The CV Lab: Optimizing Staffing Models & Anesthesia Support for New Efficiencies

Authors: Christopher H. Hasse, MBA, CSSBB, CFPH; Barbara D. Naffziger, R.N.; Virginia E. Reynolds, R.N., BSN; Leslie T. Cooper, Jr., M.D.; Belinda C. Shauver, C.R.N.A.

Background: Established in 1986, the Mayo Clinic in Florida (MCF) routinely delivers elite complex comprehensive care to patients from local, regional, national and international levels. The Department of Cardiovascular Diseases (CV) has been identified by Executive Leadership as a key element to achieving the institution’s overall vision and strategic direction of becoming a destination medical center. In order to become a premier center for complex cardiovascular care and treatment, the CV Lab needed to enhance operational excellence and improve clinical workflow without compromising on quality or patient safety. Data collected from November and December of 2014, revealed that approximately 38% of the 8:00 AM scheduled cases experienced delayed starts of over 25 minutes. Top three areas for improvement and waste reduction were:

- **Wait Time**: Delayed staff arrival (physicians/fellows, anesthesia or CV team), team huddle length and/or lab results
- **Over-Processing**: Multiple members of procedural team reviewing charts and duplicating non-critical discussions
- **Under-Utilization**: Staff awaiting directions, unclear assignments and inconsistent input on communication board

Objective: The CV Lab aimed to increase overall efficiency and improve the daily clinical workflow of the unit. Recognizing that multiple Lean Process Improvement and Planning interventions would be needed to achieve the desired efficiency outcomes, the CV Lab Leadership Team (CVLLT) identified the following objectives and metrics:

- Improve on-time starts for first case (Cath & EP)
- Develop staffing schedule patterns for predictability
- Establish protocols for Anesthesia staffing

- Increase timely scheduling access for cases & volume
- Align physician and allied health staffing models
- Enhance communication amongst all CV staff

Planning: The CV Department consists of 19 cardiologists, including three interventional catheterization (Cath) consultants and three electrophysiology (EP) consultants. At the time of this study, the CV Lab consisted of three procedural rooms. Services include EP ablation therapies, structural heart interventions and cardiac catheterization procedures. The CV Lab Leadership Team (CVLLT) was formulated and membership included Nursing Administration, EP & Cath Lab Physician Directors, Practice Administration, Anesthesia Leadership and other CV Lab representatives (prep/holding, intraoperative, post-op, etc.). The CV Lab engaged MCF’s Systems & Procedures Department to lead education/tutorials on Lean Process Improvement interventions. The CVLLT developed a detailed communication plan, which depended on physician and nursing champions for staff education and targeted presentations (including final report to MCF Executive Leadership).

Implementation: The CV Lab leveraged 5S standardization initiatives, visual management applications, redesigned checklists, root cause analysis, and rapid tests of change (PDSA cycle) during May and June of 2015. Multiple collaborative work sessions with all CV Lab stakeholders directly contributed to staff ownership of the processes and would lead to post-implementation sustainability. CV Department Leadership received weekly check-point reports, assisted with removing barriers and advocated for incremental project support (when needed). Consistent data collection occurred for on-time starts (manual), case volume (automated), procedure access availability (manual), and scheduling efficiency (manual). CVLLT received daily feedback (verbal and written) from CV Lab physicians, anesthesia staff and allied health staff.

Results: The CV Lab showed positive improvements in on-time starts for Cath & EP cases scheduled for 8:00 AM. Data collected through July 2015 exhibited a 51.3% decrease in delays for the first case (tracking unit of minutes). CV Lab morning huddles were restructured to follow an updated checklist, and non-critical information/news was deferred to staff meetings or communicated via S.B.A.R. email memos (Situation, Background, Assessment & Recommendation). Gantt charts and detailed staffing schedules were designed to align with CV lab procedural demand in a newly formatted two-week pattern. Anesthesia support was designated to precise assignments for each half-day block to enhance scheduling efficiencies and information was accurately recorded at 6:00 AM on the CV Lab Prep/Holding electronic communication board:

- **Week-A**: Allows 88.8% allocation for EP cases & 11.2% for TEE/cardioversions (emergent coverage available)
- **Week-B**: Allows 77.6% allocation for EP cases, 11.2% for TEE/cardioversion & 11.2% complex structural cases

Comparing CV Lab volumes from 2014 to 2015, catheterization cases increased by 19.4%, EP cases increased by 17.3% and TEE/cardioversion procedures increased by 10.0%. Reoccurring biweekly meetings were established (every other Monday at 5:00 PM) with the CVLLT to consistently discuss operations, volume, staffing, supply logistics, policies and other topics.

