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To cite this article: Neeraj Narula, Liban Ahmed & Jill Rudkowski (2012) An evaluation of the '5 Minute Medicine' video podcast series compared to conventional medical resources for the internal medicine clerkship, *Medical Teacher*, 34:11, e751-e755, DOI: [10.3109/0142159X.2012.689446](https://doi.org/10.3109/0142159X.2012.689446)

To link to this article: <https://doi.org/10.3109/0142159X.2012.689446>



Published online: 30 May 2012.



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## WEB PAPER

# An evaluation of the ‘5 Minute Medicine’ video podcast series compared to conventional medical resources for the internal medicine clerkship

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## Abstract

**Background:** ‘5 Minute Medicine’ (5MM) is a series of video podcasts, that in approximately 5 min, each explain a core objective of the internal medicine clerkship that all clinical clerks should understand. Video podcasts are accessible at [www.5minutemedicine.com](http://www.5minutemedicine.com)

**Aim:** The aim of this study was to investigate how well received 5MM video podcasts are as an educational tool for clinical clerks to use while on call.

**Methods:** Clinical clerks rotating through their internal medicine clerkship rotation were asked to use the 5MM video podcasts or conventional resources to prepare themselves prior to seeing patients. Questionnaires were distributed to students to determine effectiveness, appropriateness and time-efficiency of the resources students used.

**Results:** Students almost unanimously strongly agreed or agreed that the 5MM video podcasts were effective learning tools, appropriate for clinical clerks and time-efficient, more so than conventionally used resources. The vast majority of clerks selected the 5MM videos as their preferred resource of all resources available to them. Most clerks felt the 5MM videos were better than textbooks and conventional online resources.

**Conclusion:** Video podcasts such as the 5MM videos are welcomed as educational tools and may have a role in the future of undergraduate medical education.

## Introduction

Technology in medical education is advancing quicker than we ever imagined. The resources available to medical students today are expanding as the Internet has made answers to their questions available within minutes. Textbooks and white coat pocket books are being replaced with laptops and hand-held computing systems. Many medical schools offer web-based teaching resources, but the format, availability, style and content of these vary widely (Alur et al. 2002). Recent literature suggests many students use ‘Google™’ as the electronic resource of choice when approaching a diagnostic challenge, and its use substantially exceeds other online resources, such as eMedicine™ and Up-to-Date™ (Graber et al. 2009). This may lead to acquisition of medical knowledge that is not evidence-based and potentially inaccurate.

The term podcast was originally used to describe the regular publishing of audio excerpts that could be downloaded from the Internet and listened to on portable audio players. As the popularity of portable media devices and smartphones has grown, so has the use of podcasts. A survey of second-year medical students at the University of Leeds identified 75% owned a portable digital media player and 90% listened to podcasts on most days (Sandars 2009).

## Practice points

- Video podcasts are welcomed educational tools for undergraduate medical students.
- The 5MM series is a collection of video podcasts, each of which explains an approach to a key internal medicine objective in approximately 5 minutes.
- 5MM podcasts are accessible at [www.5minutemedicine.com](http://www.5minutemedicine.com)
- Clinical clerks find them to be effective, appropriate for their level and time-efficient.

Professions such as medicine, dentistry and nursing have all tried incorporating podcasting into undergraduate curricula (Walmsley et al. 2009; Kardong-Edgren & Emerson 2010; Schreiber et al. 2010).

Video podcasts are the combination of an audio recording with video images. Students who have used audio-only medical podcasts have indicated that the addition of a visual component improves the value of this resource (Shantikumar 2009). Video podcasts are convenient to those who have adapted pocket technologies such as hand-held computing and tablet systems. E-learning helps overcome difficulties of

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**Table 1.** Responses to the comparison questions on the survey.

	Significantly better	Somewhat better	Similar	Significantly worse/worse
Please compare the videos with teaching from textbooks/online resources used to prepare for a consult ( <i>n</i> = 35)	3 (8.6%)	25 (71.4%)	7 (20%)	0
Please compare the videos with teaching from junior and senior residents while on your medicine rotation ( <i>n</i> = 35)	12 (34.3%)	12 (34.3%)	10 (28.6%)	1 (2.9%)

traditional lecture-based teaching, as it can be accessed from anywhere with Internet access at a time convenient to the learner. Further, the same content can be accessed multiple times for reinforcement.

