Maximizing Operational Capacity of Cardiac Interventional Rooms

Michelle A. Larson, DNP, RN, CCRN-CSC, NE-BC1, Eric H. Yang, MD2, Komandoor Srivathsan, MD2, Kim M. Earre, MSN, RN1, Donna M. Rollinson, MBA, RN2, Win-Kuang Shen, MD2

1Department of Nursing, 2Department of Cardiovascular Diseases
Mayo Clinic, Phoenix, Arizona

Abstract

Background: The cardiac interventional rooms had reached full operational capacity, and were not able to accommodate projected growth for Cardiac Catheterization Services. In 2015 Electrophysiology Lab (EP) utilization was 86% and Cardiac Catheterization Lab (CCL) utilization was 96%.

Methods: An analysis was completed which included volumes, ancillary departments, current scheduling, and staff. It was identified that expanding the hours in the cardiac catheterization rooms to 12 hours per day, Monday through Friday, would achieve an incremental time period of 25 hours per week in CCL/EP. To accommodate the extended hours in CCL/EP was also necessary to extend the hours of the Prep/Recovery room.

The proposal required 9.7 FTE RN/RT. The minimum optimal incremental capacity was 50 incremental hours each week in CCL/EP.

Conclusions: 50 incremental hours were added to the Cardiac Interventional Rooms on July 4, 2016. Electrophysiology Lab (EP) utilization was 96% and Cardiac Catheterization Lab (CCL) utilization was 86%. Patient volumes increased 3.1%, EP lab visits increased 260, EP lab visits increased 6.6%, and patient volumes increased 3.1%. EP utilization went from 95% to 100%. CCL utilization increased from 80% to 85%. Turnaround Time decreased in all procedure rooms, CCL/2 minutes to 1.5 minutes, CCL/2 increased to 15 minutes, EP/8 minutes to 12 minutes. We have seen a decrease in on-time starts for all services (Interventional, EP, and Heart Failure).

Objective

We aimed to identify an innovative solution to increase capacity in three cardiac interventional rooms to allow for future growth of the clinical practice.

Results: Procedure Volumes

<table>
<thead>
<tr>
<th>Year</th>
<th>CCL/EP Procedures</th>
<th>EP Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td>CCL/EP</td>
<td>32,000</td>
<td>33,000</td>
</tr>
<tr>
<td>EP</td>
<td>2,500</td>
<td>2,700</td>
</tr>
</tbody>
</table>

Methods

- The CCL/EP had reached maximum operational capacity. EP utilization was 96% and CCL utilization was 86%. To accommodate the extended hours in CCL/EP was also necessary to extend the hours of the Prep/Recovery room.

- The proposal required 9.7 FTE RN/RT. The minimum optimal incremental capacity was 50 incremental hours each week in CCL/EP.

- The CCL/EP had been changed with identifying options for extended hours of operation. Options included opening on Saturday versus extending the hours of CCL/EP to 12 hours per day/6 days.

- Extending the CCL/EP from 8 hours per day/4 days/week added 50 incremental hours per week in CCL/EP.

- The 12-hour shifts also increased the ability to schedule more complex cases back to back.

- The Prep/Recovery Room hours were also extended to accommodate the extended hours in CCL/EP.

- The proposal required 9.7 FTE RN/RT. The minimum optimal staffing for elective and interventional coronary artery procedures include the staffing of three primary roles: hemodynamic monitoring/straight ED, interventionalists, and nursing staff. The additional nursing staff has also been able to implement several quality improvement initiatives to allow for increased productivity and growth.

Conclusions:

- Increased operational capacity was successfully completed without incremental infrastructure or capital expenditures.

- Additional personnel was essential in our success. Efforts must be made to ensure adequate training of these additional team members when such a large volume of new staff is added in a limited time period.

References

1. The Society of Invasive Cardiovascular Professionals, Position Statement - Staffing in the Cardiac Catheterization and EP Lab, 2015