

VIEWPOINT

Teaching Quality Improvement and Patient Safety in Residency Education

Strategies for Meaningful Resident Quality and Safety Initiatives

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Providing foundational knowledge and skill sets in patient safety and quality improvement (PS/QI) is integral to otolaryngology–head and neck surgery (OHNS) resident education. The Accreditation Council for Graduate Medical Education requires that trainees develop meaningful and measurable skills in QI,¹ and Clinical Learning Environment Review institutional site visits assess quality and safety in the learning environment. The PS/QI training during residency prepares otolaryngology trainees for practice, and an otolaryngologist's ability to demonstrate PS/QI competencies is necessary for maintenance of certification and for reimbursement.² Cultivating PS/QI competencies during residency education promotes clinical innovation, patient-centered outcomes, interdisciplinary relationships, and leadership.

Despite many drivers of a robust residency PS/QI experience, wide variation exists in its implementation.³ The high degree of subspecialization, heterogeneous disease entities, and competing demands in otolaryngology can splinter well-intentioned efforts. Drawing on exemplary practices, we discuss in this Viewpoint how strong culture, experiential focus, and systematic use of validated procedures can overcome these barriers and promote successful PS/QI efforts.

Build a Culture of Continuous QI

Strong departmental culture is a prerequisite for successful PS/QI endeavors. All clinical and educational activities are opportunities for improvement in safety and quality, and PS/QI should be integrated with the experience of patient care. The PS/QI activities must be valued commensurate with other clinical and scientific activities. Clinical investigators recall the long, arduous path to ensuring that clinical research was rightfully positioned alongside basic and translational biomedical research efforts. The same recognition is still evolving for PS/QI efforts. It behooves us to remind our trainees that the leadership of the United States in biomedical research stands in stark contrast to its struggles in delivering high-quality, cost-effective care, in part owing to a reluctance to regard health care delivery as a science.

A thriving PS/QI program begins with robust support from institutional and departmental leadership. A key aspect involves participation of dedicated faculty preceptors to instill QI concepts; provide tools, such as root cause analysis, control charts, and the plan, do, study, act (PDSA) cycle; and offer guidance and role modeling. Protecting resident time for and allocating resources to PS/QI establish its importance within departmental culture. Resident engagement with institutional PS/QI efforts affords access to

greater resources while further emphasizing the PS/QI culture within the context of the larger health care system. In addition, engaging in system-aligned QI projects with institutional backing allows for "multigenerational" projects that facilitate longitudinal involvement and potentially surmount limitations of scope and scale imposed by rotations and time constraints.

Transition the Curriculum From Didactic to Experiential

Didactic education and process improvement provide the foundation for experiential learning and effective participation in QI projects. For example, "Lean" is a process improvement methodology that originated in the manufacturing industry and was adapted for use in health care. The Department of OHNS at the Indiana University School of Medicine developed a pilot program facilitating a Lean Belt certification during a dedicated 3-month research block in postgraduate-year 3, resulting in significant academic productivity and achievement by several trainees of Yellow or Green Belt certification.⁴ Using the Lean framework, residents identify gaps in safety or quality and learn PS/QI while applying rigorous methodologies to correct problems.

The Institute for Healthcare Improvement has developed educational modules focused on improvement capability, patient safety, leadership, and person- and family-centered care as well as a triple aim for populations (ie, improving patients' health care experience, bettering population health, and reducing cost). These modules have been used to provide a framework for faculty-designed lectures to reinforce pertinent PS/QI principles, resulting in residents significantly increasing their knowledge, as assessed by the Quality Improvement Knowledge Application Tool Revised.³

These examples of quality improvement curricula can be readily adapted within other OHNS residencies. Residents learn stepwise to define a problem, identify stakeholders, align a project with health system priorities, perform root cause analyses, implement change, and evaluate the impact of their intervention. These tools empower residents to independently generate and implement PS/QI efforts, which become experiential learning opportunities that also benefit patients and reduce health care expenditures.⁵

Leverage Resources and Data to Maximize QI Impact

A variety of approaches can be used to integrate PS/QI projects into residency training. Morbidity and mortality

conferences are a keystone of QI efforts, providing opportunities for residents to perform root cause analyses and conduct PDSA cycles using patient safety events.⁶ The American College of Surgeons' National Surgical Quality Improvement Program and the recently launched American Academy of OHNS' Reg-ent ENT Clinical Data Registry provide large, national patient safety and quality repositories that residents can leverage to compare department metrics against national performance standards and identify opportunities for PS/QI projects.⁷ Many medical centers have experienced success with institution-level resident-led PS/QI committees and appointments of residents as patient safety and quality officers. These approaches offer residents access to hospital-wide patient safety reports and representation on hospital PS/QI committees. At the University of Michigan, the House Officer Quality and Safety Council launched numerous initiatives with institution-wide impact. Many of these efforts arose organically because of the group's multidisciplinary composition. Building partnerships with allied health care professionals, including nurses, speech-language pathologists, respiratory therapists, and physician extenders, to tackle PS/QI projects can provide residents experience in directing complex teams while integrating diverse perspectives on health care problems. Surgical simulation is also being increasingly used to assess components of health care quality, providing another venue for PS/QI innovation.

Embrace the Science of QI and Cultivate Leaders

Although QI initiative structure is slightly distinct from biomedical scientific inquiry, such initiatives are amenable to assessment using rigorous and systematic methodology. Indeed, the general reluctance to embrace quality improvement science and human factors engineering has been a major obstacle to meaningful resident QI efforts

and has slowed growth of the evidentiary base of the quality and safety literature. Projects asking carefully framed questions and using validated scoring tools (eg, Quality Improvement Proposal Assessment Tool 7) can ensure appropriate definition of the problem, identification of key stakeholders, and preparation of root cause analysis and PDSA, thus increasing the probability for successful intervention.¹ The Standards for Quality Improvement Reporting Excellence statement provides a framework, including a 19-component checklist, for use before submitting formal QI studies for publication. These standards are common to all scientific reporting but are adapted to the specific requirements of QI initiatives.⁸

Maintaining a portfolio of resident QI projects allows educators to track trainee progress and ensures project sustainability, whereas formally presenting project outcomes enables feedback and mentoring. Residents mature as leaders through engagement in QI projects, and resident progression in PS/QI activities should parallel other aspects of residency training, with graduated responsibility and leadership. In addition, program directors can track the quantity and quality of projects or other metrics of productivity, such as publications, national presentations, grants, and institutional or national leadership roles, to assess the overall effectiveness of their programs.

Conclusions

Because quality and safety are the cornerstones of patient-centered care, an effective PS/QI program should pervade residency training. The educational framework for QI has evolved from imparting basic knowledge to emphasizing the integration of competency-based systems with experiential learning. Using systematic approaches, residents can lead QI initiatives that positively affect patient outcome and simultaneously be cultivated as future leaders in OHNS.

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