# Promoting antimicrobial stewardship: using video tools for junior doctors' induction

Antimicrobial prescribing is linked to key issues in infection control and patient safety. This article presents a novel video tool for junior doctors promoting antimicrobial stewardship, and thus safe antimicrobial prescribing, through improved awareness of local information technology systems.

## Introduction

Antimicrobial prescribing is linked to key issues in infection control and patient safety (Davies, 2013). Inappropriate prescribing and health-care-associated infections place a strain on already overburdened clinical microbiology departments.

Antimicrobial stewardship aims to improve prescribing patterns in an attempt to minimize antimicrobial resistance and health-care-associated infections. In the UK this is carried out using a 'Start Smart – Then Focus' approach as set out by the Department of Health's Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (2011).

The 'Start Smart – Then Focus' approach takes into consideration local resistance patterns and in the UK, many hospitals have set up local prescribing guidelines on hospital intranet systems for clinicians to access before contacting on-call microbiology services. However, with the frequent changeover of doctors across the UK and limited time for training during induction periods, doctors are not always familiar with the services available to them at each trust. Furthermore, with each trust relying on local and very often widely contrasting IT systems, the ability to access these services and guidelines often remains confusing for new doctors.

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There remains a need to highlight these resources, while simultaneously demonstrating how to access services, using a concise and structured approach. Traditionally, this has been achieved using slideshow presentations at induction, often with an overload of scripted information but lacking in interactive and real-time demonstrations.

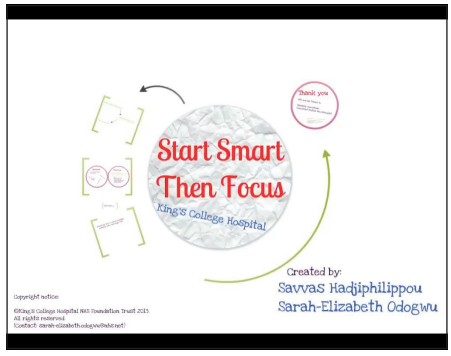
This project aimed to create a tool to promote antimicrobial stewardship and its components while highlighting to doctors new to a trust how to navigate the local IT system in order to access online antimicrobial services more effectively.

## Identifying a solution

With the idea being to create a memorable, concise and instructive presentation avoiding the traditional format of a factual overloaded slideshow presentation, the authors felt that creating a concise video presentation would offer the best chance of achieving this (*Figure 1*).

The video began with an introduction to the concept of antimicrobial stewardship followed by a simulated conversation between a junior doctor and a consultant microbiologist. During this conversation the junior doctor was portrayed as not being familiar with the 'Start Smart – Then Focus' approach revealing the risks to patient care and infection control. It then moved to a presentation, created using Prezi (www.prezi.com), centred around the 'Start Smart – Then Focus' approach (*Figures 2* and *3*), highlighting key issues of infection control and ways to access local online antimicrobial guidelines. This included a breakdown of the Department of Health's guidance (*Figure 4*) (Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection, 2011) into:

***Figure 1. Screenshot of the opening scene of the video.***

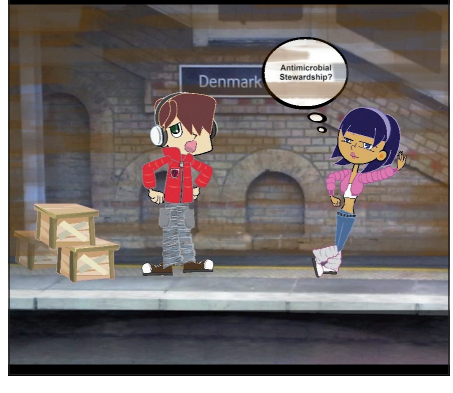



### 'Starting Smart'

1. Not starting antibiotics unless there is clinical evidence of bacterial infection
2. Obtaining blood cultures first before starting antimicrobial therapy

***Figure 2. Screenshot showing two characters discussing the 'Start Smart – Then Focus' guidance.***


***Figure 3. Screenshot of the animated characters discussing the wider role of antimicrobial stewardship.***



3. Prescribing antibiotics using local guidelines as this takes into account local resistance patterns
4. Clear documentation to include the clinical indication, duration, review date, route and dose.

