



From Gaps to Greatness: Boosting OR Laser Skills with AORN Standards

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Significance of the Problem

- Profound clinical benefits of surgical lasers are undermined by the inherent risks of severe injury to both patients and staff without established safety protocols and competency validation.
- Injuries like corneal burns and soft tissue scarring often arise from two primary sources: critical operator errors such as a dislodged laser fiber, and device malfunctions like an overheated connector.
- Operating Room (OR) had gaps in several laser program components: no standardized periodic audit, limited maintenance oversight, and inconsistent competency records with fewer than 20% of staff validated as laser-trained.
- The project team determined that implementing the recommendations from AORN Guideline for Laser Safety, in full alignment with the US Food and Drug Administration performance standards, provided the most effective framework for mitigating perioperative hazards.

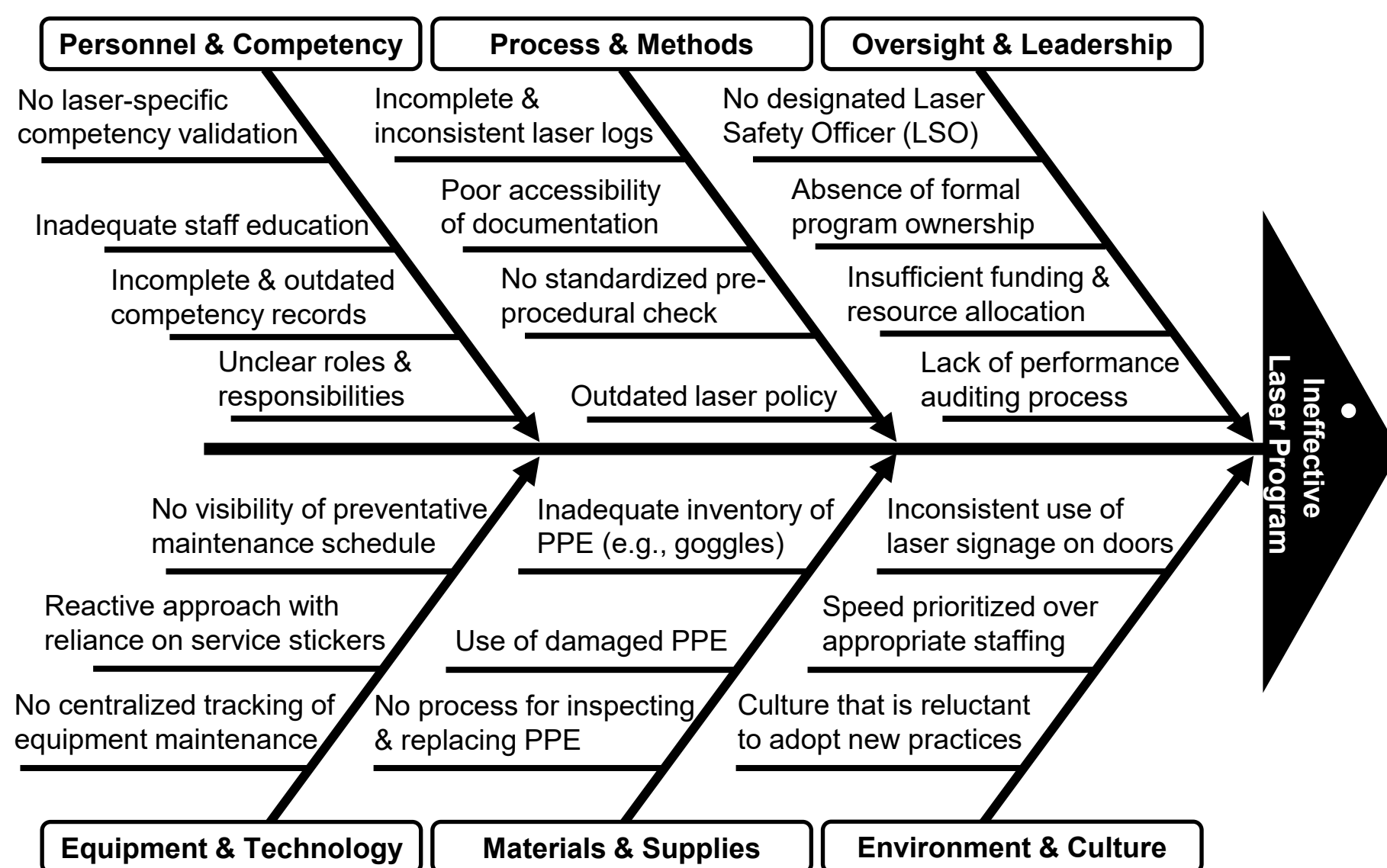
