2025 RLI Impact in Leadership Award

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Project Description

Participation in the ACR Radiology Leadership Institute (RLI), including the Resident and Young Physician Leader Program and the RLI Kickstart Your Career Workshop, was instrumental in the successful execution of my project. These programs provided a comprehensive framework for leadership, strategic thinking, and innovative problem solving within radiology. Key sessions on organizational dynamics, financial acumen, and change management laid the groundwork for effectively navigating institutional challenges and fostering impactful initiatives. Networking opportunities during the programs allowed me to exchange ideas with peers and mentors, gaining diverse perspectives on leadership in radiology. These interactions reinforced the importance of interdisciplinary collaboration and adaptability in advancing clinical and operational goals. The RLI experience also emphasized the value of emotional intelligence and effective communication. Through interactive workshops, I developed skills in active listening, negotiation, and delivering feedback—all essential for cultivating trust and alignment among stakeholders. Additionally, the program's emphasis on data-driven decision-making encouraged me to adopt evidence-based methodologies for project planning and evaluation, ensuring measurable and sustainable outcomes.

Skills and Knowledge Gained from RLI

The RLI experience provided a robust set of skills and knowledge that were directly applied to my project. Sessions on strategic visioning and goal setting enabled me to structure my project with clear objectives and actionable milestones. I learned to identify key performance indicators to track progress and ensure alignment with institutional priorities. Training in healthcare economics and budgeting allowed me to craft a cost-effective plan for resource allocation, including securing funding and justifying expenditures to stakeholders. Practical tools for managing resistance to change were invaluable for gaining buy-in from multidisciplinary teams and ensuring smooth project implementation. Insights into fostering collaborative and high-performing teams helped me engage colleagues and motivate them toward shared goals. Techniques such as defining roles, setting expectations, and celebrating incremental successes bolster team morale and productivity. Enhanced presentation and storytelling skills enabled me to effectively communicate the project's vision, objectives, and impact to both clinical and administrative audiences.

Project Description and Outcomes

Title: Enhancing Workflow Efficiency and Patient Outcomes Through 3D Visualization and Printing in Personalized Radiology

The project aimed to integrate advanced 3D visualization and printing technologies into radiology workflows to enhance personalized patient care and improve operational efficiency. Leveraging my background in Biomedical Visualization and Clinical Anaplastology, combined with radiology expertise, the initiative focused on creating patient-specific anatomical models and surgical guides for complex cases. These models served as tools for pre-

surgical planning, interdisciplinary collaboration, and patient education. The project had several key objectives. It sought to improve preoperative planning accuracy for complex surgical procedures, reduce intraoperative time and complications by providing precise anatomical references, enhance patient understanding and engagement through visual aids, and streamline radiology workflows to integrate 3D printing seamlessly.

The implementation of the project was carried out in three phases. During the assessment and planning phase, I conducted a needs analysis to identify high-impact clinical cases suitable for 3D visualization and printing. I collaborated with surgeons, radiologists, and technologists to define specifications for anatomical models and established partnerships with 3D printing vendors while securing institutional and foundational funding. In the development and integration phase, workflows were created to process radiological data (e.g., CT and MRI) into printable formats using segmentation software. Radiology staff and graduate students were trained in data segmentation and 3D printing techniques. The use of 3D-printed models was piloted in surgical planning for craniofacial reconstructions and orthopedic procedures.

Finally, during the evaluation and optimization phase, feedback from surgeons and patients on the utility of 3D models was collected. Outcomes such as reduced operating room time, improved surgical precision, and enhanced patient outcome were measured. Workflows were refined to improve efficiency and scalability.

In addition to the primary objectives, I enrolled our institution and contributed to the national ACR and RSNA 3D Printing Registry by submitting data from our clinical cases. This effort aimed to build a robust dataset to validate the clinical and operational impact of 3D printing in radiology. The publication of registry outcome data in the Journal of the American College of Radiology provided valuable insights into best practices, highlighting the significant role of 3D printing in enhancing patient care and improving workflow efficiency across multiple institutions. This national collaboration further
underscored the importance of standardized protocols and evidence-based approaches in advancing the field.

The initiative yielded significant improvements in both clinical and operational metrics. Clinically, it reduced average intraoperative time by 41 minutes and saved approximately $2,500 per case. 3D-printed guides enhanced surgical accuracy, particularly in craniofacial and orthopedic cases, and improved patient satisfaction, with patients reporting better understanding of their conditions and procedures. Operationally, the project successfully integrated 3D visualization and printing into routine workflows with minimal disruptions, achieved cost savings by reducing operating room time and optimizing resource utilization, and established a scalable model for expanding 3D printing applications to other clinical areas.

In conclusion, the RLI experience equipped me with the leadership skills, strategic insights, and technical acumen necessary to spearhead this transformative initiative. By fostering interdisciplinary collaboration and leveraging cutting-edge technology, the project demonstrated the potential of personalized radiology to enhance patient care and operational excellence. The lessons learned continue to inform my efforts to drive innovation and impact within the field.