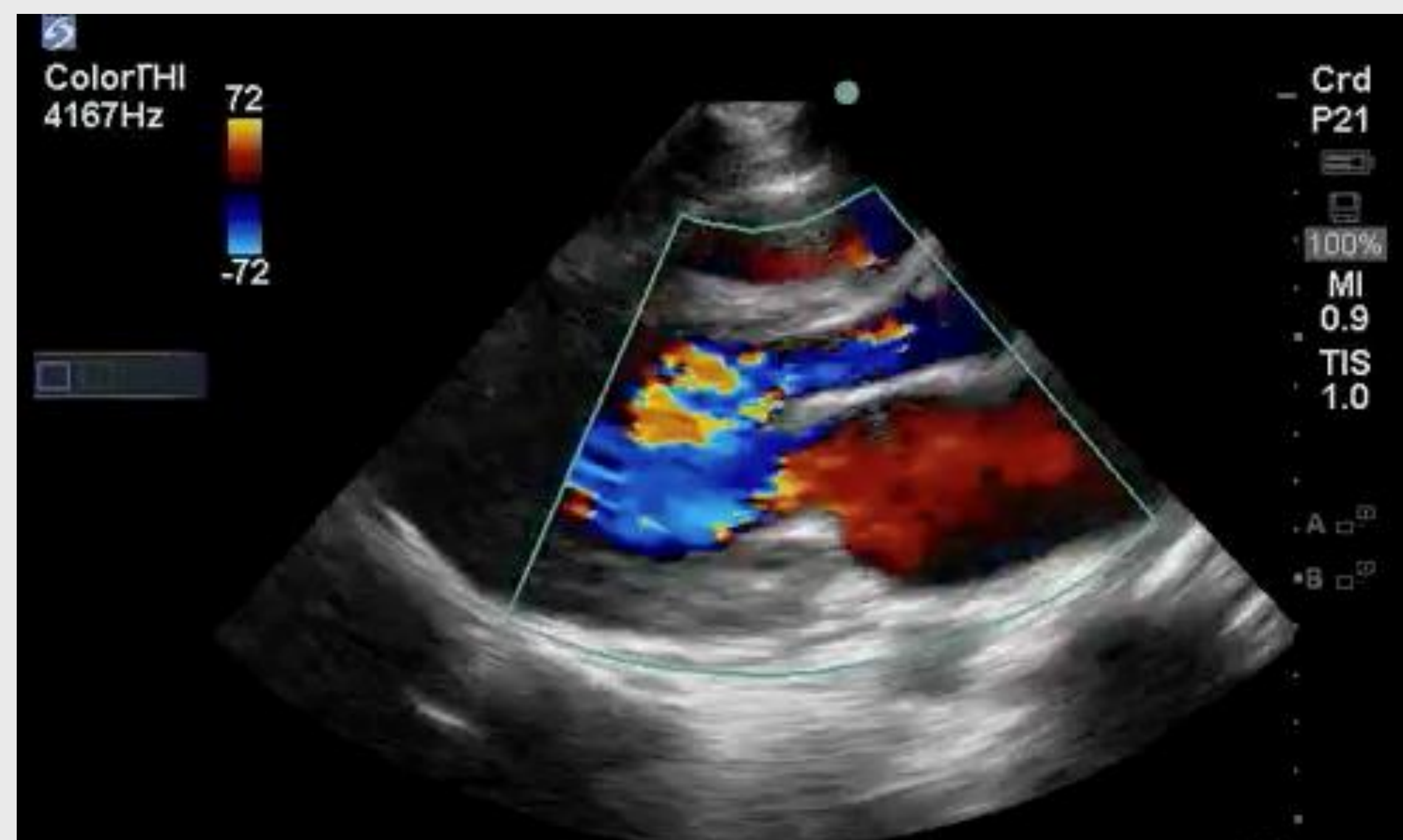


Figure 1. Severe aortic insufficiency



Figure 2. Severe mitral regurgitation