Project Aim

- Reestablish a comprehensive, sustainable Laser Safety Program aligned with AORN Guidelines for Laser Safety.
- Strengthen operational readiness by ensuring that all components of the laser safety such as competency, equipment readiness, documentation, audits, and ongoing education are standardized and reliably maintained.

Methods

- Used the 8-step Practical Problem Solving and A3 methodology.
- Performed a baseline data gathering and analysis of:
 - * CAF competency records
 - * Equipment maintenance logs and service stickers
 - * Case utilization patterns
 - * Laser log completeness and accessibility
 - * Staff knowledge gaps
- Implemented revised laser operator training using the AORN competency verification tool and internal skills validation sessions.
- Established program infrastructures: introduced laser safety checklist, pre-case readiness workflow, and scheduled monthly audits.
- Engaged stakeholders to reinforce role accountability and sustainment.

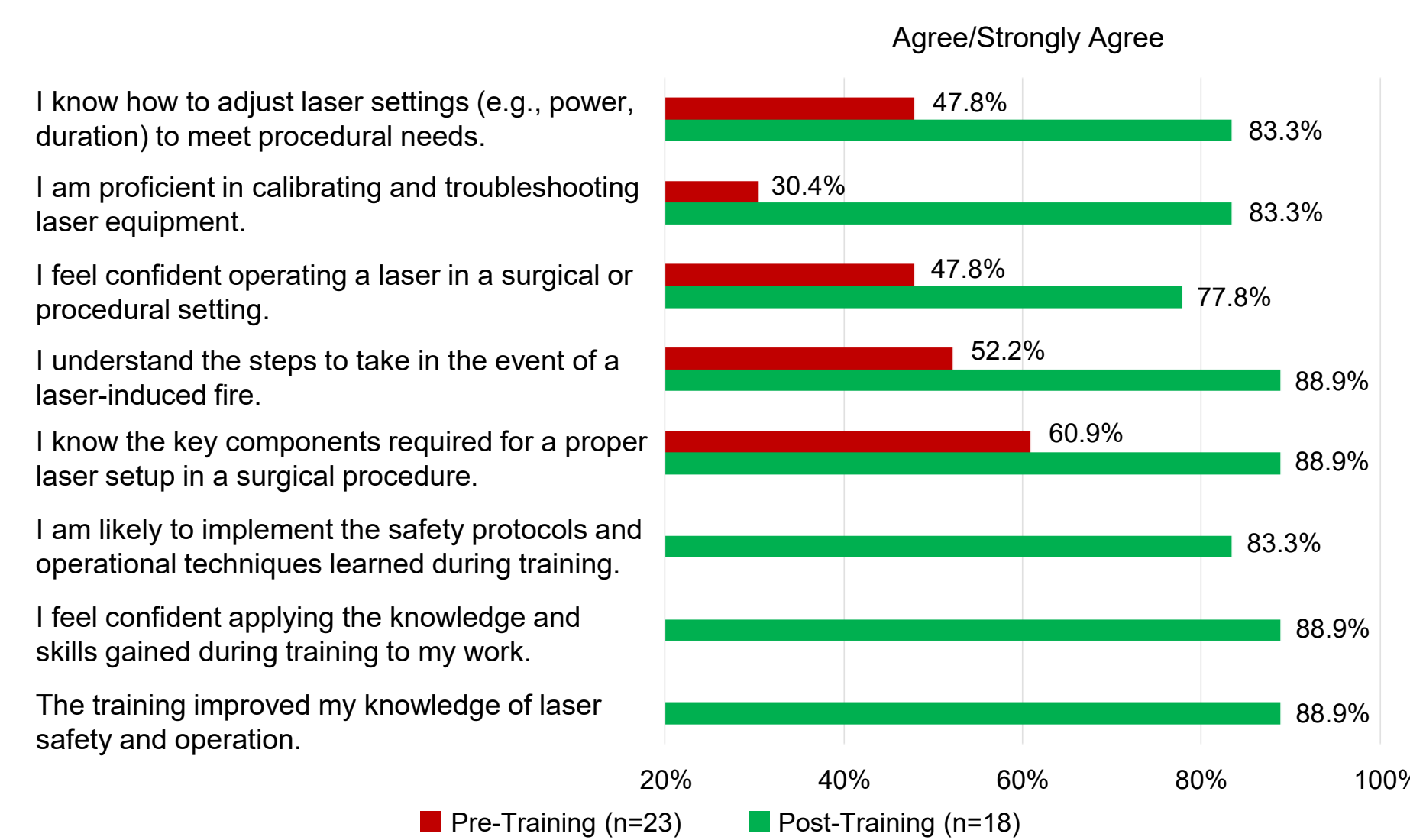
Root Cause Analysis of Ineffective Laser Program



