

A Comprehensive Resident-as-Teacher Curriculum for Surgery Residents

Introduction

Teaching is an important part of surgical training and practice. Both medical students and residents report that residents contribute significant time to teaching of medical students. This is true in all specialties, including surgery. The relevant governing bodies recognize residents' important role in education and affirm that development of teaching skills is essential. The Liaison Committee on Medical Education (LCME) requires that residents are trained to fulfill their educational duties toward medical students.¹ The Accreditation Council for Graduate Medical Education (ACGME) identified teaching as a domain in its initial General Surgery Milestone Project as well as in the recent update.² Despite the important role of teaching, few medical students enter residency with formal training regarding teaching. Most residents acquire their teaching skills in the process of teaching but, despite mandates by the LCME, few surgery residency programs offer formal resident-as-teacher programs (RATPs).³ One barrier appears to be the relative paucity of RATPs specifically aimed at surgery residents and of the few that have been published, most were published more than 5 years ago.^{4,5} Another barrier to wider use of RATPs is that many surgery residencies develop their own program, which can be a prohibitive time investment.³

Because teaching is an important part of surgical training and practice, a contemporary comprehensive resident-as-teacher program aimed specifically at surgical residents is an important contribution to the faculty development of surgical residents. We have put together such a program and share it here, hopefully with sufficient detail for easy reproducibility.

The curriculum was informed by review of the available literature on resident-as-teacher programs for any specialty as well as the current literature on teaching in general surgery training. By utilizing available literature to inform the curriculum we hoped to avoid the pitfall of 'reinventing the wheel'.

We have assembled a curriculum that provides residents with the foundational knowledge and an understanding of skills needed to teach effectively in the clinical setting. All residents have trained in the system in which they are teaching. Therefore, the culture of medical education is familiar to them. However, we assumed, for purposes of developing this curriculum, that residents have no formal background in teaching.

Through this curriculum, residents are introduced to concepts of adult learning theory, cognitive apprenticeship, social development theory, experiential learning, and motivation. The curriculum also equips residents with practical teaching skills and ways to plan encounters with their learners, these include such widely adopted models as 'The One Minute Preceptor' also known as the 'Microskills Model',⁶ 'SNAPPS',⁷ and the 'Briefing-Intraoperative Teaching-Debriefing' model.⁸ Finally, content included in the curriculum will enable them to provide effective feedback and evaluations. The curriculum allows residents to understand and explore the qualities of effective feedback and best practices for providing feedback. Also, the distinctions between summative and formative evaluation will be illustrated whilst also providing residents with a framework for thinking about their learner's performance to construct an evaluation.

The target audience for the program are general surgery residents at all levels of training, so a training program may choose to use this for all residents or target a specific post-graduate year. The program can easily be adapted to any learner group size.

The content can be delivered by any faculty member with an interest or background in teaching and education; the content can be delivered by one or multiple faculty members. At our institution, we invite a faculty member with well-recognized clinical teaching expertise to deliver session on teaching outside of the operating room. We also use nominations from graduating chief residents to select a faculty member with strong intra-operative teaching skills to deliver the session on teaching procedural skills and teaching in the operating room.

The curriculum described here represents a comprehensive, multi-session, multi-modal program targeted at surgical residents to help them holistically hone their teaching skills. It is unique in these aspects and, as it is versatile, can also be adapted by non-general surgery residency programs.

Curriculum Delivery

At our institution, the curriculum is taught in an interactive setting over the course of the academic year. We deliberately steered away from a bolus session, i.e. a single workshop held at a single time. Spacing the sessions out is in line with the accepted principle that education content distributed over time is more easily retained and maintains interest in the delivered contents.⁹ Furthermore, by repeatedly presenting teaching-related content in the curriculum, we signal that good teaching of medical student is a priority for our department.

Several different approaches are used to make the curriculum interactive and relevant. Any materials needed to prepare for the sessions, all organizers provided during the sessions, and lectures/presentations were available for residents on a shared computer drive to which all have access. Additionally, as applicable, materials were distributed electronically by the Surgery Education Office (SEO) at least one week before the session.