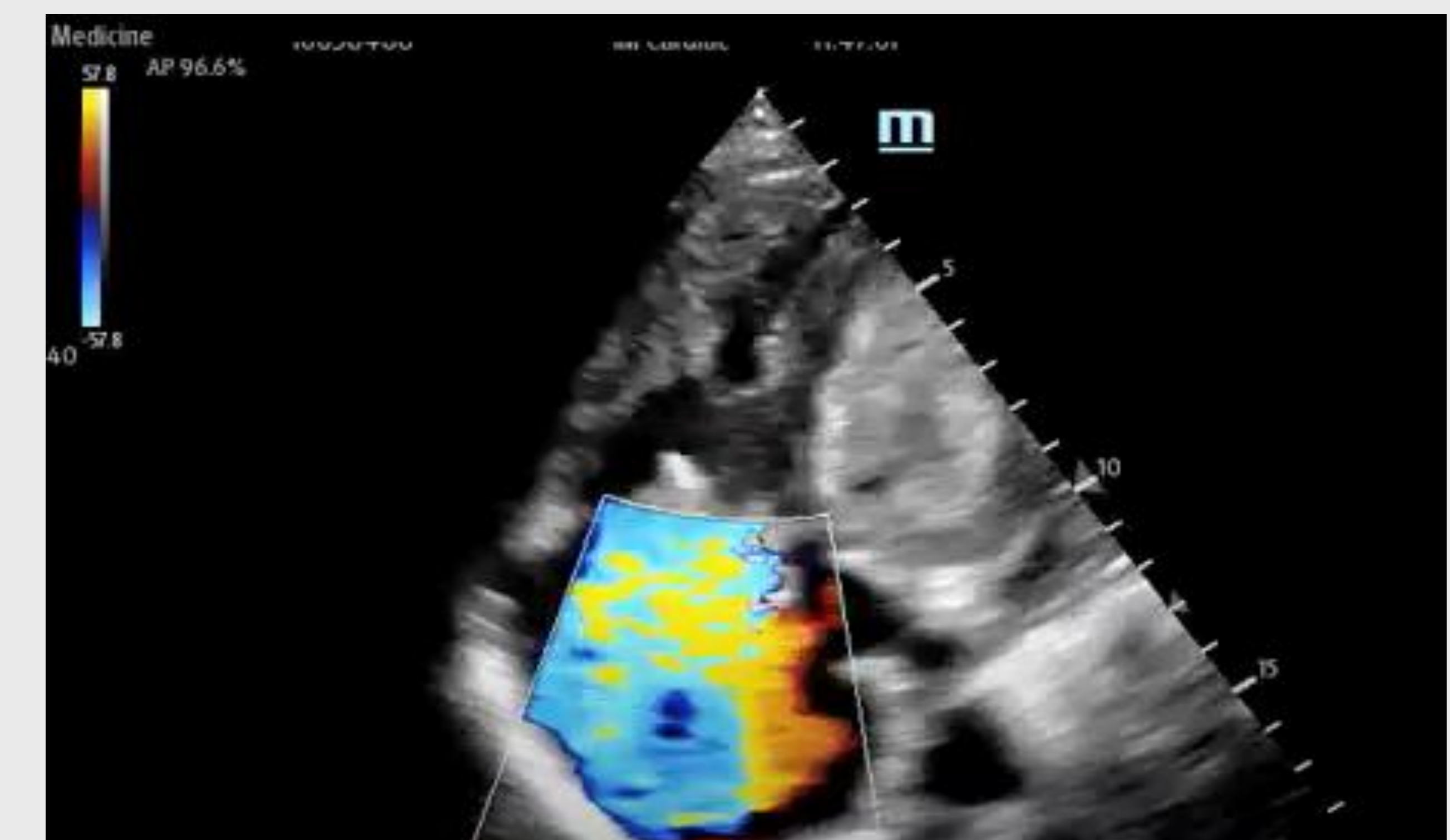


Figure 1. Severe tricuspid regurgitation



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