

## ACHIEVING EDUCATIONAL CONTINUITY UNDER COVID-19 – EARLY EXPERIENCES AND LESSONS TO SHARE

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### ABSTRACT

Singapore progressed to DORSCON Orange on 7 February 2020 when a local case with no history of travel out of Singapore was confirmed COVID-19 positive. With the impending lockdown, decision was made to move all postgraduate programs online. The objectives of this paper are to document early experiences and lessons learnt in the conversion of face-to-face to online teaching; and to conduct a literature search for tips on effective online teaching.

### METHODOLOGY

Each online session was observed by one of the authors (A/Prof Cheong Pak Yean) for glitches in video and audio transmission and speed of resolution by the technical team in attendance. Quality glitches were analysed and noted for future reference. A literature review for quality online teaching tips was also done.

### RESULTS

Good internet connection, speaking to the microphone of transmitting devices, speaking within audible distance between speaker and device improved viewer ratings. Monitoring chat boxes for audio glitches and timely actions helped to ensure quality of each session and these were confirmed by the poll results. Our experience with sound quality challenges were also noted in the literature review. The potential for greater access and wider outreach was discovered with online learning and this potential of online learning post-COVID-19 needs to be highlighted.

### CONCLUSION

DORSCON orange triggered video conferencing to achieve educational continuity. Sound quality glitches and timely resolution are challenges in each online teaching session. The potential of online teaching post-COVID-19 is highlighted.

**Key words:** Singapore, online teaching, continuing improvement.

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### INTRODUCTION

The first imported COVID-19 case<sup>1</sup> in Singapore was identified on January 23, 2020. On February 7, 2020, its national Disease

Outbreak Response System Condition (DORSCON) level was raised to Orange with the diagnosis of COVID-19 infection in a Singaporean woman who had no travel history to infected countries.

Decision was made to move teaching of the Graduate Diploma in Family Medicine (GDFM) online. This was conducted the next day. Although the audio and video transmission quality of this session was not perfect it had sufficient promise for educational continuity. The decision was then made to shift all postgraduate programs online till COVID-19 outbreak is over.

The objectives of this paper are firstly, to document early experiences and lessons learnt in the conversion of face-to-face to online teaching for the month of February; and secondly, to conduct a literature search for tips on effective online teaching.

### MATERIALS AND METHODS

#### I-EARLY EXPERIENCES TO SHARE AND LESSONS LEARNT

##### Hosting Sites

Two hosting sites were used. Site A was at the College of Family Physicians Singapore (CFPS). Site B was the room above a private clinic belonging to one of the CFPS teachers.

##### Video conferencing software

We used a software that all were familiar with. It was cited in the PC magazine 2020 as one of the best ten video conferencing software for 2020.<sup>2</sup>

##### Hardware and set up

The initial hardware consisted of an integrated unit comprising a camera with remote control for tilt and panning; and an integrated speaker-cum-microphone. Three laptops were used at the host site. The main laptop (Laptop 1) with an extended display functioned as the meeting host laptop and was used to show the presentation slides, as well as to capture audio and video production of the online session. A second laptop (Laptop 2) was for one member of the technical team to monitor transmission feedback and questions from remote participants. A third laptop (Laptop 3) was used by a second technical team member to monitor video and sound glitches of the speaker and to advise the latter of any corrections to be made.

##### Online teaching technical support team

There were two persons. The first worked with the speaker to help to share the computer screen with the participants. The second technical team member gave corrective feedback to the speaker based on glitches feedback from remote participants.

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The second technical team member also conveyed questions posed by remote participants to the speaker at question time.

### Briefing of chairperson and speakers

Chairpersons, speakers, and participants were briefed on the video conferencing software and mechanics of joining a teaching session by a brief email. Where needed, clarification by phone or SMS was also done.

## RESULTS

### EARLY EXPERIENCES TO SHARE AND LESSONS LEARNT

Table 1 shows the online teaching activities for the month of February 2020 when the social distancing requirements put a stop to face-to-face teaching sessions.

#### Hosting sites

Both the hosting sites performed well and internet connection in Singapore had no difficulties.

#### Video conferencing software

The video conferencing software with the attendance numbers of 400 plus had no difficulty in remote connection. The sound quality of replies of a few of the participants were not good. This could be due to use of internal microphone of the computer, or not speaking to the computer i.e., the common faults.