### 'Then Focusing'

Reviewing the clinical diagnosis and need for antibiotics by 48 hours and documenting an action plan of:

1. Stopping antibiotics if there is no evidence of infection
2. Switching antibiotics from intravenous to oral
3. Changing antibiotics as per sensitivities
4. Continuing current treatment and reviewing by 72 hours
5. Arranging for outpatient parenteral antibiotic therapy.

The video also included a demonstration of how to access local antimicrobial guidance navigating the local intranet system and concluded with a second simulated telephone conversation between a junior doctor and consultant microbiologist. During this conversation, the junior doctor followed the principles of the 'Start Smart – Then Focus' approach illustrating the improvements in patient care through better and more accurate communication between health professionals as well as effective use of local resources.

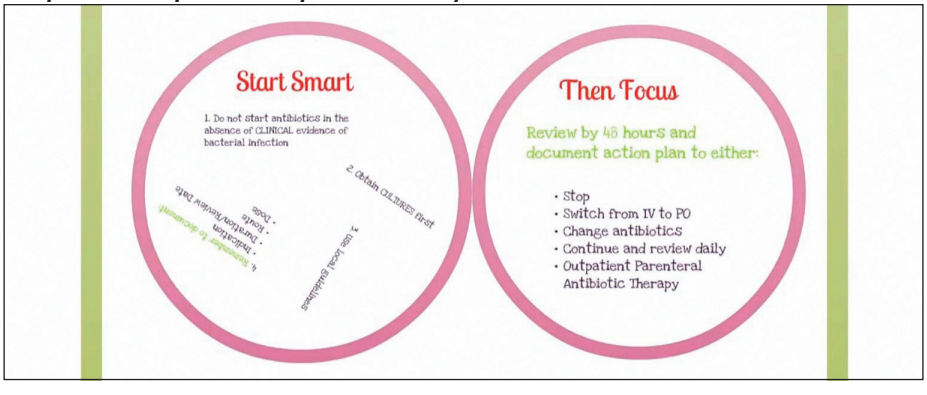
This was converted to a video recording using QuickTime software (www.apple.com/uk/quicktime) and images were filmed using a digital video camera borrowed from the local medical microbiology department. Video footage was edited using iMovie software (www.apple.com/uk/ilife/imovie) for Apple Macbook Pro and audio voiceover was added using QuickTime. This was exported as MPEG-4 and Windows Media Video formats. The video was 7 minutes and 30 seconds in length.

The antimicrobial stewardship video was implemented as part of the foundation year 1 (FY1) doctors' induction at a tertiary university teaching hospital and screened to all foundation year 1 doctors at the hospital in July 2013. It was also successfully converted into an e-learning tool by the addition of a ten-question quiz following on from the video as part of the training for health-care staff from all backgrounds (doctors, nurses and pharmacists) and final year medical students affiliated to the hospital. Upon completion of the quiz at the tertiary hospital, unique certificates were issued so that staff were able to build their portfolio and departmental leads were able to monitor completion of the module as part of an individual's infection control training. The e-learning tool was designed by the local hospital IT department. The video was uploaded to the local intranet and made accessible through all computers within the hospital. It was also included within the affiliated Academic Health Sciences Centre's Learning Hub for use by all staff across the different trust sites.

In order to evaluate the use of this video tool as part of junior doctors' induction, anonymised semi-structured questionnaires were used to gather simple baseline feedback from local foundation year 1 doctors including their views on the quality of the video as a teaching tool. It also sought to explore whether there was variance in doctors' learning related to different teaching methods, an impression gained from the authors' own clinical experience. A convenience sampling approach was used for data collection and consisted of foundation year 1 doctors attending local induction at the tertiary teaching hospital in July 2013. Questionnaires were distributed at the end of the video screening with 50 questionnaires collected and analysed using simple statistical analysis.

This project did not meet the criteria for local Research and Ethics Committee submission.

***Figure 4. Screenshot demonstrating the breakdown of the 'Start Smart – Then Focus' guidance. The video then proceeds to explain each component individually.***




## Feedback

Feedback received from the video was positive from health-care professionals of all backgrounds (nursing staff, pharmacists and doctors).