Core Components of Laser Program

Components	Actions
Competency	<ul style="list-style-type: none"> • 2 RNs attended AORN's Medical Laser Safety Officer Course and earned a certificate of mastery. • Incorporated AORN's competency verification tool for a Laser Operator.
Laser Log & Documentation	<ul style="list-style-type: none"> • Reestablished a standardized laser log capturing case details, operator, equipment settings, PPE, and safety checks. • Ensured log is centrally accessible and reviewed quarterly for completeness and trends.
Equipment Maintenance & Readiness	<ul style="list-style-type: none"> • Ensured regular equipment maintenance for Lumenis AcuPulse and UltraPulse lasers. • Established a pre-use readiness protocol to validate eyewear, foot pedals, and settings. • Ordered new goggles.
Periodic Education & Training	<ul style="list-style-type: none"> • Annual in-person group education for RNs and surgical technologists. • Ongoing reinforcement and new updates via daily morning huddle, one-on-one, and on-demand video education.
Program Auditing & Safety Monitoring	<ul style="list-style-type: none"> • Quarterly program audits assessing log completion, maintenance compliance, and CAF updates. • Trending reports shared with OR leadership to ensure accountability and readiness. • Policy updated to reflect practice change and most recent AORN recommendations.

Pre- and Post-Laser Operator Training Survey Results



Outcome Analysis

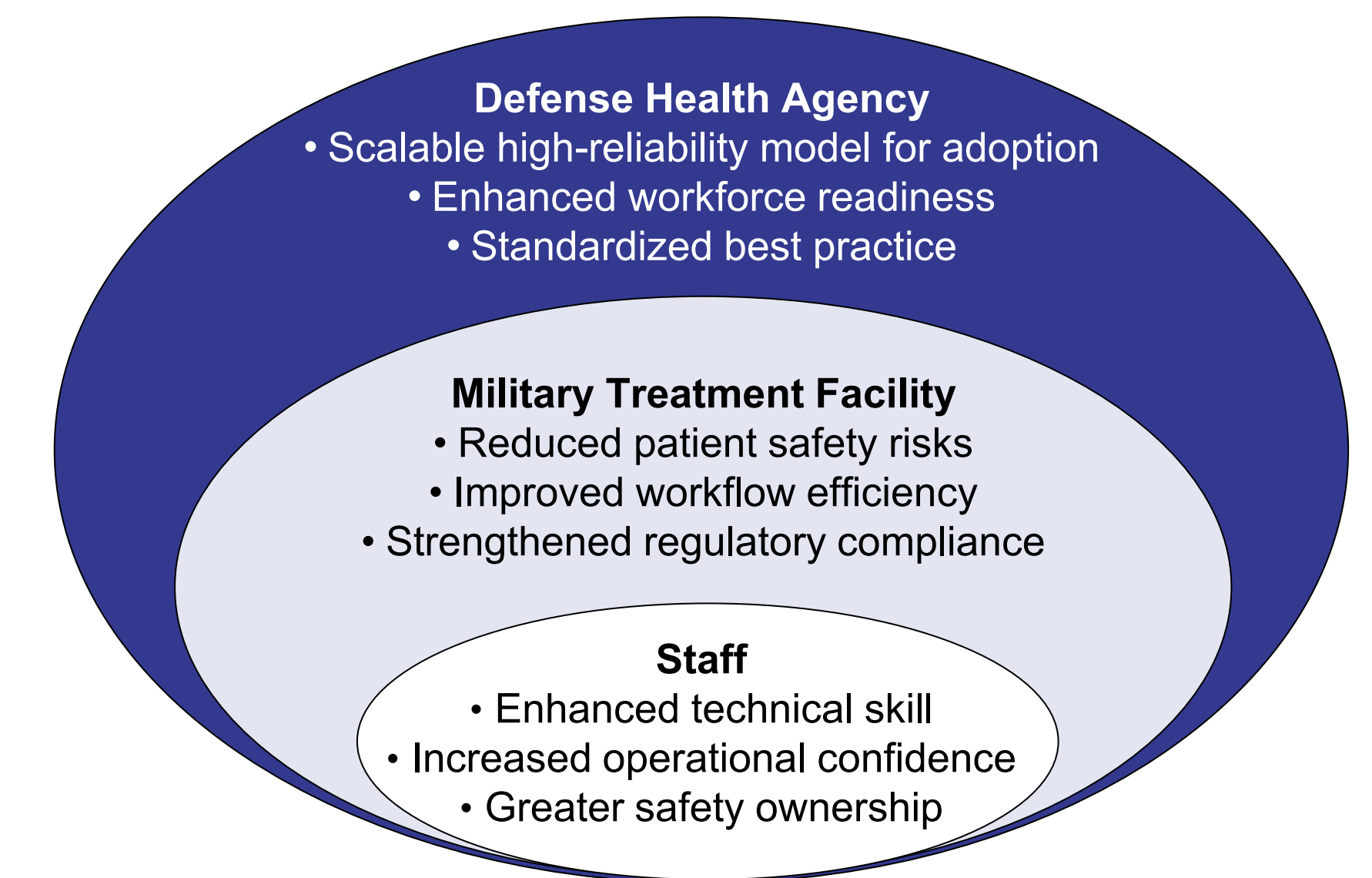
- Rebuilding the program reduced system-level gaps rather than forcing individual staff to compensate for missing processes.
- Enhanced RN competency to 95%, eliminating operational bottlenecks and streamlining case-flow for ENT and GYN services.
