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# "Sterile Cockpit": How Utilizing Aviation Regulations Can Reduce Errors in ECMO Procedures

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# "STERILE COCKPIT":
# HOW UTILIZING AVIATION REGULATIONS CAN REDUCE ERRORS IN ECMO PROCEDURES

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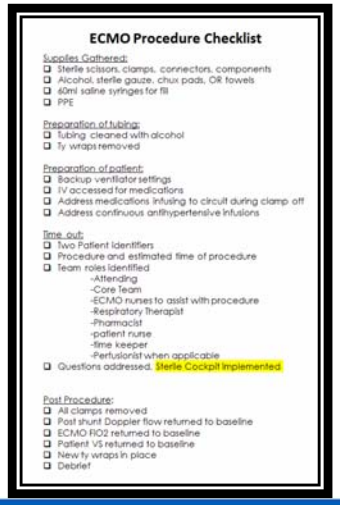
## INTRODUCTION

- Goal to decrease incidents related to distractions and interruptions during ECMO core team (primer) led procedures
- The "Sterile Cockpit Rule", developed in 1981 as an aviation regulation, was adapted by the core team to promote a distraction-free environment during critical ECMO procedures

## METHODS

- Sterile Cockpit laminated signs were placed on ECMO pumps to be displayed during procedures and pump priming
- An explanation of Sterile Cockpit was incorporated into an ECMO procedure checklist
- Practiced during multidisciplinary ECMO simulation learning events
- Interruptions were tracked during ECMO procedures

ECMO Procedure Checklist

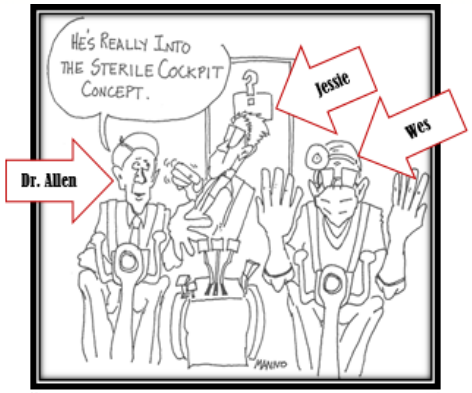
Supplies Gathered:
- ☐ Sterile scissors, clamps, connectors, components
- ☐ Alcohol, sterile gauze, chux pads, OR towels
- ☐ 60ml saline syringes for fill
- ☐ PPE

Preparation of tubing:
- ☐ Tubing cleaned with alcohol
- ☐ Ty wraps removed

Preparation of patient:
- ☐ Backup ventilator settings
- ☐ IV accessed for medications
- ☐ Address medications infusing to circuit during clamp off
- ☐ Address continuous antihypertensive infusions

Time out:
- ☐ Two Patient Identifiers
- ☐ Procedure and estimated time of procedure
- ☐ Team roles identified
  - -Attending
  - -Core Team
  - -ECMO nurses to assist with procedure
  - -Respiratory Therapist
  - -Pharmacist
  - -patient nurse
  - -time keeper
  - -Perfusionist when applicable
- ☐ Questions addressed. Sterile Cockpit implemented

Post Procedure:
- ☐ All clamps removed
- ☐ Post shunt Doppler flow returned to baseline
- ☐ ECMO FIO2 returned to baseline
- ☐ Patient VS returned to baseline
- ☐ New ty wraps in place
- ☐ Debrief





## RESULTS

1. Decreased ECMO procedure interruptions from an average of 25 to <10
2. Zero incidents related to core team led ECMO circuit or component changes since implementation
3. ECMO Specialist survey concluded 90% found Sterile Cockpit to be valuable

## CONCLUSIONS

Upon review of the data including tracking of interruptions, errors, and staff experience, it is evident that the concept of Sterile Cockpit has streamlined procedure efficiency, as well as safety. For our next PDSA cycle, we plan to implement Sterile Cockpit education for non-ECMO staff.

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