Remote education: what’s new?

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One of the cornerstones in medicine is peer-to-peer education. This multifaceted learning includes not only lectures on e.g. basic knowledge, best clinical practice, and new evidence, but also practical demonstrations of how to diagnose and treat patients. Furthermore, experienced peers may either demonstrate complex interventions at their own institution or support such cases in other institutions in order to ensure safety and efficacy of these procedures.

However, these concepts of peer-to-peer education are currently challenged. The COVID-19 pandemic has led to restrictions on travels, meetings, and congresses, as well as allowance to visit other hospitals. Furthermore, even before the pandemic, it was questioned whether the extensive air travelling associated with educational activities is appropriate in a time with much focus on how to reduce global climate change.

This has led to new approaches on how to continue education and at the same time adapt to the current and future travel and meeting restrictions. During the last months, we have experienced significant changes in our interactions with colleagues and business partners, e.g. working from home, virtual meetings, and new formats of traditional congresses with physical attendance. In general, on-site congresses have been replaced by virtual formats with often pre-recorded lectures and discussions, in which the faculty is joining from their individual domestic location. And live cases have mostly been replaced by live-in-a-box cases. Both organizers and participants have learned from this initial experience that virtual congresses need to be different from on-site meetings in order to keep the attention of the audience—and this sometimes for hours. Shorter lectures and discussions, as well as sessions focusing on daily clinical practice may increase the chance to maintain the interest of participants in virtual congresses and meetings. Another challenge is how to establish interaction between the speaker, panel, and audience. In smaller forums, this may be obtained via audio connection or chat functions, but this obviously does not apply to large-scale congresses or pre-recorded sessions. After a sudden need and demand to change from on-site to virtual meetings without much change in format, there is currently much effort invested in the development of new concepts for virtual congresses and meetings, which are foreseen to continue even after the pandemic.

This adaptation of education also applies to peer-to-peer interaction for live case demonstration and proctoring. In particular, the evolution and success of transcatheter-based treatment of structural heart disease have during the last decade been strongly supported by practical on-site teaching and learning on how to effectively and safely perform these procedures. Many of these interventions are complex and different from other transcatheter interventions. Furthermore, the patients are often elderly and frail with a high burden of co-morbidities. As a consequence, there is little margin for complications and prolonged learning curves.

The common educational approach for physicians and sites starting a new structural heart programme includes case observations as well as support from peers (proctor) and company clinical field specialists.

Case observations at centres of excellence allow for both interactive learning on how to select eligible patients based on pre-procedural examinations and evaluation, procedural planning, and step-by-step demonstration of procedure execution. Furthermore, it is possible to be educated on how to handle challenging situations or even complications during the intervention. A limited number of institutions both mastering interventions for structural heart disease and having high educational skills are often selected for case observations. The education can be about a certain procedure (e.g. transcatheter valve therapy, left atrial appendage closure), a company-specific device, or challenging scenarios. Although providing important education to the trainee, a potential problem with case observations at a centre of excellence is the need to travel and gather at the training institution, which may not be an option due to current restrictions.

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The other facet of direct peer-to-peer education is that the trainer attends cases at the trainee’s institution. This allows the trainee to perform the intervention under guidance of the trainer/proctor, who also has the possibility to assist in case of need of a challenging bail-out procedure. But, as for case observations, case proctoring is also affected in the current situation due to the travel restrictions, prohibition of
foreign visitors to the hospitals, and even requirement of quarantine.

These restrictions call for new approaches of education in order to provide safe and effective treatment of patients. As for meeting and congresses, remote training is currently being introduced. Several platforms are introduced, but all are based on the same concept. By transmitting fluoroscopy, echocardiography, haemodynamic measurements as well as in-cath lab video and audio, it is possible to provide live interaction at a high quality even with low bandwidth. These systems are simple ‘plug and play’ software, which captures the signals from the existing equipment in the intervention suit, whereas a camera and microphone/speaker are placed next to the procedure table. Thereby, it is possible for the local team to easily install the system for remote education. During the procedure, the trainer or trainee can remotely watch the case on a laptop with live audio connection. Furthermore, it is possible to continuously switch between the different signals, e.g. in-cath lab video, fluoroscopy, echocardiography, haemodynamic, etc.

For healthcare providers, it is paramount to protect sensitive patient data and these platforms need to apply to the new privacy regulations such as the European Union’s (EU) General Data Protection Regulation (GDPR) and the Health Insurance Portability and Accountability Act (HIPAA) for handling Protected Health Information (PHI) within the USA.

These systems open up for new formats of education, which can be used in different ways (Figure 1). It may replace on-site case observation by installing the system at the centre of excellence and invite trainees to join from their domestic location to watch and interact during the procedure. The system can also be installed at the site of the trainee who is starting a structural heart disease programme with an experienced proctor guiding the procedure remotely. Another advantage is that all procedures and interactions can be recorded and the most educational cases can be stored in an ‘online library’, which subsequently can be accessed and reviewed for learning purposes.

The question is—will remote education be able to replace all on-site training? Probably not! Although remote case support is attractive in times of restricted travel, there is no validation of the approach in place yet. Whereas well-planned remote case observation may have the same educational quality as if the trainee physically visits a teaching institution, the situation may be more complex for trainees starting a new programme at their own institution. Testing and validation need to be done in the most controlled and safe circumstances to secure patient safety. In case the site has no prior experience with a certain type of procedure, e.g. transcatheter aortic valve implantation (TAVI), on-site proctoring will still be required for the first procedures until basic skills have been acquired. On the other hand, for sites with extensive experience in e.g. TAVI, aiming to add a new transcatheter heart valve to their portfolio, it may be reasonable and sufficient to offer remote case observation and proctoring. Between these extremes, site-specific decisions will have to be taken and may be based on the experience and skills of the site as well as the complexity of the procedure—thereby always putting patient safety first.

How does the future look for remote education? Even after the pandemic, it is difficult to believe that meetings, congresses, and practical training will revert to on-site events at the same scale as before. Virtual educational formats have been introduced and have proven their value and limit the resource and time consumption related to travelling. On the other hand, on-site education will still be required in selected cases, and peer-to-peer networking is best established at on-site meetings. Most likely, a hybrid between traditional on-site and new remote education will be the future.

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