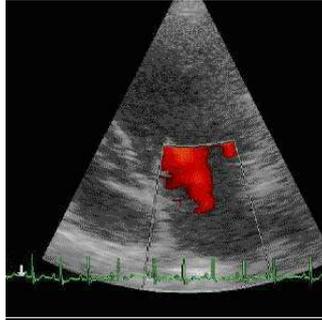


## Echocardiography is Essential Tool for Fluid Responsiveness



Echocardiography is an essential tool to predict and measure fluid responsiveness, according to a recent article, which provides a practical guide. Ashley Miller and Justin Mandeville outline the physiological basis of fluid resuscitation, and describe how fluid responsiveness can be assessed with echocardiography. They also look at the limitations and pitfalls of the technique, in their paper published in *Echo Research and Practice*.

Echocardiography is increasingly considered the first-line monitoring tool of choice in haemodynamically compromised patients, say Miller and Mandeville, as it provides much more information on the causes of shock than just fluid responsiveness. Both static and dynamic parameters may be assessed to build a picture of the circulatory state.

They discuss the most prevalent ways of using echocardiography for assessing volume status, focusing on the fluid optimisation phase of resuscitation.

While echocardiography is an invaluable tool for assessing whether a patient will be fluid responsive and what effects fluid administration has on the heart, there are limitations in its interpretation and use, say the authors. They advise that acknowledging the tool's weaknesses, taking into account the pre-test probability and gathering as many markers as possible, leads to good clinical decision making. The article includes an algorithm to assess for fluid responsiveness.

Miller and Mandeville summarise the principles of using echocardiography for volume assessment:

- Small hyperdynamic ventricles with a small inferior vena cava suggest significant hypovolaemia.
- In a shocked patient without signs of overt hypovolaemia, dynamic indices of fluid responsiveness should be sought.
- Echocardiography can give additional information regarding the validity of other clinical and monitoring markers.
- Echocardiography informs about the dangers of delivering a fluid bolus in terms of adding to extravascular fluid or worsening left ventricle filling.
- When interpreting echocardiography findings, the limitations of that particular technique in that particular patient must be taken into account.

They recommend that further research on using echocardiography to optimise circulating volume might explore the in-depth use of diastolic assessment of both left ventricle and right ventricle, the use of strain imaging and the changes induced by small rapid fluid boluses.

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