





## Digital Didactics: Introducing the New ASNR Neuroradiology Fellowship Curriculum

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In 2020, the American Society of Neuroradiology (ASNR) Fellowship Directors Committee and Young Professionals Section collaborated to curate the ASNR Neuroradiology Fellowship Digital Curriculum.<sup>1</sup> The objective of this curated curriculum is to supplement the existing educational offerings at individual neuroradiology fellowship programs. This curriculum is composed primarily of video lectures selected from a variety of sources, including annual meetings and webinar series of the ASNR and Radiological Society of North America as well as regional (Eastern Neuroradiological Society) and subspecialty (American Society of Head and Neck Radiology) societies of the ASNR. Highly relevant journal articles are also included. The new curriculum builds on a 2017 initiative led by the ASNR Education Committee to create lists of topics with which all neuroradiology trainees should be familiar at their respective level of training (junior resident,<sup>2</sup> senior resident,<sup>3</sup> and fellow<sup>4</sup>). The purpose of this editorial is to summarize the Neuroradiology Fellowship Digital Curriculum development process and to provide an introduction to this new electronic resource that is freely available to all ASNR members.

Recently updated Accreditation Council for Graduate Medical Education guidelines<sup>5</sup> outline requirements related to providing a neuroradiology curriculum for trainees. Although previously developed neuroradiology curricular topic lists<sup>2-4</sup> are useful, a limitation of these lists is that they shift the responsibility of finding, choosing, and vetting the specific content covering the topics of interest to the learner. Such an approach leaves room for error, omission, or misinterpretation on the part of the learner with respect to deciding what is or could be important in preparing for independent neuroradiology practice and the neuroradiology subspecialty certification examination. Thus, there is substantial potential for heterogeneity of educational content encountered at the individual learner level with some learners likely selecting high-quality resources and others inadvertently choosing lesser quality resources in the absence of a trustworthy endorsement.

Furthermore, there is also the potential for heterogeneity of educational content and trainee experience at the fellowship program level, as many programs are likely to excel at teaching certain topics more than others, depending on program faculty expertise. For example, some programs may not have in-house health policy or artificial intelligence experts, whereas others may not have expertise with some advanced imaging techniques (eg, fMRI, DTI, arterial spin-labeling, MR spectroscopy). Despite inevitable relative strengths and weaknesses in educational content areas, neuroradiology

fellowship training programs have a responsibility to provide a comprehensive curriculum to their trainees. Finally, the sheer number of educational resources can be overwhelming, leaving both learners and training programs alike uncertain as to which resources are the highest yield and most accurate.

For these reasons, there is a need for expert content curation to identify trainee-appropriate resources mapped to the previously developed neuroradiology fellowship curriculum topics that can be used to supplement educational offerings at each neuroradiology fellowship program.

### The Process


The national shift to virtual radiology meetings and the proliferation of other online educational material in response to the coronavirus disease 2019 pandemic provided the opportunity to curate high-quality resources from ample available digital content created by recognized experts. To select content for inclusion in the digital fellowship curriculum, subject matter–based teams (eg, brain, spine, head and neck) were formed. Each team (Table) was led by a member of the ASNR Fellowship Directors Committee. Teams included ASNR Young Professionals Committee Regional and Subspecialty Society Liaisons, additional Fellowship Directors Committee volunteers, and selected trainees representing a variety of neuroradiology training programs and educational backgrounds. One of the major benefits of including team members at different career stages is that the curriculum perspectives of both the program director and learner were represented through mutual collaboration rather than a top-down or bottom-up approach.

Each subject matter team reviewed relevant content from the ASNR, subspecialty society, and regional society annual meetings plus webinars and relevant online content from other organizations in the following topic areas: 1) Advanced Imaging, 2) Brain, 3) Head and Neck, 4) Interventional Neuroendovascular, 5) Noninterpretive/Finance, 6) Pediatric, and 7) Spine. The availability of virtual meeting recorded lecture content (eg, the ASNR 2020 Annual Meeting) for several months after the meeting enabled the teams to be thoughtful and deliberate in the content-selection process rather than rushed. Following each team's review of available content in the respective content areas, the highest quality, highest yield material was recommended for inclusion in the curriculum.

Moving forward, the digital curriculum will be refined annually through a similar team-based process. These future iterations will ensure that the digital curriculum remains relevant and up-to-date, incorporating additional topics and even higher quality resources when available.

### The Result

The result of this team-based collaborative effort between the ASNR Fellowship Directors Committee and Young Professionals Section is the Neuroradiology Fellowship Digital Curriculum (Figure). This new, curated online curriculum supplements the core educational curriculum of individual neuroradiology fellowship programs and decreases heterogeneity of the educational experience for individual learners at different programs. The full digital

 Indicates article with online supplemental data.  
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## Topic leads and additional volunteer contributors to the ASNR neuroradiology fellowship digital curriculum

Topic Area	Topic Lead	Other Team Members
Advanced Imaging Brain	Alex Korutz Aparna Singhal	Anna Trofimova Michelle Miller Thomas, Harp Bedi, Kiran Talekar, Mari Hagiwara, Richard Beegle
Head and Neck Interventional Neuroendovascular Noninterpretive/Finance	Nancy Fischbein Paul Jacobson Vinil Shah	Ashley Aiken, Bruno Policeni, Asha Sarma Scott Raymond Tabby Kennedy, Evan Calabrese, Priya Rajagopalan, Ashwani Gore, Melissa Chen, Paul Bunch, Courtney Tomblinson
Pediatric Spine	Stephen Kralik Vikas Agarwal	Julie Guerin Jennifer McCarty, Miriam Peckham, Amit Aggarwal

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**Neuroradiology Fellowship Curriculum**

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**FIGURE.** Graphic demonstrates the ASNR Neuroradiology Fellowship Digital Curriculum accessible to all ASNR members through the ASNR Education Connection. When logged in to Education Connection with a member account, click “Launch” (oval) to access the full curriculum.

curriculum is freely available to all ASNR members through the ASNR Education Connection (<https://www.asnr.org/education/education-connection/>) and includes 189 video lectures. Details of the curated video lecture content within each of the 7 topic areas are summarized in Online Supplemental Data.

Benefits of the curated online curriculum from the neuroradiology fellow’s perspective include the following: 1) confidence that content curated by ASNR experts is accurate and up-to-date, 2) access to topics and content experts that may be missing from the individual’s home program, 3) additional perspectives on topics already covered by the fellow’s home program, 4) free to use with a no-cost in-training ASNR membership, and 5) the ability to access it from the comfort of one’s own home. The new online curriculum benefits individual neuroradiology fellowship programs by supplementing the institutional curriculum, particularly in areas where a program may lack local expertise or where quality educational material is relatively sparse.

### CONCLUSIONS

Through a collaborative effort of the ASNR Fellowship Directors Committee and the Young Professionals Section, an online neuroradiology fellowship digital curriculum of high-quality content that learners can trust to be accurate and up-to-date was curated by volunteer experts. This digital curriculum is intended to

supplement the educational offerings of each individual neuroradiology fellowship program and is freely available to all ASNR members. Furthermore, ASNR membership is offered at no cost to residents, fellows, and others in training.

### ACKNOWLEDGMENTS

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