The ‘5 Minute Medicine’ (5MM) project is a series of video podcasts, that in approximately 5 minutes, each explain a core objective of the internal medicine clerkship that clinical clerks (medical students who have completed their preclinical medical education) are expected to understand. Research has suggested podcasts should not be longer than 15 minutes, otherwise attention is lost (Sandars 2009). With the 5MM series, students are able to review key objectives in approximately 5 minutes each via video podcasts, which is convenient for educating those who access the material during time-sensitive situations, such as while on call, and may not have the time available to research an objective of interest in depth prior to evaluating a patient.

In order to determine if the 5MM Series is effective, a pilot research project was undertaken. In this pilot project, 10 video podcasts were tested among clinical clerks rotating through their internal medicine rotation. The aim of this study was to evaluate the efficacy, usability and time-effectiveness of the 5MM video podcasts amongst clinical clerks prior to assessing patients on call.

## Methods

A series of 10 video podcasts were developed based on common referrals to internal medicine at teaching hospitals in Hamilton, Ontario. The topics for the podcasts were atrial fibrillation, acute renal failure, abnormal liver enzymes, cellulitis, chest pain, diarrhoea, dyspnoea, pleural effusions, sepsis and syncope. These podcasts were aimed at clinical clerks. Each podcast consisted of a graphic slideshow prepared with PowerPoint™ (Microsoft, WA, USA), and a voice-over narrative. They were designed to be succinct, relevant and appropriate for clinical clerks in the Canadian medical education system. Each video was reviewed independently by two academic staff physicians with expertise in the topic. Podcasts each required between 4 and 10 h to prepare, which included research into the topic, design of the slideshow, narrative recording and revisions after expert input.

The video podcasts are accessible through a dedicated website ([www.5minutemedicine.com](http://www.5minutemedicine.com)). Students were eligible for inclusion if rotating through their internal medicine clerkship rotation at St. Joseph’s Hospital, Hamilton General Hospital or Juravinski Hospital in Hamilton, ON. Over three block rotations, clerks coming through these sites between

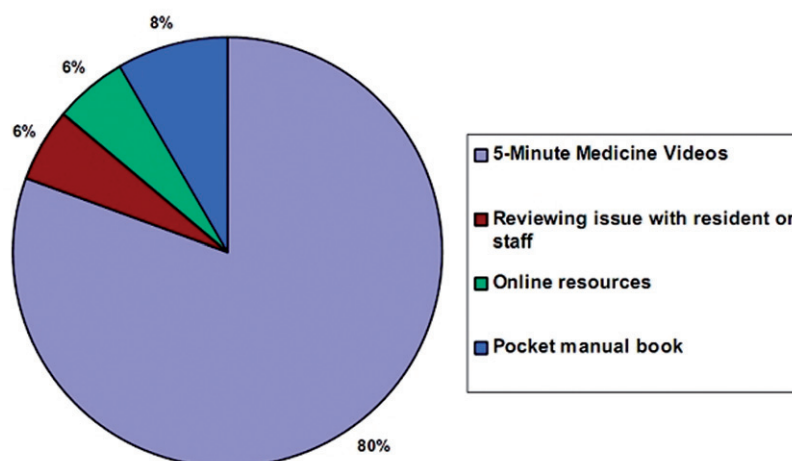
April and July 2011, were eligible for inclusion. During each block rotation, one site was randomly given access to the videos, and the other two sites were not. The site with access was cycled after each rotation. The website where the videos were accessible was password-protected to prevent use from the ‘conventional resources’ group. Surveys were administered online with Google™ surveys. Details of how to access the material was provided to clinical clerks in their orientation for their Internal medicine rotation. Participation in this study was not compulsory. Video podcasts could be accessed from anywhere, including the hospital computer systems and from the students’ homes.

