An adaptation of Peyton's 4-stage approach to deliver clinical skills teaching remotely

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Abstract

In March 2020 the UK government enforced a nationwide ‘lockdown’ to curb the spread of Covid-19, which has resulted in medical schools having to close and deliver teaching remotely through online platforms. This presents a number of challenges, especially for clinical and practical skills teaching which is usually very ‘hands-on’. At St Georges, we have adapted Peyton’s ‘4-stage approach’ to devise a tool that can be used to structure and deliver clinical skills teaching to small groups, with the help of online videos. This framework preserves the most important aspects of the ‘4 stage process’ and allows the continuation of teaching in a way that replicates conventional face-to-face teaching practices as closely as can be possible under the current constraints.

Keywords: Clinical Skills; Medical Education; Remote consultations; E-learning

Introduction

Students on the SGUL (St Georges, University of London) MBBS course are taught clinical skills during their early years, prior to their clinical placements in later years. Clinical skills teaching is delivered through a comprehensive programme which covers the entire breadth of medicine, surgery and the specialties. The teaching is led and supervised by lecturers and delivered by ‘peer tutors’ in small group sessions on a weekly basis. ‘Peer tutors’ are senior medical students who have been selected and trained to teach clinical skills under the supervision of lecturers. The structure of our teaching sessions is based on Peyton’s ‘4 stage approach’ (Munster et al., 2016), as below:

1) DEMONSTRATION: Demonstration of skill by teacher, in real time without commentary
2) DISCUSSION: Demonstration of skill by teacher, whilst providing explanation and discussing with students
3) COMPREHENSION: Demonstration of skill by teacher, with instructions and explanation provided by students
4) EXECUTION: Demonstration of skill by student, with commentary and instructions from other students

This framework has been used for several years, and remains effective and popular amongst both students and peer tutors.
Covid-19 ‘lockdown’ and the move to remote online teaching

In March 2020 the UK government implemented various measures to reduce the spread of Covid-19. SGUL was closed as a result of travel restrictions, and face to face clinical skills teaching became impossible due to social distancing guidelines.

Subsequently we were compelled to set up a new system to continue teaching clinical skills remotely using online meeting platforms. This had to be done at very short notice, and in a way that replicated the key principles and structure of our usual system as closely as possible.

Core principles and structure that we aimed to retain

In order to do this, we first identified the most important aspects to retain. These included the following:

**Peytons 4 stage approach:** as mentioned above, our sessions and tutor notes have been based on this framework for several years, and it has been effective and popular with both students and peer tutors alike.

**Small groups:** we have always held the view that teaching clinical skills in small groups of 6-8 students provides an experience that is immeasurably more effective, engaging, and personalised than larger cohorts of hundreds of students.

**Peer tutors:** this was vitally important for several reasons. Our feedback indicates that the quality of teaching delivered by our student peer tutors is excellent, and that our students prefer peer tutors over qualified doctors. In addition, it would be impractical to deliver small group teaching solely by lead lecturers or qualified doctors due to the lack of capacity and numbers. Another important consideration was the positive impact on peer tutors themselves, who generally value the opportunity to teach as a developmental activity for themselves, an opportunity to enhance their own learning, and also as a source of financial income. Furthermore, the participation of peer tutors seems to enhance cohesion and vertical integration amongst the wider student community, through the unique interface that it creates between students with different experiences and at different stages of learning.

**Session structure:**

1) ‘Briefing’ session for Peer Tutors by Lead Lecturer

- The lead lecturer instructs peer tutors regarding session structure, content, and technical aspects of the clinical skills, and goes through the official ‘tutor notes’. There is also a demonstration of the clinical skill being taught to ensure that the peer tutors are clear about what the content and structure of the session, and to give them an opportunity to ask questions.

2) Peer tutors deliver teaching to small groups of students

- Peer tutors are expected to adhere to the session plan in accordance with the briefing and the tutor notes.
- Peer tutors implement the ‘4 stage approach’ as above.
- Afterwards students practice clinical skills by examining each other or mannequins, and seek feedback from peer tutors and the lead lecturer.

3) Lead lecturers ‘visit’ each group

- Whilst the peer tutors deliver the small group sessions, lead lecturers enter each group to oversee and
supervise the teaching, ensure that students are engaging, and intervene as necessary. In addition, lead lecturers can add clinical contextualization, troubleshoot, answer questions, and support the peer tutors.

