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Original Contribution

A retrospective review of required projects in systems-based practice in a single anesthesiology residency: a 10-year experience☆,☆☆,★,★★

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Abstract

Study Objective: The Accreditation Council for Graduate Medical Education has emphasized in its core competencies and more recently, in its Milestones Project, that residents understand the importance of systems-based practice (SBP). The objectives of the study are to evaluate the quality of residents' SBP projects and to determine the degrees that were subsequently implemented.

Design: A retrospective educational observational study.

Setting: A university-based anesthesiology training institution.

Subjects: One hundred forty-nine anesthesiology residents in their final (postgraduate year 4) year of training who completed SBP projects for the last 10 years (2004-2013).

Interventions: A structured SBP course was provided for postgraduate year 4 anesthesiology residents with deadlines set such as project identification, data collection, and proposal draft. Each resident's written SBP proposal received inputs by 2 members of the department executive steering committee.

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★ Authors' contributions: R.M.P. developed the program and maintained the data. T.E.M. and T.S. collected and analyzed the data. T.S. and T.E.M. wrote the draft. All authors reviewed the final draft and agreed the content.

★★ Previous presentations: The study has been presented, in part, as a podium presentation at the 2015 Spring Annual Meeting of the Society for Education in Anesthesia and the Association of Surgical Educators (Seattle, WA; April 24-26, 2015) and as a poster form at The 2015 Annual Meeting of the International Anesthesia Research Society (Honolulu, Hawaii; March 21-24, 2015).

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The SBP projects concluded with oral presentations by each resident to the department executive steering committee, who provided overall scores.
Measurements: All SBP projects were categorized into 7 categories: safety initiatives, economic analysis, process analysis, policy change recommendations, education initiatives, teamwork/communication, and operating room efficiency. Evaluation scores using a Likert scale (1-9, where 9 is the best) were analyzed. The rate of implementation of project ideas within the department based on the presentations to the executive committee was examined.
Main Results: Of 149 projects, policy change recommendations was the most frequently chosen category (46 projects; 30.9%), followed by process analysis (36 projects; 24.2%). The overall evaluation score was 7.6 ± 0.6 (mean ± SD). A total of 53 projects (35.6%) were implemented in the department. There was no statistical difference between SBPs with implementation vs SBPs without implementation in terms of evaluation scores, year of the presentation, or categories.
Conclusions: This SBP project has given residents the opportunity to participate in a hospital system change aiming to improve efficiency and safety.
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1. Background

In 1981, the Accreditation Council for Graduate Medical Education (ACGME) was established as a private, nonprofit council, whose mission is to improve patient care by improving the quality of graduate medical education. To achieve this mission, the ACGME Outcome Project was introduced in July 2001 and was intended to be implemented in stages over a 10-year period. As a part of this mandate, the ACGME endorsed the 6 core competencies: (1) medical knowledge, (2) patient care, (3) professionalism, (4) interpersonal communication, (5) practice-based learning: personal improvement, and (6) systems-based practice (SBP): system improvement. The ACGME defines *SBP* as being able to "demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care."* In 2009, the ACGME shifted to a milestones-based accreditation system called the *Next Accreditation System*. The Next Accreditation System aims to include milestone-driven assessment and improvement for the 6 competencies [1]. The Milestones# provide a framework for assessing the development of the resident physician in ACGME-accredited residency or fellowship programs in key dimensions of the elements of physician competency in a specialty or subspecialty. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced.

A generic milestone for SBP for level 4 competency requirement is described as follows:

1. can compare and contrast failure modes and effects analysis with root-cause analysis as a patient-safety tool in health care, and
2. develops content for and facilitates a morbidity-and-mortality presentation or conference focusing on systems-based errors in patient care [1].

Historically, SBP has been difficult to be interpreted [2]. In principle, SBP refers to the use of available resources to manage patients with the highest standards of safety in a cost-effective and efficient manner. It is important for future clinicians to advocate for their patients and identify health care system deficiencies. Residency programs in all disciplines across the United States have developed specific interventions and curricula to teach SBP and have attempted to evaluate residents in this competency domain [3–17]. To date, however, no long-term analysis of SBP projects within a residency program has been performed.

In this study, we reviewed a departmental SBP curriculum which was a newly developed educational process and was mandated within a large academic anesthesiology residency program for the last 10 years. We also analyzed how many SBP projects have resulted in direct system change in the department.

2. Methods

This retrospective observational study was conducted within an anesthesiology residency program at a large university medical center. The study was approved by the local institutional review board as an "exempt" study entitled, "System based project for anesthesiology residents: a 10-year single center experience" (University of Pittsburgh School of Medicine IRB no. PRO13070600; initial approval: November 14, 2013).

The postgraduate year (PGY) 4 anesthesiology residents from the graduating classes of 2004 to 2013 were included in this study. Residents were excluded if they transferred to another residency program and did not complete a project, or if the resident did not graduate and therefore did not complete a project. All data were de-identified prior to analyses.

* https://www.acgme.org/acgmeweb/Portals/0/PFAssets/ProgramRequirements/CPRs2013.pdf (last accessed on September 5, 2014).
# http://www.acgme.org/acgmeweb/Portals/0/PDFs/SlideDecks/SLIDEDECK-FDMilestones2013.pptx (last accessed on September 5, 2014).

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