Clinical and Economic Impact of a TEE Monitoring System in Intensive Care*

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INTRODUCTION

Purpose: To determine the clinical and economic impact of hemodynamic monitoring in intensive care with the ImaCor TEE monitoring system, including a miniaturized, detachable, single-use probe (ImaCor ClariTEE™).

TEE has been cited as especially appropriate for hemodynamic monitoring because abnormalities are multifactorial, e.g. hypovolemia, LV and RV dysfunction, tamponade. Unlike conventional probes, the ClariTEE was designed and cleared by the FDA to remain indwelling for 72 hours of episodic hemodynamic monitoring.

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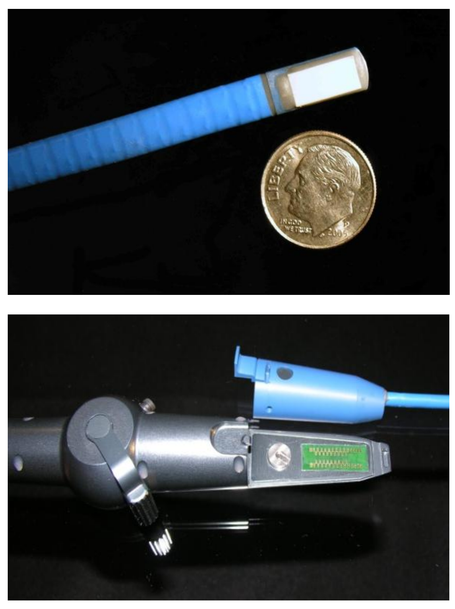
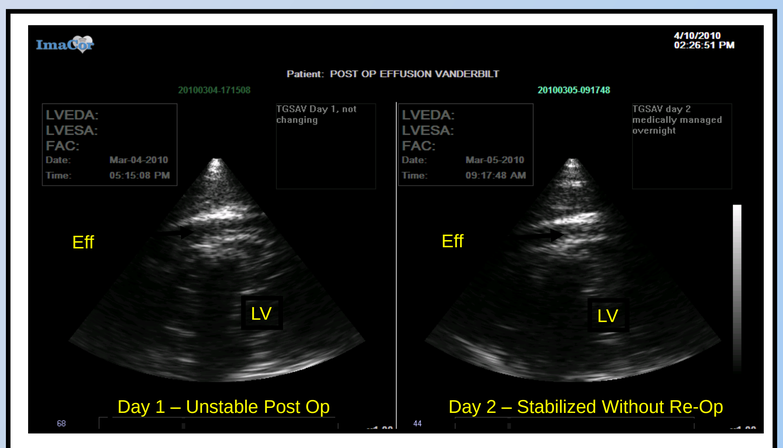


IMACOR SYSTEM

METHODS

The ImaCor system was used to monitor 46 post cardiac surgery patients at 2 institutions and 68 general ICU patients at 8 institutions. Effects on management were recorded and analyzed retrospectively. Economic impact was estimated from 1-4.

RESULTS: CLINICAL IMPACT



AVOIDED RE-OPERATION FOR PERICARDIAL EFFUSION (5)

TEE monitoring detected a cardiac effusion in a hemodynamically unstable patient. A decision was made to monitor the patient to see how the effusion progressed. The effusion was unchanged overnight, and eventually resolved without surgery.

1. In 46 post-cardiac surgery patients, surgical re-exploration was avoided in five patients (11%), and fluid and pressor administration changed in 23 (50%).

