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## Twelve tips for integrating podcasts into medical education curricula

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### ABSTRACT

Engagement with medical education podcasts among health professions learners has been increasing steadily over the last several years. Prior '12 Tips' publications have focused on helping medical educators create and publish their own podcasts. However, there is a gap in available resources to help educators incorporate an already existing and growing library of medical education podcasts into their curriculum rather than create their own. In this paper, the authors provide medical educators '12 Tips' on how to integrate podcasts into their teaching sessions grounded in fundamental principles of curriculum development, cognitive science, and accessibility.

### KEYWORDS

Podcasts; curriculum development; digital medical education

### Introduction

In the last decade, podcasts – digital audio files that can be downloaded as stand-alone episodes or as part of a series – have gained popularity in medical education and become a preferred learning method for many health professionals and trainees (Mallin et al. 2014; Berk et al. 2020a; Bernstein et al. 2021). Fueled by this hungry audience, the medical education podcast market has exploded; at the time of this writing, there are thousands of medical podcasts on mainstream podcast platforms. As podcasts continue to proliferate, educators are challenged with vetting and incorporating podcasts into their educational sessions. While a previous '12 Tips' article focused on the creation of podcasts, this paper presents an approach that both capitalizes on the growing availability of medical education podcasts and fills the gap on best practices for incorporating medical education podcasts into new or existing curricula (Berk et al. 2020b). What follows is a set of principles to guide an enthusiastic educator looking to reinvigorate their teaching with digital medical education content.

#### Tip 1

##### *Don't let the novelty of podcasts distract from the basics of curriculum development*

When first determining how a podcast might fold into a new or established curriculum, educators can use established frameworks such as Kern's 6 steps of curriculum development for guidance, focusing on steps 2 (targeted needs assessment), 3 (goals and objectives), and 4 (educational strategies) in particular (Thomas et al. 2022). As Kern's process is meant to be iterative, intentionally

reviewing and returning to the steps of this established curriculum development framework multiple times is imperative in planning for podcast integration into a curriculum.

Prior to selecting a podcast for use, consider the following: What are the goals and objectives (Kern Step 3) of the teaching session? What knowledge, skills, or attitudes should a learner walk away with? If a podcast has already been selected for use, do the previously identified learning objectives for the session align with the podcast's objectives and subject matter? Alternatively, the educator can start by performing a targeted needs assessment (Kern Step 2) to engage learners in podcast selection which will be discussed more in Tip 2.

Next, the educator should brainstorm which educational strategies (Kern Step 4) should be employed to integrate the podcast or podcasts into the curriculum. While the use of podcasts themselves is an educational strategy, we recommend that educators add on another layer of strategy in *how* the podcast episode or clip will be added to the curriculum.

#### Tip 2

##### *Select podcasts with intention*

In order to create a relevant and timely teaching session for the adult learner, educators should use a targeted needs assessment (Kern Step 2) to identify which podcasts fit with learning goals and objectives (Kern Step 3) for a particular teaching session (Thomas et al. 2022). What the educator learns from this process feeds directly into selecting an appropriate podcast for their teaching session based on the needs of their learners.

To assist with the podcast selection process, there are a few categories of medical education podcasts to consider: 1. Official podcasts from medical journals, such as the New England Journal of Medicine (NEJM) or the British Medical Journal Podcast, which provide up-to-date information on the latest clinical evidence as well as in-depth interviews with authors and researchers; 2. Podcasts focused on journal article review, such as KeyLIME, Last Week in Medicine or Cochrane Library Podcasts, which provide a virtual journal club experience as physicians present secondary analysis of research findings; 3. Podcasts focused on core background information about a particular medical topic or teaching particular skills such as clinical reasoning; examples include Curbsiders Internal Medicine, Curbsiders Teach, CPSolvers with infographics available in Spanish, Portuguese, and German, and CoreIM; 4. Podcasts focused on storytelling or narrative medicine, such as The Nocturnists, Bedside Rounds, and Primary Care Pearls; and lastly, 5. Podcasts that cover medicine-adjacent topics such as climate change or health advocacy, which could include a wide range of reputable media outlets, such as the British Broadcasting Corporation (BBC) Global News or National Public Radio (NPR) podcasts. A list of website links to referenced podcasts can be found in the [Supplemental Materials](#).