#### Hardware and set up

Working on feedback on need for better lighting, a pair of studio lights was added and this improved video quality scores in online sessions four and five. As seen in Table 2, the proportion of participants who had a “good” and “excellent” overall learning experience increased from 54 percent in session three to 98 percent in session six. Sound and light quality appear to parallel the ratings. We also gained technical experience with the chat box over successive sessions, where remote participants could interact with the chairperson and speakers through the technical support team member (using Laptop 2), by typing into the chat box.

The original internal microphone in the integrated unit was replaced with an external microphone for session five (19 February 2020) and quality scores improved. The summation of “excellent” and “good” scores in the GDFM class rose from overall of 74 percent (in session three) to 98 percent (in session six); correspondingly from sound quality of 30 percent to 92 percent; and from video quality of 84 percent to 95 percent - background lighting was augmented, and external microphone was added to the system on 19 February which was before session six. These additions to hardware verified the importance of ensuring adequate audio and video hardware and making the necessary hardware changes (See results of questions one to three in Table 2).

## 2-LITERATURE REVIEW

### PubMed search on online teaching set-up and tips for effective teaching

A PubMed search using the keywords “Online teaching” and “tips” yielded the 113 hits. Of these, 11 were selected and the full text read. Of these 11, seven<sup>3-9</sup> provided information and are included in the reference list of this paper.

Of the seven papers<sup>3-9</sup> included under this heading, two<sup>3-4</sup> were on setting up, one was on power outages and Wi-Fi loss<sup>5</sup> and four<sup>6-9</sup> were on tips for effective conducting of the online sessions. The paper by Reschef et al (2020)<sup>3</sup> on organising an online conference highlighted the challenges of audio and video quality as “the primary issue raised by participants”. The solutions found, at least partially, was the use of external microphones. An earlier paper by Telles (2008)<sup>4</sup> gave tips on room setup/equipment and also how to adapt teaching strategies in front of a camera: choice of clothing is to avoid white and yellow clothing which may look “washed out” to choosing “red and pastel” because these colours transmit well; the need “to face and speak to the camera”, and the need to “speak clearly”. These are all useful tips to the beginner online speaker or chairperson.

About power outage due to loss of transmission cables being damaged by heavy storms<sup>5</sup>, such events are not common in Singapore but can still happen. Certainly, no internet connection can happen and usually at times when such connection for downloading of documents and assignments are urgently required. This is a good example of Murphy’s Law. The simple rule of prevention is to download assignments and other materials the moment you see them online.

The remaining four papers<sup>6-9</sup> covered tips on conducting the online teaching e.g., the need for breaks in between presentations<sup>8</sup>, and engaging the participants.<sup>6,7,9</sup> For online teaching which are online courses there is a need for introducing the trainer, the course participants, the programme at the beginning of course. Also, keeping tabs on progress of the participants are important strategies that weak participants do not drop out e.g., check they have no online access issues, do their assignments and seek help from peers, and course instructors.<sup>9</sup> Avoiding overloading the participants with content and assignments are also important points to take note and apply these in practice.<sup>6,7,9</sup>

### PubMed search on online teaching during COVID-19 and beyond COVID-19

A separate PubMed search using the keywords “COVID-19”, “online teaching”, “beyond COVID-19” yielded nine hits of which three<sup>10-12</sup> provided information for this paper and are included in the reference list.

The two papers by Tahan<sup>10-11</sup> on essential case management in times of COVID-19 are useful readings for knowledge, application, problem solving as well as for reflection on coping with care situations during COVID-19. There is a lot to be gleaned from these two papers. The papers cover tele-case

management, discharge planning, transition of care, and transitions of care in Part one of the two papers. Part two covered topics of palliative care, remote practice, legal and ethical obligations, and resilience. They are good references as resources papers for now and after the COVID-19 outbreak is over.

The editorial by Ferrel and Ryan<sup>12</sup> on the impact of COVID-19 on medical education is insightful. The impact of COVID-19 on medical education is a great disruption. How do we shift from the usual postgraduate traineeship and residencies to online teaching? This calls for alternative ways of training, skills development, and skills assessment into the near future.

## DISCUSSION

The documentation of early experiences and sharing of the lessons learnt has an end in mind namely, documenting the events and processes as chronicles for sharing with the present and future generations of practitioners. The lessons learnt will be of evergreen importance because COVID-19 is not going to be the last of such pandemics that will inflict mankind. In online teaching, attention to details were noted to be important.

We dealt with the challenge of migration to online teaching and concluded that this could be an alternative mode of delivery.