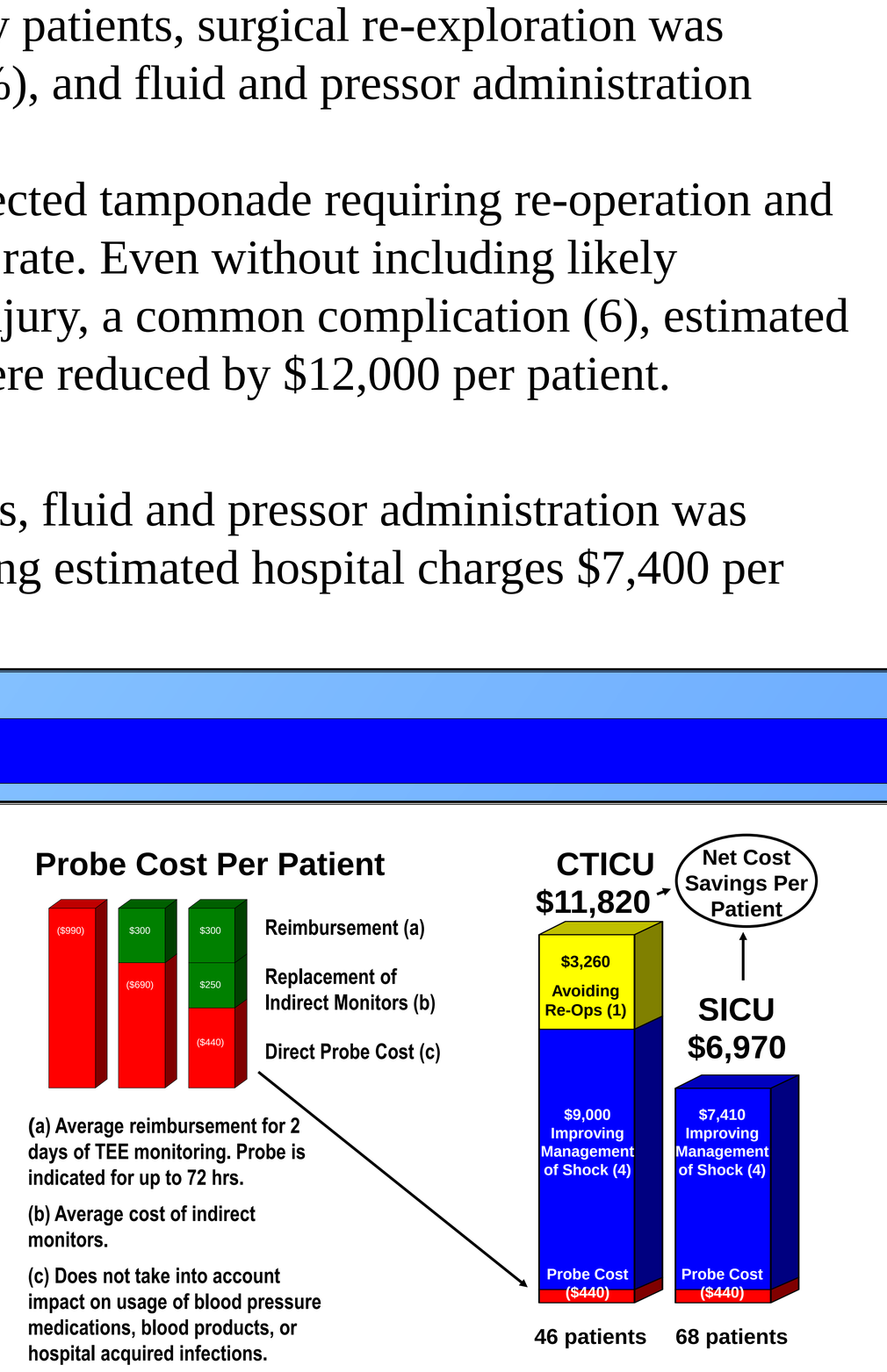
TEE monitoring also detected tamponade requiring re-operation and helped optimize LVAD flow rate. Even without including likely reductions in acute kidney injury, a common complication (6), estimated hospital charges (c.f. 1-4) were reduced by $12,000 per patient.

2. In 68 general ICU patients, fluid and pressor administration was changed in 28 (41%), reducing estimated hospital charges $7,400 per patient.

RESULTS: ECONOMIC IMPACT

TEE monitoring demonstrated the potential to improve hemodynamic management; expected to reduce hospital stay (7,8): even small amounts of mild instability significantly increase hospital stay and charges (4). TEE monitoring also demonstrated the potential to avoid reoperation post cardiac surgery. Reoperation significantly increases "morbidity (low cardiac output, acute renal failure, sepsis)," vent time, ICU stay and mortality (9); also cost (1).

Conclusion: Although further study is needed, TEE monitoring has shown potential for significant clinical and economic impact.



ECONOMIC IMPACT OF TEE MONITORING

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