# FloTrac Monitoring System
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## Project Description

The VigileoTM/FloTracTM (V/FT) system is a non-invasive monitor from Edwards Lifesciences, Irvine, CA, that provides dynamic measurement of CO/CI/ SV/SVV. We addressed the existing problem of a lack education and clinical familiarity regarding the V/FT monitoring system in Student Registered Nurse Anesthetists (SRNAs) through the use of a teaching module which we evaluated the effectiveness of by the use of a pre and post test.

The teaching module was presented to a convenience sample of 23 first year SRNAs on January 25, 2016.

Submission to the Adventist University (ADU) Scientific Review Committee (SRC) and Institutional Review Board (IRB) was performed and approved. Informed consent was obtained prior to the administration of the pre test.

The pre test and post test were placed in an envelope so as to keep the respondents identity anonymous upon completion and return. The teaching module was presented to SRNAs regarding the use and utility of the V/FT system.

We also addressed the critical thinking aspect on the incorporation of the V/FT device into anesthetic care, including; appropriate patient population selection, interpretation of data, and interventions/ modifications to plan of care.

## Objectives

Students will obtain a higher score on the post test than on the pre test and thus, believed to have a better understanding of the appropriate use of the system.

## Review of Literature

The FloTrac algorithm was found by Mclean, Huang, Kot, Rajamani, & Hoyling in a 2011 study to be clinically comparable to transthoracic Doppler echocardiography in the measurement of cardiac output.

A study by Vasdev et al. in 2012 concluded that FloTrac system software version 3 showed good correlation with pulmonary artery catheter derived cardiac output.

Monnet et al. in a 2012 study described FloTrac's ability to accurately track changes in Cardiac Index in critically ill patients induced by volume expansion.

A 2015 study by Suehiro et al. concluded that the 4th generation FloTrac software had a greatly improved ability to track cardiac output changes in response to changes in vasomotor tone.

Overall, the FloTrac system has proven to be of value in a variety of intraoperative settings, though its use and interpretation can be challenging for the novice anesthesia provider.
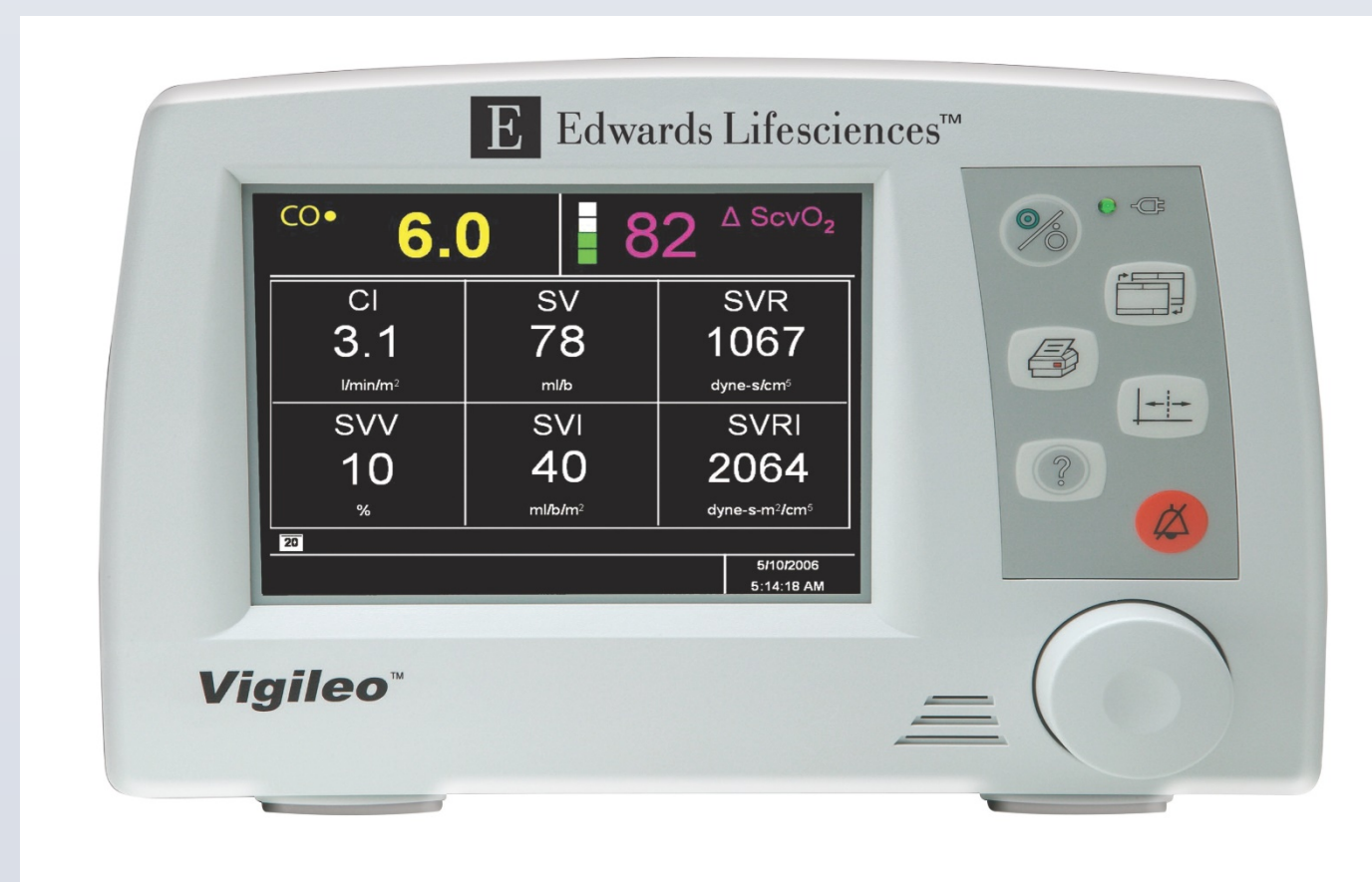
## Results and Conclusions