Students were asked to complete surveys after each patient they saw, and provide us with information on the resources they used before and after seeing the patient, the amount of time consumed, and their comfort level in approaching patients before and after accessing their specified resources. Students were also asked to compare the videos to teaching they had received from junior and senior medical residents while on their internal medicine rotation. The survey consisted of seven Likert-type statements (from 1 to 5, where 1 is ‘strongly disagree’, 3 ‘unsure’ and 5 ‘strongly agree’), one multiple-choice question, and two open questions to gauge time for preparation and to allow students to suggest topics for future video podcasts. The questionnaire was e-mailed each night to students on call. We compared comfort levels, time-efficiency, and effectiveness from students who used the 5MM videos to students who used other resources. Likert data were analysed as ordinal data rather than interval data, as has been previously suggested (Jamieson 2004).

## Results

The first two questions (Likert-type statements) of the survey and their responses are presented in Table 1. The majority of respondents felt that the 5MM videos were significantly or somewhat better than conventional resources such as textbooks and online resources. The majority of respondents also ranked the 5MM superior to teaching from junior and senior medicine residents on their medicine rotation.

Question 3 asked, ‘Which resource was most useful to you prior to seeing the patient?’ Of the 36 respondents who used the 5MM videos, 29 (80.6%) selected them as their preferred resource (Figure 1). Of the remaining responses, 2 (5.6%) preferred the use of online resources, 2 (5.6%) selected reviewing with residents or staff and 3 (8.3%) favoured pocket manual books.



**Figure 1.** Students with 5MM video access were asked ‘Which resource was most useful to you prior to seeing the patient?’.

**Table 2.** Students were asked to rate their level of comfort with an approach to the symptom/disease before and after use of the resources.

	Very comfortable	Comfortable	Somewhat comfortable	Minimal comfort/ very uncomfortable
<i>Group that used 5MM videos +/- conventional resources (n = 36)</i>				
Before	0 (0%)	4 (11.1%)	13 (36.1%)	19 (52.8%)
After	4 (11.1%)	22 (61.1%)	10 (27.8%)	0 (0%)
<i>Group that used conventional resources only (n = 35)</i>				
Before	0 (0%)	9 (24.3%)	17 (45.9%)	11 (29.7%)
After	6 (16.7%)	15 (41.7%)	11 (30.6%)	4 (11.1%)

**Table 3.** Amount of time required for preparation prior to patient encounters.

	Clerks without access to 5 MM videos	Clerks with access to 5 MM videos
N (responses)	37	36
Mean <sup>a</sup> (minutes)	19.2	11.1
Median	15	10
SD	11.9	5.7
Range	5–45	5–30

Note: <sup>a</sup>two-tailed  $p$ -value = 0.0004.

Question 4 assessed students’ level of comfort with an approach to a symptom or disease before and after the use of resources (Table 2). Of the 36 respondents who had the 5 MM videos available to them, 26 (74.2%) were comfortable or very comfortable after the use of the 5MM videos with their approach to a symptom or disease in question. Notably, no respondents in this group felt uncomfortable after the use of resources. In the conventional resources only group, 21 of 35 (60%) of respondents felt comfortable or very comfortable with their approach and 4 (11.1%) of respondents felt uncomfortable with their approach.

