A Disease-Specific Hybrid Rotation Increases Opportunities for Deliberate Practice

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IMPORTANCE: Incorporating deliberate practice (DP) into residency curricula may optimize education. DP includes educationally protected time, continuous expert feedback, and a focus on a limited number of technical skills. It is strongly associated with mastery level learning.

OBJECTIVE: Determine if a multidisciplinary breast rotation (MDB) increases DP opportunities.

DESIGN: Beginning in 2010, interns completed the 4-week MDB. Three days a week were spent in surgery and surgical clinic. Half-days were in breast radiology, pathology, medical oncology, and didactics. The MDB was retrospectively compared with a traditional community rotation (TCR) and a university surgical oncology service (USOS) using rotation feedback and resident operative volume. Data are presented as mean ± standard deviation.

SETTING: Oregon Health and Science University in Portland, Oregon; an academic tertiary care general surgery residency program.

PARTICIPANTS: General surgery residents at Oregon Health and Science University participating in either the MDB, TCR or USOS.

RESULTS: A total of 31 interns rated the opportunity to perform procedures significantly higher for MDB than TCR or USOS (4.6 ± 0.6 vs 4.2 ± 0.9 and 4.1 ± 1.0, $p < 0.05$). MDB was rated higher than TCR on quality of faculty teaching and educational materials (4.5 ± 0.7 vs 4.1 ± 0.9 and 4.0 ± 1.2 vs 3.5 ± 1.0, $p < 0.05$). Interns operated more on the MDB than on the USOS and were more focused on breast resections, lymph node dissections, and port placements than on the traditional surgical rotation or USOS.

CONCLUSIONS: The MDB incorporates multidisciplinary care into a unique, disease-specific, and educationally focused rotation. It is highly rated and affords a greater opportunity for DP than either the USOS or TCR. DP is strongly associated with mastery learning and this novel rotation structure could maximize intern education in the era of limited work hours. (J Surg Ed 73:1-6. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: graduate medical education, breast neoplasms, autonomy, surgery residency training, general surgery

COMPETENCIES: Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills

INTRODUCTION

Educators must continually balance resident service and education obligations in the era of limited duty hours and evolving concerns about the preparation of recent graduates.[1-3] This balance is particularly difficult to achieve for interns, as traditionally structured resident "teams" can have a strong hierarchy and leave little time for intern education.[4-7] Novel curriculum innovations that increase the educational value of intern rotations are needed, but must be structured to optimize educational efficiency.

Deliberate practice (DP) is a concept initially described by Ericsson et al.[8] and is based on the premise that, for complex neuron-cognitive skills, there are no naturally high performers. DP is a combination of immediate feedback, protected time for problem solving, and opportunities for repeated performance to refine behaviors that is strongly

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associated with the achievement of expertise in a wide variety of fields.[9,10] It may be that intentionally structuring residency rotations to maximize opportunities for DP will be a step towards the optimization of surgical graduate medical education.

Novel attempts to incorporate DP into internship have fallen into 2 groups: educationally-specific rotations and apprenticeship-model rotations.[11-17] These curriculum innovations are limited by lack of a consistent operative focus and logistical difficulties, respectively. These limitations highlight the opportunity for novel hybrid rotations that capitalize on the strengths of the educationally-specific and apprenticeship-model rotations while addressing the short-comings of each. We designed a hybrid multidisciplinary breast (MDB) rotation in an attempt to provide the opportunity for DP and to incorporate feedback from recent graduates of the program indicating that operative exposure at the intern level could be increased. This study reviews the educational outcomes of the first 3 years of the MDB. We hypothesize that MDB interns have more opportunity for DP than the interns on traditional rotations.

EDUCATIONAL PROGRAM DESCRIPTION

The general surgery residency at Oregon Health and Science University (OHSU) is a university-based residency program with 12 categorical residents in each class. These residents are supervised by 109 faculty at 11 hospitals in 3 cities. Categorical residents complete 5 clinical training years as well as 1 to 3 years of optional research. The intern class includes categorical general surgery interns, undesignated preliminary residents, and designated preliminary residents from neurosurgery, orthopedic surgery, urology, ophthalmology, anesthesia, and radiology.

Feedback from recent graduates of the program and analysis of graduating chief resident operative case logs before 2010 suggested a programmatic deficiency in the number of operations for benign and malignant breast disease completed during residency at our institution. In an effort to correct this deficiency, while simultaneously increasing opportunities for DP, the MDB was introduced in 2010 at one of the community teaching hospitals associated with the OHSU residency program. The 4-week rotation was assigned to categorical general surgery interns. The interns worked directly with 4 teaching faculty who have a strong interest in breast pathology and breast cancer care. A breast pathologist, breast radiologist, and a medical oncologist with a significant interest in breast cancer were also included on the teaching faculty.

The primary responsibility of the MDB intern was the care of patients admitted to the breast surgery service. As the sole resident assigned to the breast surgery service, the interns were expected to take responsibility for the clinical care of the patients while interacting directly with the supervising attending surgeons. Although senior residents were assigned to other clinical services at that hospital, they did not have a formal role on the breast service. The clinical week of the MDB intern was divided into half-days, with 1 half-day each in pathology, radiology, medical oncology, and surgery clinic. Operating with the supervising faculty took 4 half-days. An option to participate in a half-day of radiation oncology clinic was also available to residents, with the expectation that at least 1 half-day during the month be spent there. Continuity of patient care across the specialties was emphasized, such that patients who were seen by the intern in the radiology suite were subsequently evaluated in surgery clinic, and the breast specimens resected during operative days were reviewed during the pathology half-day. In addition to the clinical component of the MDB, 2 half-days were dedicated to formal educational activities. Attending the residency-wide weekly didactic and simulation conference took 1 half-day. The remaining half-day was dedicated to self-paced review of seminal articles in breast surgery and preparation of an hour-long teaching conference on breast pathology. This conference was given by the intern at the end of the rotation to faculty, residents, and students. Although the MDB provides intensive and early exposure to breast pathology, residents participate in the care of patients with breast cancer throughout their training. The MDB was not designed to replace this longitudinal exposure but rather to supplement their training with an early, focused exposure to patients with breast disease. The residents' later exposure to breast disease occurs on general surgical services at our affiliated community hospitals and as part of the university surgical oncology service (USOS) as a junior and chief level resident.

METHODS

Rotation feedback and operative data from interns rotating on the MDB from July 2010 to June 2013 were collected and analyzed. For comparison, similar data over the same time period were collected from residents rotating on the USOS and those rotating on a traditionally structured general surgery rotation (TSR). The TSR is covered by the same surgical faculty group and based at the same hospital as the MDB.

At the conclusion of each rotation, residents completed an anonymous, electronic evaluation of the rotation. Numeric scores were provided for each of 7 categories on a scale from 1 to 5, with 5 being the best possible score. The 7 items rated were: (1) availability of ancillary services, (2) ability of faculty and their willingness to teach, (3) quality of faculty teaching on this rotation, (4) quality of conferences on this rotation, (5) quality of educational materials made available, (6) the opportunity to perform and learn procedures and operations, and (7) the extent to which you were able to attend core