The sessions themselves combine direct instruction with opportunities for interactive learning and application of concepts. Role-playing exercises were incorporated to allow for feedback on performance and practice. Finally, reflection pieces were included to allow residents to consider their current role and how they might (re)consider it going forward. Several tasks and tools were used to evaluate residents' learning from the program. These include design tasks, organizers, role-play exercises with peer evaluations, reflection pieces, and quizzes. We have learned that it is helpful if for all items to be handed in, that residents generate a unique 4-item code. We had them generate the code based on their individual information: 1: First letter of the city of birth; 2: First letter of mother's first name; 3: (Numeric) Month of birth; 4: Second letter of undergraduate college or university attended.

Based on our experience, we recommend that the curriculum be delivered over five sessions, each lasting approximately 55 minutes.

Summary of each session including activities, suggested time spent on each activity, and the necessary materials

Session 1. Foundation in Education Theory and Goals

Session	Activity	Time	Materials
1	1 – Quiz, Survey	10mins	Quiz, Survey
	2 – Discussion, Review Teaching Role	15mins	PPT
	3 – Discussion, Review Adult Learning Theory, Motivation	15mins	Organizer, PPT
	4 – Clerkship Curriculum	15mins	PPT

Session 2. Practical Tips for Teaching Outside of the Operating Room

Session	Activity	Time	Materials
2	1 – Task Design Challenge	10mins	Task Design
	2 – Review Clinical Teaching Frameworks	15mins	PPT, Organizer
	3 – Role Play	15mins	Clinical Scenarios
	4 – Mini Lecture Design	10mins	PPT
	5 – Reflection Piece	5mins	

Session 3. Practical Tips for Teaching Procedural Skills and Teaching in the Operating Room

Session	Activity	Time	Materials
3	1 – Discussion, Review Cognitive Apprenticeship, Experiential Learning	10mins	PPT, Organizer
	2 – Skill Teaching Demonstration	15mins	
	3 – Review Learning Contracts	10mins	PPT
	4 – Task Design Challenge	15mins	Task Design
	5 – Reflection Piece	5mins	

Session 4. Feedback and Evaluations

Session	Activity	Time	Materials
4	1 – Discussion, Review Evaluations	10mins	PPT, Organizer

2 – Review Clinical Skill Evaluation Tools	15mins	PPT
3 – Role Play	15mins	Clinical Scenario
4 – Review Management of the Difficult Learner	15mins	PPT

Session 5. Curriculum Review and Reflection

Session	Activity	Time	Materials
5	1 – Review Prior Sessions	20mins	PPT
	2 – Evaluation of Own Teaching, Review Teaching Competencies	20mins	PPT, Organizer
	3 – Survey (+/- Quiz)	15mins	Survey, Quiz

We recommend delivery of the content in the order shown but recognize that sometimes faculty best suited to deliver specific content may not be available in that order. Therefore, we consider the order of sessions 2 through 4 flexible and these sessions can be presented in any order if necessary. Session 1 and 5 provide an introduction and conclude with a goal-setting exercise, respectively, and should be used to bracket the remainder of the curriculum. Session 1 provides a foundation in education theory and is an opportunity to share the goals of the clerkship with the residents. In Session 2 residents are given practical tips for teaching outside of the operating room. Session 3 provides a framework for teaching in the operating room or technical skills more broadly. The purpose of session 4 is to equip residents with the necessary tools to give effective feedback and to construct evaluations. Session 5 provides a summary of the preceding sessions as well as an opportunity for residents to reflect on past and plan on future teaching. The relevant PowerPoint presentations (simple, to allow programs to tailor to their needs) and organizers are provided.

Materials

Session 1 Foundation in Education Theory and Goals ^{10–19}

Session 2 Practical Tips for Teaching Outside of the Operating Room ^{6,7,20,21}

Session 3 Practical Tips for Teaching Procedural Skills and Teaching in the Operating Room ^{8,22–25}

Session 4 Feedback and Evaluations ^{26–29}

Session 5 Additional Skills and Curriculum Review ^{30,31}

Surveys and Quiz

PowerPoint Slides

Organizers

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