**P-94**
**THE EFFECT OF CRITICAL CARE ECHOCARDIOGRAPHY ON THE USAGE RATES OF DIAGNOSTIC ECHOCARDIOGRAPHY IN THE INTENSIVE CARE UNIT**

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**Introduction:** Critical care echocardiography (CCE) is routinely used by intensive care unit (ICU) providers to provide real time interpretation and integration of findings into patient care. By comparison, diagnostic echocardiography (DE) employs a comprehensive examination with a more traditional imaging workflow and sophisticated techniques not included in CCE. Despite these differences, CCE and DE are frequently employed to answer similar diagnostic questions that arise in the ICU. This overlap raises questions of duplicate testing, which may result in redundancy of hospital resources and patient morbidity through over-testing. An examination of the utilization patterns of these modalities in the ICU and, in particular, how the advent of CCE may influence the use of DE is of great interest.

**Objectives:** To evaluate the effect of the introduction of CCE over the utilization of DE in tertiary care ICUs from 2 hospitals: University hospital (UH) and Victoria hospital (VH). To examine if a change in trend (if any) had resulted in any change in outcomes.

**Methods:** The monthly mean ratios of CCE and DE studies to patient care days (PCD) were plotted and general linear models were used to test for trends over time. Student's t-test was used to compare the mean ratio of DE studies to PCD before and after the introduction of CCE. Outcome measures were compared using Pearson’s chi-square test of association or the Wilcoxon Rank Sum test, where applicable.

**Results:** Whereas the ratio of CCE/PCD increased significantly and the ratio of DE/PCD decreased significantly over time at VH (p=0.0001 and p=0.0037 respectively), they did not change significantly over time at UH (p=0.11 and p=0.81 respectively) (Figure 1). The mean ratio of DE/PCD decreased significantly between pre CCE and post CCE periods at VH (5.27% to 4.51%, p=0.011) while insignificant decrease was seen at UH (5.90% to 5.79%, p=0.689) (Table 1). At both hospitals, there was no significant increase in ICU mortality or LOS when comparing the pre to post CCE periods. At VH, ICU mortality was (23.69% and 24.61% pre and post CCE respectively, p=0.479) and median LOS was (4.18 and 3.53 pre and post CCE respectively, p=)

**Conclusion:** Significant CCE utilization is associated with a significant decrease in utilization of DE in an academic ICU environment with no influence on outcomes.

**References:**
Figure 1: CCE/PCD (A) and DE/PCD (B) trends over time at VH

A

B

p=0.0001

p=0.0037
Figure 2: CCE/PCD (A) and DE/PCD (B) trends over time at UH

A

B

p=0.1123

p=0.8194
Table 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>VH</th>
<th></th>
<th>UH</th>
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<tbody>
<tr>
<td></td>
<td>Pre-CCE</td>
<td>Post-CCE</td>
<td>Pre-CCE</td>
<td>Post-CCE</td>
</tr>
<tr>
<td>DE/PCD*</td>
<td>5.27%</td>
<td>4.51%</td>
<td>5.9%</td>
<td>5.79%</td>
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<td>ICU mortality*</td>
<td>23.7%</td>
<td>24.6%</td>
<td>23.3%</td>
<td>23.4%</td>
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<td>ICU LOS**</td>
<td>4.18</td>
<td>3.53</td>
<td>3.85</td>
<td>3.63</td>
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</tbody>
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* Mean percentage, ** Median days