How these core aspects were preserved in the remote online format

SGUL chose Microsoft ‘Teams’ as our institutional online platform to deliver teaching remotely. This is similar to ‘zoom’ and other portals which allow participants to conduct online meetings.

Participants can see each other through webcams, and screen-sharing enables documents and web-browsers to be shared. Crucially it also allows ‘groups’ of participants to be set up, and enables administrators to join meetings of groups as and when they wish to. The set-up also allows discreet observation of group meetings, enabling lecturers to view sessions without necessarily intervening.

Teams also has a function to post material (such as documents) online, and to communicate with groups through instant messaging ‘chats’.

In view of the extensive functionality provided by the software, we decided that we could preserve all of our key components- including peer tutors, small groups, and the usual set-up with peer tutors delivering sessions to small groups of students through Peyton’s 4-stage approach.

Modifying Peyton’s ‘4-stage approach’ into a format which is deliverable remotely

The greatest academic challenge in replicating our usual format was adapting Peyton’s ‘4 stage approach’ so that it could be implemented in an online remote format, in the absence of ‘real’ face to face practical demonstrations of clinical skills.

We considered conducting demonstrations online, so that peer tutors and students could view lecturers demonstrating the clinical skill on a simulated patient or on a mannequin. However this was not feasible because of the risk of potential transmission of Covid-19 through physical contact, government guidelines on social distancing, and travel restrictions.

In view of this significant limitation, we decided to modify Peyton’s ‘4-stage approach’ using online publicly accessible videos (such as those on YouTube) to replace demonstrations. The adapted ‘4-stage approach’ that we devised for this is as follows:

1) DEMONSTRATION: Demonstration of skill by teacher, at normal speed without commentary

   - The demonstration was replaced with a single online video viewed in its entirety by students, without any commentary or discussion by anyone.

2) DISCUSSION: Demonstration of skill by teacher, whilst providing explanation and discussing with students

   - Each clinical skills session is divided into sections (eg for a cranial nerves session, there is a section pertaining to each cranial nerve, for example. For a cardiovascular examination session, there is a section on how to examine the hands and arms, followed by a section on how to examine the face, etc).

   - The peer tutor explains and discusses each section, and augments the discussion with one or more short online video clips demonstrating the skills discussed in that section. These clips should be 2-3 minutes in duration, and are selected by lead lecturers, and peer tutors are expected to adhere to these. We have derived these clips from the relevant youtube videos, and have designated the precise times within the youtube videos to play (eg peer tutors
could be instructed to play 1:13-2:56 on a certain video- that 1 minute 43 second excerpt is the clip)

- The peer tutor invites questions and interacts with students during (or before and after) the clips.
- The combination of the short clips and interactive discussion replaces the usual demonstration and discussion by the peer tutor.

3) COMPREHENSION: Demonstration of skill by teacher, with instructions and explanation provided by students

- After doing the above and completing the session as instructed in the briefing and tutor notes, the peer tutor invites each student in his/her group to narrate each step from memory, without referring to their handbook.

- The peer tutor should ideally select one student for each step, covering the entire group by the end.

- This group ‘narration’ replaces the usual stage 3.

4) EXECUTION: Demonstration of skill by student, with commentary and instructions from other students

- Unfortunately the online platforms and the lack of student demonstration mean that we unable to emulate a demonstrable ‘execution’.

- Instead we use this part of the session to invite and answer questions from the group, and furnish their learning with clinical anecdotes and contextualization.

- This step helps students consolidate, clarify and reinforce the skill. Therefore it can be defined as ‘consolidation’.

This modified remote ‘4-stage approach’ can be summarised as follows:

1) DEMONSTRATION: Demonstration of skill with video, at normal speed without commentary

2) DISCUSSION: Discussion of skill with teacher, augmented with multiple short video clips

3) COMPREHENSION: Narration of skill by students, with help from other students

4) CONSOLIDATION: Q&A and clinical contextualisation

For comparison, the original ‘4 stage approach’ is as follows:

1) DEMONSTRATION: Demonstration of skill by teacher, at normal speed without commentary

2) DISCUSSION: Demonstration of skill by teacher, whilst providing explanation and discussing with students

3) COMPREHENSION: Demonstration of skill by teacher, with instructions and explanation provided by students

