TOO LITTLE FLUID? TOO MUCH FLUID? Take the 50/50 Challenge:
Review the case studies to gain a broader understanding of Fluid Responsiveness.

THE 50|50 CHALLENGE

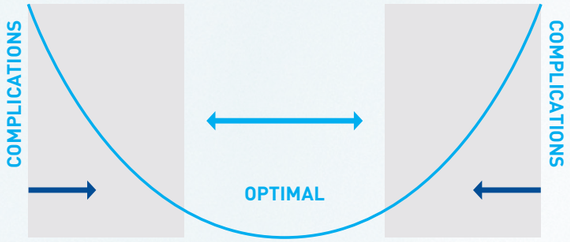
CASE STUDY 01

Will this hemodynamically unstable, critically ill patient benefit from further fluid administration?

CLINICAL SCENARIO:

- 81 y/o male presents to the ED, confused and hypotensive
- Hx of chronic renal disease and dialysis
- ED physician orders a 250cc bolus, but, given minimal response in blood pressure, he infuses a vasopressor
- ED physician is hesitant to approve additional volume due to patient's renal history

FLUID VS. COMPLICATIONS



TOO LITTLE FLUID[1,2] [HYPOVOLEMIA] CAN LEAD TO
Tissue Hypoperfusion
Tissue Hypoxia
Organ Failure

TOO MUCH FLUID[3-6] [HYPERVOLEMIA] CAN LEAD TO
Tissue Edema
Organ Failure
Increased ICU/Ventilator Days
Increased Mortality

≈50%
will respond to IV Fluid
[≈50% will not]

WILL FLUID HELP OR HARM?

Because 50% of hemodynamically unstable patients respond to IV fluid by increasing cardiac output, and 50% don't,[6] the emergency department team is now challenged to determine if this patient is indeed fluid responsive.

This patient is NOT fluid responsive.

ASSESSMENT OF FLUID RESPONSIVENESS WITH STARLING:

Using the **Starling** Fluid Management System, the emergency medicine physician performs a dynamic assessment with a passive leg raise (PLR) to determine fluid responsiveness and measures the subsequent change in stroke volume index. The **Starling** system reports a **7.7% increase in SVI**, **indicating that this patient is NOT fluid responsive.**

Based on the objective results of the PLR the emergency department team (not just physician) decides to withhold additional fluids, continue vasopressor administration and admit the patient to the ICU.

PLR

CONCLUSION: Do you know who is Fluid Responsive? Starling Can Help.

Dynamic assessment via the **Starling** system has confirmed the emergency medicine physician's hesitancy to administer additional volume due to this patient's history. In sepsis, a non-responsive PLR can confirm that a patient may need vasoactive medications, requiring an ICU admission.

THE 50/50 CHALLENGE

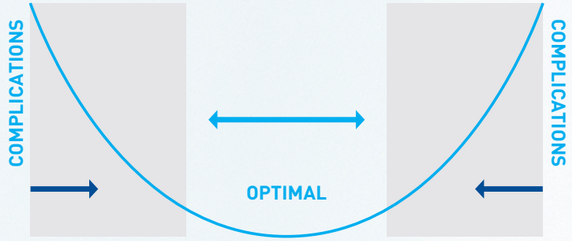
CASE STUDY 02

Will this hemodynamically unstable, septic patient benefit from further fluid administration?

CLINICAL SCENARIO:

- 70 y/o male with Hx of chronic renal failure is admitted to the ICU for septic shock.
- Patient's MAP is 55
- However, ICU team is reluctant to administer additional volume due to patient's history of renal failure.

FLUID VS. COMPLICATIONS



TOO LITTLE FLUID[1,2] [HYPOVOLEMIA] CAN LEAD TO
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Tissue Edema
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This patient is fluid responsive.

ASSESSMENT OF FLUID RESPONSIVENESS WITH STARLING:

Using the **Starling** Fluid Management System, the Intensivist performs a dynamic assessment with a passive leg raise (PLR) to determine fluid responsiveness. The **Starling** system reports a **25% increase in SVI**, **indicating that this patient IS fluid responsive.**

≈50% will respond to IV Fluid [≈50% will not]

WILL FLUID HELP OR HARM?

Because 50% of hemodynamically unstable patients respond to IV fluid by increasing cardiac output, and 50% don't,[6] the emergency department team is now challenged to determine if this patient is indeed fluid responsive.

CONCLUSION: Do you know who is Fluid Responsive? Starling Can Help.

Dynamic assessment via the **Starling** system provides objective data, which may be useful in treating complex patients such as those with renal failure or congestive heart failure. Fluid responsiveness is best assessed by Stroke Volume changes, not subjective clinical assessment.

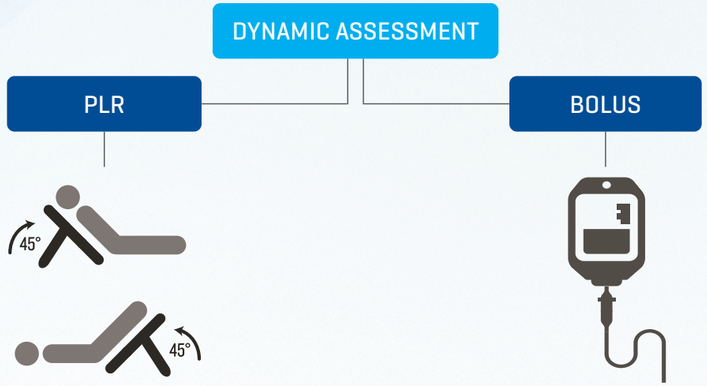
THE 50/50 CHALLENGE

Do you know which hemodynamically unstable patient will respond to a bolus of IV fluid?

ONLY 50% OF HEMODYNAMICALLY UNSTABLE PATIENTS WILL RESPOND TO FLUID

However, static assessment approaches assessing MAP, urinary output, heart rate and physical assessment—are limited and late indicators of perfusion.[7] Such outdated physical exam findings DO NOT DIFFERENTIATE fluid responders from non-responders, and measurement of CVP is inadequate.[8]

Plus, the 2021 Surviving Sepsis Campaign Guidelines suggest—for adults with sepsis or septic shock—using dynamic measures to guide fluid resuscitation over physical examination or static parameters alone.[9] And, The 2020 FRESH (Fluid Responsiveness Evaluation in Sepsis-associated Hypotension) trial demonstrated improved outcomes when a dynamic assessment of fluid responsiveness was used to guide treatment in sepsis patients.[7]



PLR **Bolus Challenge**

CONCLUSION: Dynamic Assessments Provide Objective Data for determining if fluid will help or harm

The **Starling** system supports individualized fluid therapy without requiring an invasive arterial or central line.[10]

Rx Only. For safe and proper use of the products mentioned herein, please refer to the appropriate Operator's Manual or Instructions for Use.

REFERENCES

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