In addition to considering the various podcast categories, educators can also solicit recommendations from other educators (i.e. word of mouth) and/or their students. Forums to exchange ideas regarding podcasts and the innovative use of podcasts can occur in-person at national or regional medical education conferences or more locally at institutional education or faculty meetings. As the uptake of podcasts has been shown to be highest in early learners (Kelly et al. 2022), an educator may choose to ask their students how they are using podcasts in their learning endeavors, and if they are using podcasts, which ones, and for what purpose? Additionally, social media forums such as X, formerly known as Twitter, or Reddit can be used to discuss appropriate podcast selection among both educators and students in a virtual space.

Once the educator identifies the type of podcast they would like to incorporate into their teaching session, the educator can search for a podcast using either teaching topic or podcast author on one of several podcast platforms, such as Apple Podcasts, Spotify, or Google Podcasts.

### Tip 3

#### *Analyze podcast quality*

Healthcare providers value transparency, credibility, and accuracy when listening to podcasts (Lee et al. 2022). When deciding if a podcast or series of podcasts is appropriate for a curriculum and target learners, it is important to assess quality. At the time of this writing, no validated instruments have been developed for the purpose of evaluating the quality of podcasts; however, frameworks exist by which educators can vet podcasts for use in their learning environments (Paterson et al. 2015). A prior systematic review of medical education blogs and podcasts identified over 150 quality indicators, the use of which is not practical for most frontline educators. A newer instrument, the 'Quality Checklist for Podcasts', translated these metrics

into a more user-friendly tool, that prompts educators to consider the credibility, design, and content of podcast episodes (Colmers et al. 2015). The checklist poses questions that are specific to podcasts as a media, such as whether references are provided either verbally or in the show notes, if the podcast authors and editors are credible, if the information presented is accurate and guideline-based, and whether the podcast is generally easy to listen to and enjoyable.

In addition to using available tools to assess quality, it is important to consider whether the podcast is a good 'fit' for learners and the learning environment. To this end, educators should carefully listen to the podcast and evaluate all associated resources and show notes. It is important to ensure the podcast content is up to date, presented at a level that is appropriate for learners, and that the podcast is accessible to learners of all abilities (for example, is there a written transcript for hearing impaired learners?). Engaging learners in the evaluation of podcast quality may further help curriculum developers address these more intangible goals.

### Tip 4

#### *Plan for how learners will listen to the podcast and engage with it in the classroom*

Listening to a podcast should be an active process, and educators should prompt and orient learners to the intent and purpose of the podcast prior to exposure. Ideally, "attentive listening" for the purpose of learning should be a cognitive act requiring the individual to actively interpret information as they absorb it (Boudreau et al. 2009). For podcast listening, educators should orient their learners to the purpose of listening by sharing goals of the listening experience, asking learners to take notes, and/or providing prompts or questions to be answered at the end of their listening. Regardless of the approach, it should be clear to the learner from onset how the podcast will be used for their learning, how the information from the podcast will be assessed (if at all), and if the podcast is recommended or required listening.

To supplement and potentiate the "attentive listening" of podcasts assigned to learners, it can be useful for educators to follow this up by pursuing active learning strategies when learners come together in the classroom. Among the various educational strategies that an educator could employ, small group teaching has been shown to lead to some of the largest effect sizes for learning gains (Huang et al. 2019). In practice, this strategy requires the use of a flipped classroom model of teaching where learners study learning material prior to a teaching session (material can be either text, video, or audio format; in this case a podcast episode) then engage with the material along with their peers during an in-person educational session. Using the flipped classroom method among health professions learners has been shown to lead to significant improvement in student learning and is often preferred over traditional lectures (Hew et al. 2018). Although the study primarily focused on quizzes, there are several other examples of specific teaching maneuvers educators could employ in the flipped classroom format including case-based learning, jigsaw strategy, or role-playing which can deepen and activate the knowledge and skills discussed in the podcast episode.

