

Precision Fluid Management in a Septic Patient with Complex Cardiac History

The Case

In the ICU, managing hemodynamic instability, particularly in septic patients, **requires precise assessment of fluid responsiveness** to guide fluid therapy.



Excessive fluid administration can result in fluid overload, which may worsen underlying cardiac conditions, elevate the risk of pulmonary edema, and potentially lead to organ failure from inadequate perfusion. Conversely, insufficient fluid resuscitation can perpetuate hypotension, risking further organ compromise.



In this case, a 72-year-old male presented with sepsis secondary to lumbar osteomyelitis or an ascending UTI.

He had a complex cardiac history, including mitral and tricuspid valvuloplasties and a diminished LVEF of 40% due to chronic hypertension and ETOH.

The challenge was to provide the right amount of fluid to maintain hemodynamic stability without causing fluid overload, especially given his cardiac history.

Patient Journey

History: Old echocardiography showing mitral and tricuspid valvuloplasties, diminished LVEF of 40% due to chronic hypertension and ETOH.



Emergency Department Arrival

Back pain, altered mental status, hypotension, leukocytosis and acute kidney injury. The treating clinician thought the patient had low venous pressure.



Initial Diagnosis

Sepsis, due to lumbar osteomyelitis vs. ascending UTI.



Clinical Assessment

HR 83 bpm, BP 69/52 mmHg.



Assessment with FloPatch

Passive Leg Raise (PLR) indicates fluid unresponsiveness.



Treatment Initiated

Broad-spectrum antibiotics and norepinephrine infusion.



ICU Transfer

Trans-thoracic echocardiography showed abnormal septal motion, right ventricular (RV) pressure and volume overload, dilated RV size and reduced RV systolic function with RV hypertrophy, indicating acute septic cardiomyopathy.

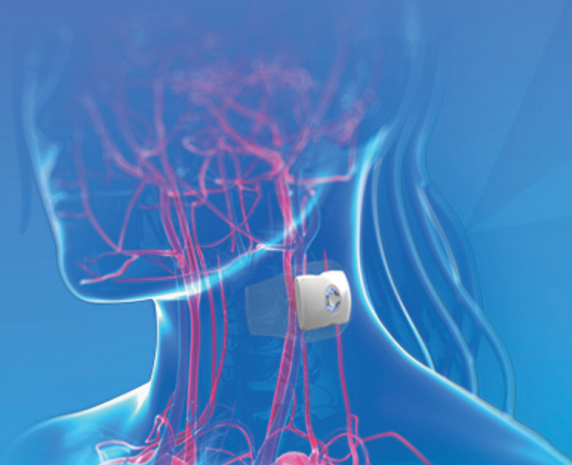


Improved Outcomes

BP showed significant improvement post-intervention.

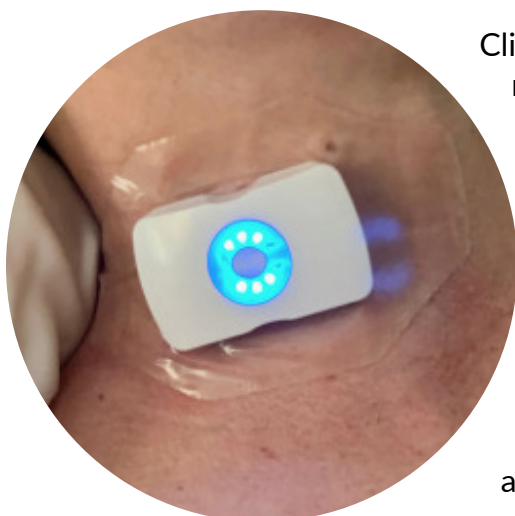
FloPatch

Impact on Patient Care



	Outcomes With FloPatch	Potential Outcomes Without FloPatch
Decision Making	Assessment revealed the patient was fluid unresponsive, which was pivotal in guiding the right treatment approach.	Fluid overload has the potential to worsen cardiac conditions. This can lead to pulmonary edema, which increases the risk of respiratory distress. Additionally, poor perfusion from fluid overload heightens the risk of organ failure.
Timely Treatment	Precise assessment enabled timely use of Levophed to maintain arterial pressure.	Delayed treatment results in prolonged hypotension, risking further organ compromise before initiating effective interventions like vasoactive drugs.
Mitigate Risk	Real-time assessment allowed for immediate intervention, mitigating the risks associated with hypotension.	Worsening of cardiac function given the patient's diminished LVEF and valvuloplasties.

Impact for the Bedside Clinician



Clinicians are often burdened with multiple responsibilities that require quick decision-making and effective interventions. FloPatch addresses these unique challenges and needs:

Simple & Efficient: Receive real-time, dynamic assessments that can be completed in under 5 minutes.

Enhanced Patient Safety: With rapid and repeatable assessments, FloPatch minimizes the risks associated with delayed or incorrect treatment, such as fluid overload.

Empowerment Through Precision: Advanced ultrasound metrics like Corrected Flow Time (FTc) can empower clinicians to observe and interrogate a patient's hemodynamic status in more detail.