

# Teaching the Healthcare Economics Milestones to Radiology Residents: Our Pilot Curriculum Experience

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**Rationale and Objectives:** Since July 2013, the Accreditation Council for Graduate Medical Education (ACGME) has required radiology residency programs to implement a set of educational milestones to track residents' educational advancement in six core competencies, including Systems-based Practice. The healthcare economics subcompetency of Systems-based Practice has traditionally been relatively neglected, and given the new increased ACGME oversight, will specifically require greater focused attention.

**Materials and Methods:** A multi-institutional health-care economics pilot curriculum combining didactic and practical components was implemented across five residency programs. The didactic portion included a package of online recorded presentations, reading, and testing materials developed by the American College of Radiology (ACR's) Radiology Leadership Institute. The practical component involved a series of local meetings led by program faculty with the production of a deliverable based on research of local reimbursement for a noncontrast head computed tomography. The capstone entailed the presentation of each program's deliverable during a live teleconference webcast with a Radiology Leadership Institute content expert acting as moderator and discussion leader.

**Results:** The pilot curriculum was well received by residents and faculty moderators, with 100% of survey respondents agreeing that the pilot met its objective of introducing how reimbursement works in American radiology in 2015 and how business terminology applies to their particular institutions.

**Conclusion:** A health-care economics curriculum in the style of a Massive Open Online Course has strong potential to serve as many residency programs' method of choice in meeting the health-care economics milestones.

**Key Words:** Economics; healthcare; milestones; ACGME; resident education.

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## INTRODUCTION

Following the recent implementation of the Accreditation Council for Graduate Medical Education (ACGME) Milestones guidelines, our residency program, like many others, was prepared and confident in satisfying the clinically based milestone requirements. The only exception was the Healthcare Economics Milestones component of the Systems-based Practice competency. From anecdotal reports, organized discussions at the annual Association of University Radiologists meetings, and published literature, it became clear that this was a weak point in many radiology residency programs. In the past, authors have published their experiences with teaching this subject to radiology residents by utilizing unique, program-specific curricula (1–4). What they shared in common were faculty members who were well versed in the subject matter and had the institutional resources to support a custom, program-specific curriculum. We

soon realized that although the radiology faculty at Tufts Medical Center (TMC) were enthusiastic about teaching health-care economics to our radiology residents, their relative lack of content experience and resources would hamper attempts at developing a unique curriculum that would efficiently fulfill the requirements of the healthcare economics milestones.

The challenges of teaching healthcare economics to radiology residents are manifold, including the complexity of managing and corraling the bounty of available business-oriented radiology literature and existing content into a streamlined learning experience. Underlying this issue is the hurdle of making the content accessible to finance-naïve radiology residents. Indeed, residents have shown great interest in this subject matter despite residency programs largely maintaining their focus on teaching interpretive skills (2,5). As a result, we endeavored to devise a delivery technique that would not interfere with residents' primary clinical responsibilities.

## MATERIALS AND METHODS

In parallel to our internal deliberations regarding the development of a health-care economics curriculum at TMC, the ACR's Radiology Leadership Institute (RLI) made available, through its online on-demand portal, the "RLI-

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**TABLE 1.** Adapted from The Diagnostic Radiology Milestone Project (7) and the Association of Program Directors in Radiology (8)

	Milestone Definition	Health-care Economics
<b>Level 1</b>	The resident demonstrates milestones expected of one who has had some education in diagnostic radiology.	Describes the mechanisms for reimbursement, including types of payers.
<b>Level 2</b>	The resident is advancing and demonstrating additional milestones.	States relative cost of common procedures.
<b>Level 3</b>	The resident continues to advance and demonstrate additional milestones; the resident consistently demonstrates the majority of milestones targeted for radiology.	Describes the technical and professional components of imaging costs.
<b>Level 4</b>	The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.	Describes measurements of productivity (e.g., RVUs).
<b>Level 5</b>	The resident has advanced beyond performance targets set for residency and is demonstrating “aspirational” goals, which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this goal.	Describes the radiology revenue cycle.

RVUs, Relative value units.

ACGME 2014 HC Economics Milestones Program.” (6) This webinar, originally presented during the annual ACR Resident & Fellow Section meeting in Washington, DC, in April 2014, contains four 15- to 20-minute presentations by nationally known leaders in radiology, discussing the topics relating to each of the five health-care economics milestones. The webinar also includes selected *Journal of the American College of Radiology (JACR)* reading materials, which serve as a more detailed supplement to the recorded presentations. The package introduces residents to the vocabulary of economics, Current Procedural Terminology codes, the Resource-based Relative Value Scale (RBRVS), and the effects of RBRVS on radiology practice. In total, these resources summarize the topics of the healthcare economics milestones into a single presentation readily available for on-demand online viewing at a reduced price for trainees (Table 1).

We have previously written about how this RLI webinar could be used to meet the healthcare economics milestones, and so we sought out a way to employ this at our residency program (9). It was at this point when we began collaborating with the executive team at the RLI to develop a more engaging healthcare economics curriculum that could be implemented at any radiology residency program, regardless of size or institutional resources.

Taking a lesson from effective clinical and business-school teaching techniques, our curriculum working group devised a pilot program that took a multifaceted approach to eschew the traditional didactic-only method (10,11). It was also scaled up to simultaneously teach healthcare economics to five radiology residency programs in the model of a Massive Open Online Course (MOOC), utilizing both didactic and practical components. Participants included TMC (Boston, MA), Massachusetts General Hospital (Boston, MA), Virginia Mason Medical Center (Seattle, WA), Ochsner Medical Center (New Orleans, LA), and Dartmouth-Hitchcock Medical Center (Lebanon, NH). These programs were specifically re-

cruited for their varying institutional size and types, spanning from small academic departments to large academic tertiary care institutions, and those in between. Residency class sizes spanned from 3–10 residents per year. The purpose of the pilot program was to serve as a proof-of-concept that a MOOC-style curriculum could be developed to sufficiently relieve the burden of teaching healthcare economics to radiology residents from solely by clinical faculty to a hybrid online and local curriculum that could leverage the knowledge, experience, and resources of content experts at the RLI.

Following the review of the existing RLI content by the curriculum development committee, the didactic curriculum was formed, combining a customized package of online webinars with online postwebinar quizzes and reading material. This included material from the original RLI webinar, “RLI-ACGME 2014 HC Economics Milestones Program,” and the “Econ Speak 101” article from the Business Essentials Series of the *JACR*. Also included was an RLI webinar by Dr. Ezequiel Silva III, titled “How a Dictation Becomes a Dollar Webinar.” This 40-minute video served as an expanded version of his shorter April 2014 presentation where he discusses the RBRVS underlying professional and technical fee reimbursements and how it then translates into payment. Required online post-tests following the webinars provided an objective measure of content understanding. This didactic portion was designed with radiology residents’ clinical responsibilities at the forefront, with the expectation that consumption of the webinars and reading materials require approximately 3–4 hours, allowing ample off-duty time to engage in clinically related studying. In our view, it was imperative that the economics curriculum not be burdensome and would allow residents to complete this portion in parallel to their clinical duties. Following residents’ documented completion of the didactic section by a predetermined date, the practical section began.

The innovative practical component was devised to deepen engagement with the source material. It was here where el-

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