4) EXECUTION: Demonstration of skill by student, with commentary and instructions from other students

Discussion

As explained above, we have used Peytons ‘4-stage approach’ as the framework for our clinical skills sessions for several years, and its popularity and effectiveness are well established. In the wider sphere of medical education, it has proved to be simple to use for teachers and well accepted by learners (Nikendei et al., 2014). There is also evidence that the ‘4-stage approach’ is superior to other methods with respect to professionalism and communication skills, and results in ‘faster performance’ when trainees carry out the skill for the first time (Krautte et al., 2011).
These were key factors in our decision to retain it whilst moving to a remote system to deliver our teaching.

As this transition from face-to-face to remote teaching took place within 3 weeks and at very short notice, we had very limited time to design and implement our contingency plans. We held remote team meetings and outlined key principles first, before setting out a practical framework within which these could be implemented.

This adapted ‘remote Peyton’s 4-stage approach’ has enabled us to achieve this and deliver clinical skills teaching successfully thus far.

Lead lecturers have been selecting online videos for their sessions. We have a pre-existing bank of bookmarked videos that some lecturers were already using to augment and reinforce their teaching. This made the process of searching and selecting videos easier.

In addition, we also used social media to gather views from students as extensively as possible before devising the adapted ‘remote 4-stage approach’. Facebook groups had been used extensively over the last few years for our Graduate Entry Programme (GEP) students. We used these to seek input and suggestions from senior students and former students who have now qualified. We also gathered views from students at other universities, using the numerous facebook groups which students had set up to facilitate student volunteering to support the NHS. Several students responded to this, including former SGUL students, as well as students from other universities in other parts of the country. Some were willing to share teaching material and insight from their own universities, and a student union representative offered to use their communications infrastructure to help us. It was encouraging to see such an overwhelmingly positive response from students, and an appreciation of the challenges and constraints that we faced.

**Evaluation**

We have now used the adapted ‘remote 4-stage approach’ to deliver clinical skills teaching for numerous cohorts over the last few weeks. So far it has worked successfully, with positive feedback from both peer tutors and students. We are still at an early stage, and will need more feedback to continue to evaluate this system.

Although the feedback from students so far has been overwhelmingly positive, some have expressed an understandable concern about the lack of opportunity to practice clinical skills ‘face to face’. We have reassured them that we will try our best to facilitate this as soon as we are able to, after the current travel and social distancing restrictions are eased or rescinded. Most students seem to appreciate this, and accept that whilst substituting real clinical demonstrations with videos in this way is not ideal, it is the best possible solution in the current situation to minimise the risks to their health and safety.

We also considered the possibility of students practising clinical skills on cohabitants, and video recording themselves. However we have decided against this at the moment, as the UK government advises social distancing even amongst cohabitants for certain groups of people medically deemed at ‘high risk’. Therefore we decided not to facilitate or promote any such contact without further consideration of potential risks involved.

**Take Home Messages**

The Covid-19 pandemic has compelled universities across the world to deliver teaching remotely instead of face-to-face.

Teaching clinical skills remotely presents a significant challenge. Our adaptation of Peyton’s ‘4-stage approach’ using online videos enables educators to deliver clinical skills teaching remotely, whilst retaining the core principles and structures of conventional face-to-face systems.
Remote adaptation of Peytons 4-stage approach

1) DEMONSTRATION: Demonstration of skill with video, at normal speed without commentary

2) DISCUSSION: Discussion of skill with teacher, augmented with multiple short video clips

3) COMPREHENSION: Narration of skill by students, with help from other students

4) CONSOLIDATION: Q&A and clinical contextualisation

This adaptation preserves the most important aspects of the ‘4 stage process’ as much as is possible within the limitations of a remote set-up. It is a tool that can be used by educators to deliver clinical skills teaching remotely until face-to-face teaching can be resumed. Further research is needed to validate it.

Notes On Contributors

Dr Hamed Khan is a Senior Lecturer in Clinical Skills at St Georges (University of London), and is also a practising GP in South London.

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Appendices

None.

Declarations

The author has declared that there are no conflicts of interest.
Ethics Statement

This is not a 'Research' paper. This paper simply describes a tool that we have devised to deliver our clinical skills teaching remotely, as a result of the 'lockdown' enforced to curb the Covid-19 outbreak.

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