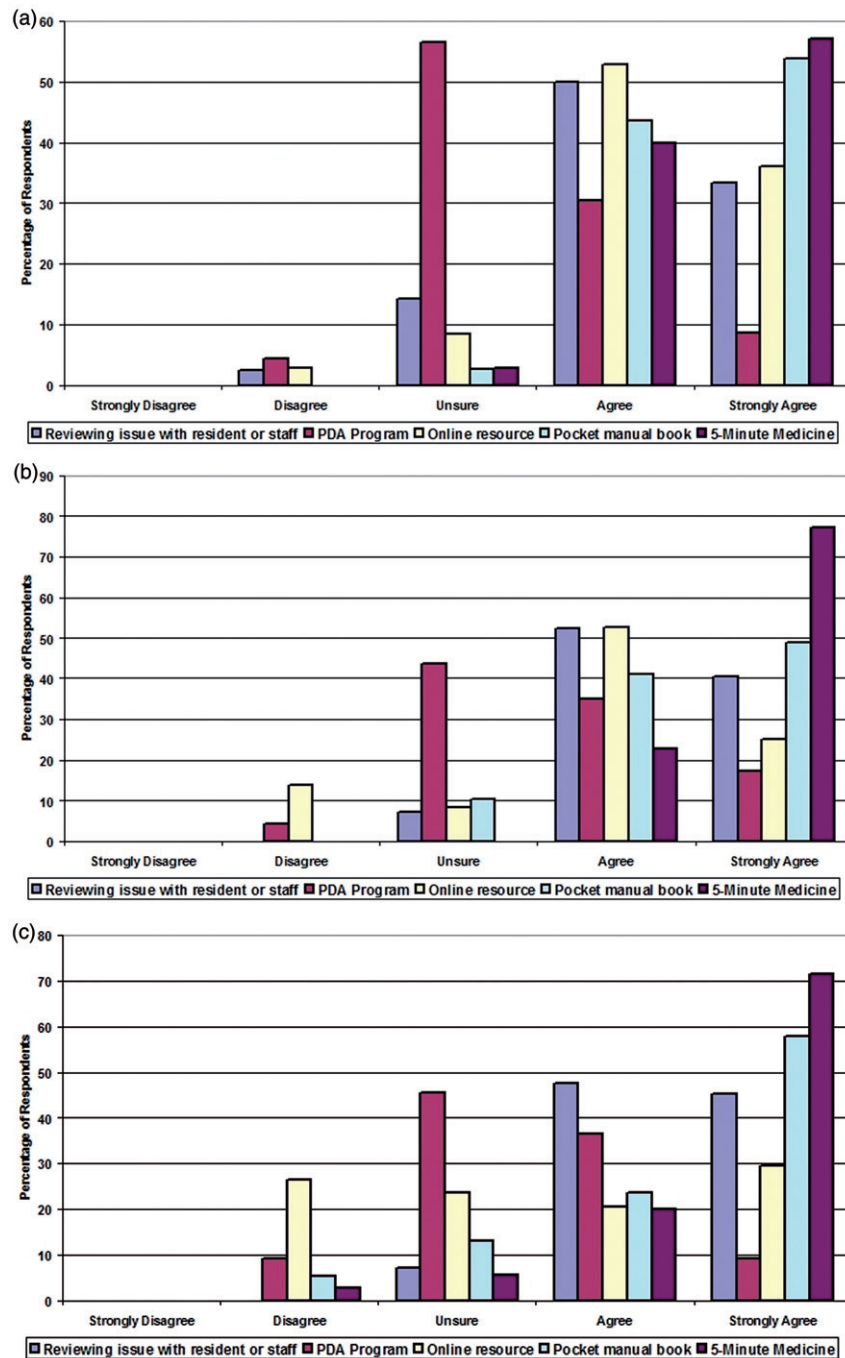
Question 5 asked students for the amount of time required to prepare prior to patient assessment (Table 3). The group with access to the 5MM video podcasts required a mean of 11.1 min, which was significantly less than the 19.2 min

required by the group with access to conventional resources only ( $p=0.0004$ ).

The next three questions were Likert-type statements that aimed to evaluate each resource used with regards to effectiveness, appropriateness and time-efficiency. Question 6 stated, ‘The resource I used was an effective way for me to learn about the symptom/disease’. Of the 35 respondents to this question who used the 5MM video podcasts, 34 (97.1%) agreed or strongly agreed with this statement (Figure 2a). Reviewing with a resident or staff, online resources and pocket manual books also had a high number of respondents who agreed or strongly agreed with this statement. Only 9 of 23 (39.1%) respondents who used PDA programmes agreed or strongly agreed with this statement.

Question 7 stated, ‘The resource I used was appropriate for my level of training as a clinical clerk in the Canadian medical education system’. Of the 35 respondents using the 5MM video podcasts, 27 (77.1%) strongly agreed and the remainder agreed with this statement (Figure 2b). Smaller portions of respondents who used other resources strongly agreed or agreed with this statement. Almost half of users who used PDA programmes disagreed or were unsure if these programmes were appropriate for learners at their level of training.

