

# Cost Effectiveness of Detection of Tamponade After Postcardiac Surgery By Miniaturized Hemodynamic Transesophageal Echocardiogram (hTEE)

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## Purpose:

Multiple hemodynamic presentations can mimic postoperative tamponade after cardiac surgery making it difficult to decide when to explore a patient, knowing that negative exploration is not always a benign procedure and requires substantial resources. In this population TEE is the gold standard for diagnosis but not always available due to limited resources and transthoracic echocardiography is not always diagnostic due to body habitus and surgical effects. Imacor has developed a 5 mm disposable hemodynamic transesophageal echocardiography (hTEE) probe as a point of care device to be inserted at bedside in the intensive care unit. Imacor hTEE probe can provide evaluation of fluid status, ventricular function and the pericardial space.

## Methods:

During academic year of 2011 and 2012, 129 patients (305 studies) underwent Imacor hTEE imaging. Among these studies, 26 of them were performed to rule out post-open heart surgery cardiac tamponade for clinical suspicion of tamponade including hemodynamic instability and chest tube drainage.

The hTEE images were reviewed retrospectively and the patient outcomes were analyzed.

## Results:

Out of the 26 hTEE studies, 13 studies showed no evidence of tamponade and did not require re-exploration. Other 13 studies were positive for pericardial tamponade by hTEE and required evacuation of hematoma in the operating room. Using hTEE, we can avoid unnecessary operating room set-up for exploration in timely manner. The cost of operating room set up would be \$7,500 per case. Just avoiding the operation by use of hTEE, the device (\$70,000/device) of the hTEE and disposable probe cost (\$1,250/probe) can be justified.

## Conclusion:

This disposable hTEE probe allowed us to predict with 100% accuracy pericardial tamponade and is a valuable tool in hemodynamic management in the intensive care unit. Since hTEE can be allow intensivists rapid evaluations, hTEE can contribute to reduce resource utilization.