- Programmatic education increased reliability of PPE use, hazard mitigation, and adherence to policy.
- Auditing processes provided predictable oversight and allowed early identification of safety or workflow issues.

Laser Operator Training Survey Result Analysis

- Procedural readiness strengthened significantly, as staff confidence in proper laser setup (+28.0%) and fire safety steps (+36.7%) both reached 88.9%.
- Staff proficiency in calibrating and troubleshooting surged by 52.9%, while skill in adjusting laser settings grew by 35.5%, indicating improved hands-on knowledge of the laser equipment.
- A 30.0% increase in staff confidence operating a laser can be translated to greater case-flow efficiency in the OR.
- The 19.3% gain in knowledge of the LSO's role and hazards may provide the foundation for a stronger culture of shared responsibility.

Organizational Impact

- Strengthened safety infrastructure potentially to reduce risks of preventable harm (e.g., eye injury, skin burns, fire, plume exposure).
- Enhanced staffing capability expands flexibility in scheduling and reduces delays attributable to insufficient trained personnel.
- Reliable documentation improves transparency during inspections and reduces administrative burden on OR leaders.
- Fostered a more technically skilled and confident workforce, laying the foundation for a culture of continuous improvement and clinical excellence.
- Program reinvigoration reinforces the culture of safety and becomes a model for revitalizing other specialty programs (e.g., robotics, electrosurgery).



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