Optimizing Operational Efficiency in the Adult Cardiac Catheterization Laboratory

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INTRODUCTION

- The adult cardiac catheterization laboratory (ACCL) is one of the cornerstones for diagnosis and treatment in adult cardiology
- A large proportion of patients treated both in the inpatient and outpatient settings undergo procedures in the ACCL as part of their evaluation
- The ability to evaluate and intervene on patients in the ACCL in a timely fashion plays a large role in assisting in prompt discharges, as well as ensuring efficient patient care[1]
- Improvements in efficiency in the ACCL has the potential to improve inpatient throughput and timeliness of medically necessary procedures[2-3]

AIM STATEMENT

Improve average first daily procedure start times in the ACCL by at least 25% over a 1 year period

MUSC Pillar Goals:
Quality, Service, Growth

REFERENCES

1. Anderson R, et al. "Efficiency improvements in the catheterization laboratory: it's all about the team." *JACC Cardiovasc Interv.* 2018 Feb 26;11(4):339-41
2. Reed G, et al. "Operational efficiency and productivity improvement initiatives in a large cardiac catheterization laboratory." *JACC Cardiovasc Interv*. 2018 Feb 26;11(4):329-38
3. Reed G, et al. "Operational efficiency and effective management in the catheterization laboratory: JACC review topic of the week." *J Am Coll Cardiol*. 2018 Nov 13;72(20):2507-17

METHODS and RESULTS

Interventions

- Daily schedule and workflow was sent via email to the entire ACCL staff, along with specific lab assignments and expected start times the day prior
- Regular daily ACCL staff huddles prior to the first case start
- Utilization of phone consents for next day first cases

Data Collection

- Scheduled and actual start times were abstracted retrospectively for daily first procedures from the ACCL hemodynamic recording software system for a representative week before and after interventions were implemented
- Actual start times were identified as the first timestamp on the procedure log and were defined in minutes from the scheduled start time
- Given variability in start times for certain procedures, select cases were excluded including valvular and structural interventions, research study cases, peripheral cases, and cases occurring on weekends or holidays

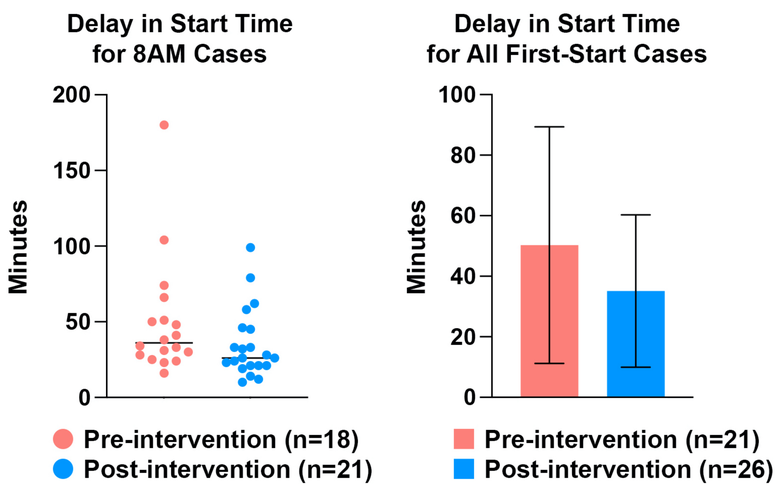
Statistics

- Start times were compared using an unpaired two-tailed Student's t-test
- Although no statistically significant difference was identified, there was a reduction in both average start time for 8AM cases and delay in start time for all first cases between our pre- and post-intervention groups (Table 1, Figure 1)

Table 1

	Pre-Intervention (n=21)	Post-Intervention (n=26)	P Value
Average Start Time for 8AM Cases	8:49 AM	8:34 AM	0.14
Average Delay in Start Time for All First-Start Cases, min (STD)	50 (39)	35 (25)	0.11

Figure 1



CONCLUSIONS

- With a simple intervention aimed at improving daily workflow within our ACCL, we were able to meet our aim with a 30% improvement in start time and delay in minutes for first cases
- Before our intervention, first cases were delayed on average by 50 minutes from their scheduled start time
- After our intervention, delay in first cases improved to an average of 35 minutes from their scheduled start time

Barriers

- Unable to ensure ACCL staff reviewing emailed schedule daily
- Unable to control patient factors, such as arrival time of patients for their schedule procedure

NEXT STEPS

- Comparing lab turnover time (i.e. time between cases)
- Compare number of completed same-day inpatient cases
- Identify variables contributing to ongoing delay in case start times and enact an action plan to minimize these variables