Having a project leader,

- Buying equipment incrementally
- Learning to maximise the conferencing software by ongoing feedback from participants, and
- Active sharing of experiences were useful.

In the literature review, just as we have found, attention to audio and video quality is of evergreen importance. This was also noted by Reshef et al<sup>3</sup> in a worldwide online conference organised in January this year because of the COVID-19 lockdown.

The literature review also provided useful information on online teaching.<sup>3,6,10-12</sup> The older references on online teaching are useful in reiterating tips of effective teaching techniques: How to stand and interact with the camera. Speaking to the microphone ensures better sound reception. Wear dark coloured clothing like blue or red makes the person stand out.

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## CONCLUSION

DORSCON orange triggered video conferencing to achieve educational continuity. Sound quality glitches and timely resolution were clearly challenges that were defining in our experience and that of others. These remain important and evergreen in each online teaching session. The potential of online teaching post-COVID-19 is highlighted. Online teaching has the advantages of being of greater ease to access compared to a face-to-face session, assuming appropriate hardware and software are available. Also, online teaching also has the potential for reaching out to a wider audience of viewers.

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**Table 1. Teaching Sessions in February 2020 Migrated To E-conferencing**

Session grouped by class type	Session No.	Date *	Teaching Session	Host Site**	Duration	Participant Numbers	Title of Teaching Session
11	1.	8 Feb (Sat)	Diplomate workshop	B	2.5 hours	477 signed in	Sexual dysfunction, menopause, incontinence, and gynaecological cancers
12	3.	15 Feb (Sat)	Diplomate workshop	A	2.5 hours	442 signed in; 190 did exit poll	Emergencies and acute cardiac problems
13	6.	22 Feb (Sat)	Diplomate workshop	A	2.5 hours	421 signed in; 230 did exit poll	Myocardial infarction and heart failure, and sports injuries, accidents, and violence
21	4.	19 Feb (Wed)	Master of Medicine Tutorial	B	2 hours	45 signed in and also did exit poll.	Using illness narratives to teach compassion and humanism
31	2.	12 Feb (Wed)	Fellowship class	A	1.5 hours	20	Introduction to Medical Pedagogy
41	5.	20 Feb (Thu)	Ministry of Health/CFPS Webcast	A	1.5 hours	95	Webcast to GPs on COVID-19 and Public Health Preparedness Clinics activation

**Footnotes**

\*7 February 2020 - Declaration of DORSCON ORANGE by Singapore Government. Social distancing introduced and inter-institution meetings of doctors prohibited. Last usual session on 1 February 2020 during DORSCON yellow - 364 attended in person.

\*\* Host Sites: A: CFPS Lecture room; B: Office above Cheong Medical Clinic

<b>Table 2. Results of Sessions With Exit Polling</b>				
Question No.	Rating of experience	Session No. 3 Diplomate workshop 15 Feb 2020	Session No. 4 MMed FM Tutorial on Illness narratives 19 Feb 2020	Session No. 6 Diplomate workshop 22 Feb 2020
1	<b>How would you rate the overall learning experience using video conferencing?</b>			
	Excellent	38 (20%)	13 (29%)	118 (49%)
	Good	102 (54%)	26 (58%)	114 (48%)
	Fair	39 (21%)	6 (13%)	7 (3%)
	Poor	10 (5%)	0 (0%)	0 (0%)
	Total responses	189	45	239
2	<b>How was the sound quality?</b>			
	Excellent	10 (5%)	13 (29%)	93 (39%)
	Good	48 (25%)	24 (54%)	127 (53%)
	Fair	80 (43%)	6 (13%)	19 (8%)
	Poor	51 (27%)	2 (4%)	0 (0%)
	Total responses	189	45	239
3	<b>How was the video quality?</b>			
	Excellent	51 (27%)	16 (36%)	91 (38%)
	Good	108 (57%)	26 (58%)	135 (57%)
	Fair	27 (14%)	3 (6%)	13 (5%)
	Poor	4 (2%)	0 (0%)	0 (0%)
	Total responses	190	45	239
4	<b>How is the ease of use of this video conferencing software?</b>			
	Excellent	61 (32%)	12 (27%)	120 (50%)
	Good	102 (53%)	25 (55%)	107 (45%)
	Fair	22 (12%)	7 (16%)	12 (5%)
	Poor	5 (3%)	1 (2%)	0 (0%)
	Total responses	190	45	239