**Tip 5*****Consider podcasts for continuing medical education***

Educators can use podcasts to advance their own learning as well as to quickly prepare to teach educational sessions. For example, if an educator is preparing a didactic session about transient ischemic attacks and strokes and wishes to first refresh their own knowledge about the topic, they could listen to The Curbsiders Internal Medicine Podcast Episode #385 TIA/Stroke for the Hospitalist as a content overview. Listening to a podcast about a topic of interest allows an educator to hear both the content and educational structure designed by experts and reduce their time in preparing for a short teaching session.

Many medical podcasts have the added benefit of offering continuing medical education (CME), which the educator can claim on their own and/or incorporate into the teaching session if the session is designed for faculty development. When using podcasts with CME credit, the instructor should provide participants with easy-to-follow instructions on how to obtain CME credit.

**Tip 6*****Use podcasts to enhance learning for specific audiences***

A unique feature of podcasts is the ability to be consumed at the learner's own time and speed, increasing access for learners with a variety of abilities or who speak English as a second language. The ability for learners to consume educational content at their own pace has been linked to increased efficacy in learner performance and more positive student perception (Hew and Lo 2018). Unlike traditional in-person lectures, podcasts can be easily slowed down and/or replayed by the listener in order to provide clarity on a missed or difficult teaching point. In addition to allowing for varied speed of auditory content, most podcasts offer transcription (and some have video with subtitles) along with show notes, which serve as visual aids for consolidation of learning on the topic presented. These alternate visual aids (i.e. podcast transcript or video with subtitles) may provide differently abled learners with more ways to interact with the content in order to find what works best for their learning needs. The ability to provide a tailored learning experience through the use of podcasts as part of a health professions curriculum signals that accessibility and inclusivity of learning approaches are recognized and prioritized.

**Tip 7*****Create new listening (learning) experiences***

Podcasts provide a flexible learning experience that can be enjoyed anywhere and, in many cases, while performing other tasks. Educators can capitalize on this feature to provide alternative classroom experiences. For example, an instructor may choose to have students walk outside while listening to a podcast to combine a wellness activity with learning. Allowing learners to physically move around during the learning session can help overcome proactive interference, or the inability of a learner to take in new information due to previously taught information taking priority that frequently occurs with traditional classroom

lectures. Additionally, in the era of increasing amounts of online teaching, creating new listening experiences via podcasts can help ameliorate what has been termed "zoom fatigue".

**Tip 8*****Bring in diverse voices and new stakeholders***

Podcasts offer the opportunity to incorporate the voices of experts who may not be commonly included in standard didactic or lecture teaching sessions. Varied perspectives from patients, interdisciplinary colleagues such as physical therapists, or state of the art updates from national experts can expand discussion (Miller et al. 2021). For example, at the beginning of class, one could play a few minutes of a first-person patient experience of living with heart failure. Listening to this excerpt returns learners to a patient-centered approach and brings humanity to the course work before diving into pathophysiology or treatment options (Zaharias 2018; Davidson et al. 2019). Another way to incorporate different viewpoints is to split the learners into two groups and assign them to listen to experts of podcasts with differing opinions on a controversial subject. After listening, everyone can debate takeaway points from varied perspectives. Smaller or rural training programs that may have less diversity in their faculty or less access to outside expert lecturers may especially benefit from extensive free podcast content on a variety of topics (Leeuwenburg and Parker 2015).

**Tip 9*****Consider topics that are medicine-adjacent***

Medicine-adjacent topics, such as climate change and global refugee crises, are becoming increasingly important to integrate into medical training. The use of podcasts can be an effective strategy to introduce contemporary medicine-adjacent topics into curricula for all health professions students. For example, when discussing heat-triggered renal disease, the 3-minute "Consider This" podcast from NPR entitled 'Whatever Happened To... The Mysterious Kidney Disease Striking Central America?' could be assigned to learners as a pre-work or an introductory activity prior to delving deeper into a discussion about the impact of climate change on human health. Incorporating these resources into curricula can encourage learners to appreciate the impact of environment and society on health and promote advocacy.