**Paired Samples Statistics**

|  | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Pre-Test | 3.8696 | 23 | 1.86607 | .38910 |
| | Post-Test | 8.4348 | 23 | 1.07982 | .22516 |

**Paired Samples Test**

|  | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | Upper | | | |
| Pair 1 | Pre-Test - Post-Test | -4.56522 | 2.19143 | .45695 | -5.51286 | -3.61757 | -9.991 | 22 | .000 |

The effectiveness of this study was reinforced by an improvement in the mean score from pre test to post test.

The tests were graded; the data was placed in a spreadsheet and analyzed by Roy Lukman, PhD.

The mean score of the pretest was 3.8696, while the posttest mean was 8.4348. The standard deviation of the pretest was 1.86607 and the posttest was 1.07982.
The obtained t value was -9.991, which is associated with a $p < 0.05$. This is considered statistically significant. It can be concluded that the average values between pre-test and post-test increased significantly. There appeared to be an increase in understanding based on the graded responses.

The authors recognize that due to the increase in knowledge and understanding that there would be an increase in use and appropriate intervention by SRNA's, which has the potential to improve patient safety.
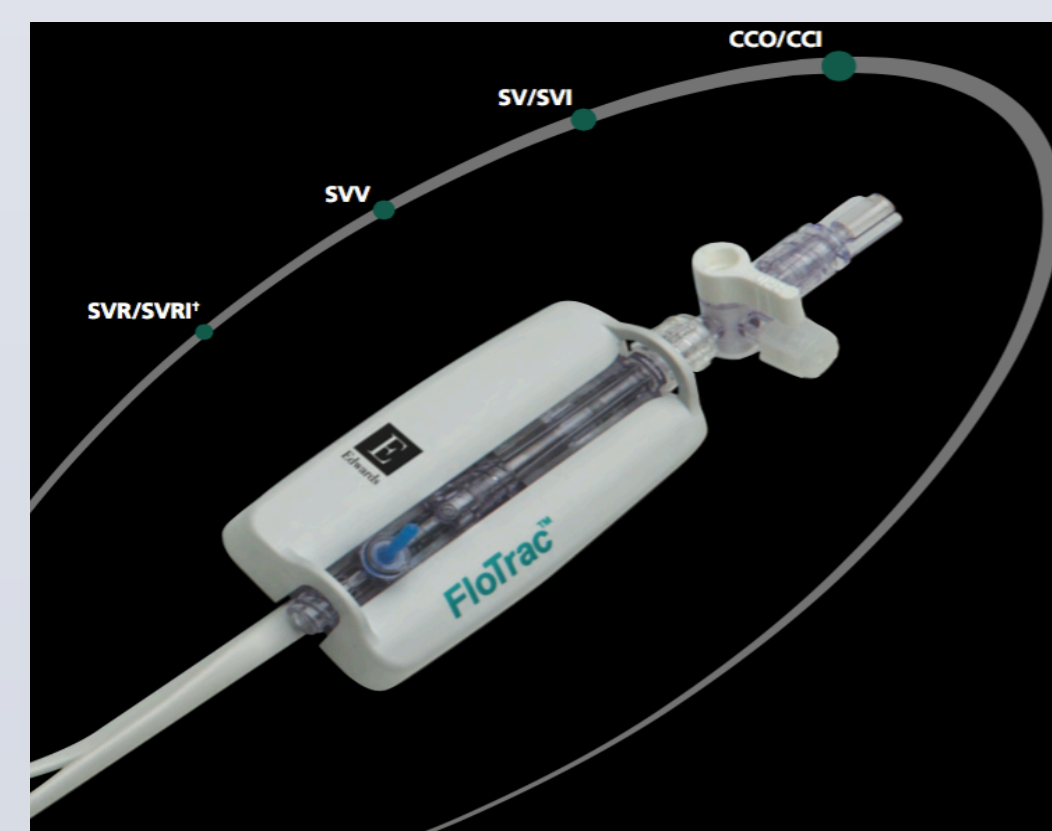
## Evaluation

The evaluation plan included a short 10 question test. We evaluated the pre-lecture test versus the post-lecture test grades to determine if our teaching module was effective. An increase in the overall mean test scores of the participants was considered to be a success.

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