Contact: Christopher H. Hasse, MBA, CSSBB, CFPH | Operations Administrator | Mayo Clinic | hasse.christopher@mayo.edu

---

Authors: Christopher H. Hasse, MBA, CSSBB, CFPH; Barbara D. Naffziger, R.N.; Virginia E. Reynolds, R.N., BSN; Leslie T. Cooper, Jr., M.D.; Belinda C. Shauver, C.R.N.A.

Background: Established in 1986, the Mayo Clinic in Florida (MCF) routinely delivers elite complex comprehensive care to patients from local, regional, national and international levels. The Department of Cardiovascular Diseases (CV) has been identified by Executive Leadership as a key element to achieving the institution’s overall vision and strategic direction of becoming a destination medical center. In order to become a premier center for complex cardiovascular care and treatment, the CV Lab needed to enhance operational excellence and improve clinical workflow without compromising on quality or patient safety. Data collected from November and December of 2014, revealed that approximately 38% of the 8:00 AM scheduled cases experienced delayed starts of over 25 minutes. Top three areas for improvement and waste reduction were:

- **Wait Time**: Delayed staff arrival (physicians/fellows, anesthesia or CV team), team huddle length and/or lab results
- **Over-Processing**: Multiple members of procedural team reviewing charts and duplicating non-critical discussions
- **Under-Utilization**: Staff awaiting directions, unclear assignments and inconsistent input on communication board

Objective: The CV Lab aimed to increase overall efficiency and improve the daily clinical workflow of the unit. Recognizing that multiple Lean Process Improvement and Planning interventions would be needed to achieve the desired efficiency outcomes, the CV Lab Leadership Team (CVLLT) identified the following objectives and metrics:

- Improve on-time starts for first case (Cath & EP)
- Develop staffing schedule patterns for predictability
- Establish protocols for Anesthesia staffing

- Increase timely scheduling access for cases & volume
- Align physician and allied health staffing models
- Enhance communication amongst all CV staff

Planning: The CV Department consists of 19 cardiologists, including three interventional catheterization (Cath) consultants and three electrophysiology (EP) consultants. At the time of this study, the CV Lab consisted of three procedural rooms. Services include EP ablation therapies, structural heart interventions and cardiac catheterization procedures. The CV Lab Leadership Team (CVLLT) was formulated and membership included Nursing Administration, EP & Cath Lab Physician Directors, Practice Administration, Anesthesia Leadership and other CV Lab representatives (prep/holding, intraoperative, post-op, etc.). The CV Lab engaged MCF’s Systems & Procedures Department to lead education/tutorials on Lean Process Improvement interventions. The CVLLT developed a detailed communication plan, which depended on physician and nursing champions for staff education and targeted presentations (including final report to MCF Executive Leadership).

Implementation: The CV Lab leveraged 5S standardization initiatives, visual management applications, redesigned checklists, root cause analysis, and rapid tests of change (PDSA cycle) during May and June of 2015. Multiple collaborative work sessions with all CV Lab stakeholders directly contributed to staff ownership of the processes and would lead to post-implementation sustainability. CV Department Leadership received weekly check-point reports, assisted with removing barriers and advocated for incremental project support (when needed). Consistent data collection occurred for on-time starts (manual), case volume (automated), procedure access availability (manual), and scheduling efficiency (manual). CVLLT received daily feedback (verbal and written) from CV Lab physicians, anesthesia staff and allied health staff.

Results: The CV Lab showed positive improvements in on-time starts for Cath & EP cases scheduled for 8:00 AM. Data collected through July 2015 exhibited a 51.3% decrease in delays for the first case (tracking unit of minutes). CV Lab morning huddles were restructured to follow an updated checklist, and non-critical information/news was deferred to staff meetings or communicated via S.B.A.R. email memos (Situation, Background, Assessment & Recommendation). Gantt charts and detailed staffing schedules were designed to align with CV lab procedural demand in a newly formatted two-week pattern. Anesthesia support was designated to precise assignments for each half-day block to enhance scheduling efficiencies and information was accurately recorded at 6:00 AM on the CV Lab Prep/Holding electronic communication board:

- **Week-A**: Allows 88.8% allocation for EP cases & 11.2% for TEE/cardioversions (emergent coverage available)
- **Week-B**: Allows 77.6% allocation for EP cases, 11.2% for TEE/cardioversion & 11.2% complex structural cases

Comparing CV Lab volumes from 2014 to 2015, catheterization cases increased by 19.4%, EP cases increased by 17.3% and TEE/cardioversion procedures increased by 10.0%. Reoccurring biweekly meetings were established (every other Monday at 5:00 PM) with the CVLLT to consistently discuss operations, volume, staffing, supply logistics, policies and other topics.

Contact: Christopher H. Hasse, MBA, CSSBB, CFPH | Operations Administrator | Mayo Clinic | hasse.christopher@mayo.edu