Question 8 stated, ‘The resource I used was a time efficient way for me to learn about the symptom/disease’. Of the 35 respondents using 5MM video podcasts, 32 (91.4%) strongly agreed or agreed with this statement, and only one user disagreed with this statement (Figure 2c). Similarly, reviewing



**Figure 2.** Students were asked to respond to the following questions regarding the resources they used. (a) The resource I used was an effective way for me to learn about the symptom/disease. (b) The resource I used was appropriate for my level of training as a clinical clerk in the Canadian medical education system. (c) The resource I used was a time-efficient way for me to learn about the symptom/disease.

with a resident or staff and use of pocket manual books were also felt to be time-efficient, as the majority of those users strongly agreed or agreed with this statement. In contrast, only 50% (18/36) of online resource users and 45.8% (10/22) of PDA programme users felt these resources were time-efficient.

## Discussion

As part of the evolution of medical education, novel web-based tools are being created to enhance learning experiences

and improve knowledge outcomes. Production of tools such as video podcasts is labour intensive, so this pilot study was undertaken to determine if they are favourably received by the target audience, and determine if production of further video podcasts would be worthwhile.

In summary, we found that students almost unanimously strongly agreed or agreed that the 5MM video podcasts were effective learning tools, appropriate for Canadian clinical clerks and time-efficient, as compared to conventionally used resources. The vast majority of clerks selected the 5MM videos

as their preferred resource of all resources available to them. The majority of clerks felt the 5MM videos were better than textbooks and conventional online resources. This is consistent with other research, for example in one study of short audio podcasts listened to while travelling, students reported podcasts were engaging, efficient and effective compared to a textbook (Smith et al. 2007).

Video podcasting has promise as a tool for medical education. Its benefits include the ability to watch anytime, anywhere, to pause and rewind, and to view the resource multiple times. Currently, most podcasts for undergraduate students are in the form of entire lectures that have been recorded and made accessible online (Sandars 2009). The 5MM video podcasts are unique as they are short podcasts related to specific high-yield topics.

Patient care and administrative tasks are increasingly placing a heavy burden on clinicians, resulting in poor motivation and enthusiasm to teach (Schormair et al. 1992). The 5MM video podcasts may help relieve some pressure on clinical time. As the number of medical trainees increase, more peripheral teaching sites are used for clinical clerks to complete their internal medicine rotations. These sites typically do not provide the same experience as academic hospitals as there are usually no residents available to provide practical teaching to clerks. As 5MM video podcasts are effective, and results suggest perhaps better than teaching from junior and senior medical residents, consideration can be given to expanding the videos to these peripheral sites to supplement these clinical clerks' learning experience.

The 5MM podcasts have some limitations. The amount of information that can be provided in a short video podcast is restricted, and supplemental information via other conventional resources may be necessary depending on the specific clinical circumstances. Other potential shortcomings of the 5MM video podcasts are the need for Internet access, a computer or smartphone with the capability of video streaming, and reliable storage from our website storage providers for continuous access whenever required. We used multiple servers to store the 5MM video podcasts in case of difficulties with any one storage provider. Our study may be limited by possible selection bias, as participation was voluntary. The 5MM videos were accessed several more times than survey responses recorded, so there is also potential for response bias. The survey was designed by the authors of this study for evaluation of the 5MM podcasts, and as such it has not been previously validated. In order to help address this weakness, survey questions were reviewed with two academic physicians not involved with our study, and piloted among two medical students to ensure comprehensibility. Several studies have tried replacement of lecture-based teaching with video podcasts, and all concluded that video podcasts were useful

to supplement traditional lectures, but not replace them (Parson et al. 2009; Schreiber et al. 2010). There is no replacement for the judgement and experience of senior medical residents and staff consultants, and the 5MM videos could have a useful role as an adjunct to these.

Video podcasts, such as the 5MM videos, have promise as a teaching aid that can be incorporated into undergraduate medical education. Further study would be necessary to examine performance-based outcomes of video podcasting within medical education.

**Declaration of interest:** All authors have participated in this research, and have reviewed and agree with the content of this article. There are no conflicts of interest in connection with this article.

## Notes on contributors

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