**Tip 10*****Use podcasts to enhance retention based on the science of learning***

Integration of podcasts into curricula enhances learning by actively using evidence-based learning strategies such as dual coding, interleaving, and spaced retrieval practice (Nebel 2020).

An educator can take advantage of the learning benefits of dual coding (combining visual and verbal information to improve retention) by including visual information with the audio podcast presented. For example, when assigning a podcast as pre-work or in the middle of an educational session, an educator can ask learners to look at the show notes (transcribed key points from an episode or select

learning pearls summarized online) or infographics (synthesized key points in graphic form) as they are listening or after they finish the segment to enhance learning.

Podcasts can also amplify learning through interleaving: the jumbling or alternating of similar concepts to help compare and contrast. When a teacher is describing two related clinical syndromes (e.g. heart failure and pulmonary hypertension) and has already provided the basic signs and symptoms of each, integrating a podcast excerpt of one patient describing their experience with heart failure to juxtapose with an already existing clinical case for pulmonary hypertension creates an opportunity for interleaving and identification of the syndromes' distinguishing aspects. Once the learners have heard the podcast excerpt and read the original (unnamed) clinical case, they are tasked to identify which clinical entity is which; this is an example of the interleaving technique in practice (Van Hoof et al. 2022).

Lastly, podcasts smoothly facilitate spaced retrieval practice (calling information to mind days or weeks after learning it) to enhance learning. As an example, a teacher can assign a podcast as pre-work for the next day's class; at the following session, learners are asked to (retrieve their learning and) respond to prompts based on what they heard the day before in pre-work. Or, the educator can assign a podcast that reviews material covered in a previous session to be listened to and briefly written about at a later date to solidify that information. Incorporating quizzes to call back information from the podcast excerpt heard weeks ago is another example of spaced retrieval practice. Many podcasts offer CME credit through quizzes to further consolidate learning via the strategy of spaced retrieval practice (Benjamin and Tullis 2010).

### Tip 11

#### *Provide podcast resources for deeper dives*

Today's learners appreciate the flexibility of the podcast medium, and sharing a curated list of podcasts for deeper dives can help them expand learning based on areas of interest, patients seen, or discussions held in the classroom or clinical setting. Educators may only have time for sharing two minutes of teaching pearls on a topic while precepting in clinic or twenty minutes during a white board mini lecture on the inpatient service, but following up after the encounter with an email of suggested podcast resources can allow learners to build knowledge on their own time and offer options for learners less likely to read a journal article (Berk et al. 2020a). Medical schools or residencies may choose to include these curated lists with the course or rotation objectives at the start of a learning experience to allow learners to prepare with resources beyond written materials.

### Tip 12

#### *Obtain learner feedback to continuously innovate*

Educators should seek to constantly adapt and evolve teaching methods and curriculum. Returning to the basics, Kern Step 6 reminds educators to assess both learners' growth and the curriculum (which has incorporated podcasts) itself (Thomas et al. 2022). Educators should elicit feedback from learners both formally and informally. Feedback should address the value of the podcast

resources, better ways to incorporate episodes or excerpts into curricula, and other digital medical education resources learners have found useful. Reflecting on the learning objectives for the course or rotation, the educator should consider how well the podcast or podcasts used aligned with the teaching goals. Teachers should be mindful of learner performance, overall evaluations, and gestalt around ways learners are looking to engage in content outside of the hospital or clinic. It is important to update resources with new podcast opportunities as lectures, teaching sessions, or rotations are improved.

## Conclusion

Podcasts have become an increasingly popular learning modality amongst healthcare professionals. Medical educators should seek to familiarize themselves with and take advantage of the unique features of podcasts in their teaching endeavors. These twelve tips provide a framework for effectively incorporating podcasts into both new and existing curricula. In this digital medical education age, we encourage you to start elevating your educator skills today by considering which podcast you want to add into your teaching this year.

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