From the analysed questionnaires, 98% (49/50) of the foundation year 1 doctors present at induction found this video an informative introduction to the medical microbiology service. All doctors (50/50) thought this video was memorable while 96% (48/50) found it enjoyable.

Ninety four per cent (47/50) of the doctors agreed that short videos should be used to reinforce important information given at induction. Sixty eight per cent (34/50) felt that short videos provided better learning tools than slideshow presentations, yet only 58% (29/50) of foundation year 1 doctors felt that videos should altogether replace slideshow presentations with 16% (8/50) completely disagreeing with this suggestion. Fifty two per cent (26/50) of the doctors present during induction felt that they learnt equally from video and slideshow presentations, with 44% (22/50) admitting to learning better from video presentations and only 4% (2/50) learning better from slideshow presentations.

Individual feedback comments particularly highlighted that the video was enjoyable and memorable and 'should reinforce induction'. They particularly found that information was easy to take away from the video.

## Discussion

The advantages of using videos at induction are apparent. Information can be conveyed in a timely, yet concise and enjoyable manner with pictorial representation of key facts. What's more, the video can be disseminated simultaneously across geographically distant locations ensuring teaching remains consistent and accessible to all staff members. Videos can also be

stored on local servers allowing viewers to re-watch specific aspects for further information while quizzes, which can easily be incorporated at the end of a video, provide a means of assessing learning as well as monitoring and evaluating the educational tool.

Technical skills required are basic with local IT departments being able to provide further assistance when needed. From a financial perspective, all IT software used to create the video was available free of charge with Apple IT software distributed freely on Apple computers.

One of the foreseeable limitations of using video tools is the potential time factor involved in updating the video when guidelines are revised. Furthermore, the quality of video produced will have a major impact on the learning outcome and whether aims and objectives are clearly met. Arguably, however, the same limitations could be said to apply to slideshow presentations with educational outcomes relying entirely on the individual delivering the presentation, as well as a similar necessity to keep slideshows up to date.

Historically, presentations have evolved over time from traditional acetates to computer slideshows to interactive audience participation. Driving this changing pattern of education is the rapidly developing field of digital technology alongside our own evolving patterns of learning. Now we see an ever-increasing reliance on aesthetically-pleasing interactive educational software fuelling an ever-increasing role for video learning. There remains a risk that information overload by slideshow becomes information overload by video, but focusing the video and restricting its length will help avoid this. An incorporated quiz will also help direct learning and ensure aims and objectives are more reliably met.

Published results demonstrate an improvement in antimicrobial prescribing following the introduction of an antimicrobial stewardship programme (Katsios et al, 2012). Even though antimicrobial stewardship programmes have been developed and implemented by local antimicrobial stewardship management teams and ward-focused teams, prudent antimicrobial use is the responsibility of all health-care staff. The Department of Health mandates that antimicrobial education and training processes should be put into practice for health-care staff (Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection, 2011) and an educational video and e-learning module provides a way of doing this.

## Conclusions

With evolving patterns of learning, an educational video promoting antimicrobial stewardship provides a method of disseminating crucial information rapidly to wider audiences. It is a simple yet innovative tool for promoting appropriate antimicrobial prescribing and patient safety through improved knowledge and awareness of local IT systems as well as enriching local induction processes and providing wider means for assessing learning at both post-graduate and undergraduate level.

While short videos are not a replacement for slideshow presentations, they can provide a way of satisfying educational needs in a memorable and efficient fashion. The authors therefore recommend the use of short videos for promoting antimicrobial stewardship at junior doctors' induction. **BJHM**

### LEARNING POINTS

- Antimicrobial prescribing is linked to key issues in infection control and patient safety.
- Antimicrobial stewardship has been shown to improve antimicrobial prescribing.
- Educational videos are a powerful tool for concisely disseminating key information to wider audiences.
- An educational video screened at junior doctors' induction is a simple yet innovative and memorable tool for promoting appropriate antimicrobial prescribing and patient safety through improved knowledge and awareness of local IT systems.

*Conflict of interest: none.*

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