The Changing Face of Medical Education in the aftermath of COVID-19: The True Digital Era Begins

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\section*{Introduction}

The current COVID-19 pandemic has led to significant disruptions to medical training. As a result, the need for education to be delivered in novel, non-face-to-face methods has been unprecedented. All educational bodies from local, regional, and national have been learning to adapt and provide innovative new ways of learning whilst maintaining engagement, relevance and delivering the highest quality content. The British Cardiovascular Society (BCS) has been proactive and agile in their response to the pandemic and undertaken a significant amount of transformational work to deliver continuing medical education (CME) and continuing professional development (CPD) to health professionals with an interest in cardiovascular disease. Here, we detail the evolution of these changes and provide a blueprint for the future of medical education.

\subsection*{Pre-COVID 19}

Founded in 1922, the BCS is the longest established national cardiology society in the world, and education has been one of the key areas of focus since its inception. The society has developed into an important multi-faceted organisation that plays a pivotal role in the delivery of cardiovascular healthcare across the UK. Before the pandemic, the society offered a comprehensive portfolio of live face-to-face educational courses, which covered the breadth of the cardiology training curriculum for those with different levels of experience, as well as providing education for cardiology consultant revalidation. Highlights of the educational calendar include the 5-day Mayo Clinic/BCS Cardiology Review Course, the 1-day Year in Cardiology update meeting and the BCS Annual Conference with its packed 3-day agenda of multiple parallel tracks of themed educational content and practical hands-on one-to-one training in the simulation zone and imaging village.

Pre-pandemic the online educational resources for members consisted of several components: webcasts (slides accompanied by audio) of presentations from our key educational conferences; a frequently updated series of peer-reviewed editorials from UK trainees in cardiology focussing on clinical updates including practice changing clinical trials, policy and guideline documents, and online access to reference textbooks and cardiology journals. Although modest in content, the resources were highly popular.

\subsection*{During COVID-19}

As the pandemic hit in March 2020, the BCS recognised this as a pivotal moment, where, as a society, we needed to provide greater support to our membership, who were now working in both unfamiliar roles and environments, whilst facing this new disease that was unforgiving in its voracity.

As a first response to the deepening health crisis, the BCS promptly set up an online “COVID-19 clinicians
resource hub”, with the onus on providing trusted reviews and articles from credible UK contributors on the many facets of COVID-19, as well as providing a direct conduit for rapid dissemination of NHS briefings and directives. At a time when there was a deluge of information and significant concerns about “fake” news, the Hub proved to be an invaluable, frequently accessed, and trusted resource for cardiologists in the UK. In conjunction with the COVID-19 hub, a popular series of short “Talking Heads” video shorts were created, focussing on experiences from many of our frontline NHS staff. These were very well received and viewed, as they helped others to navigate their way through the challenging and unprecedented healthcare crisis.

In parallel and almost overnight, the NHS IT infrastructure enabled digital solutions to deal with the need for non-face-to-face methods of communication. Virtual consultations for patients became the norm, as did virtual multi-disciplinary team meetings, which saw greater collaboration between local and regional hospitals. Trainees in cardiology faced huge challenges with frequently changing and intense rotas for emergency work focussing on COVID-19 at the cost of speciality training. As travel became restricted for clinicians, there was a pressing need to continue to provide cardiology education to trainees and established consultants for CME/CPD. Given the timing of the first wave in the UK and the redeployment of the cardiology workforce, the BCS annual conference in June 2020 was cancelled and the BCS made an early decision to switch to a fully virtual format for the delivery of its educational course portfolio. However, the BCS did not have the necessary Digital platforms and tools or the capacity to deliver such a service “in-house”. After careful assessment of all the options, we selected the Royal College of Physicians of London to provide these services to us given their experience in hosting digital events and their dedicated in-house AV team to support and collaborate with the BCS team.

The next crucial decision was the mode of delivery of these events. The two key options were either a fully virtual event with live streaming, or a pre-recorded event, with or without a live element. Our decision to choose the latter was primarily driven by the fact that pre-recording presentations would be less stressful for clinicians at a time of significant work-load pressure. Combining this with a live panel Q&A on the day of the event, with audience interaction using dedicated Q&A applications allowed the best of both worlds and brought about significant cost savings when compared to a live streamed event. This strategy proved extremely successful and as a gesture to our membership, to recognise the challenges that the pandemic had placed upon us, we reduced the registration prices to a nominal £10 per course. This approach was well received resulting in a significant uptick in registration numbers for all our courses, but also in significantly enhanced engagement during the live events despite the obvious limitation of not being able to vocalise questions during Q&A sessions, instead having to rely on the text through an application.

Throughout the pandemic there were numerous other innovative educational initiatives delivered at scale and at pace. Our affiliate society, the British Junior Cardiologist’s Association (BJCA) hosted a virtual programme of Zoom-based weekly cardiology tutorials that was conceived by three junior cardiologists. The programme was aimed at trainee cardiologists with consultant speakers from the UK, presenting for 30 mins followed by a Q&A discussion. These sessions were very much akin to those teaching programmes found in local and regional settings, but the national element and camaraderie of the whole pandemic situation led to extraordinary engagement and success of this programme. Another important initiative was the UK Cardiology News website. Developed by the BCS Digital Team and promoted via the BCS website and online channels, the resource has also gone on to evolve into a mobile application. The website grew out of the Covid 19 Clinicians’ Hub and used the same approaches to source, review and disseminate news, key articles, and commentaries across the whole spectrum of cardiovascular disease. With the support of junior cardiologist sub-editors, it was able to respond rapidly to emerging data and communicate this quickly and easily to members and other cardiology professionals with context and commentary from field leaders. It also allowed a forum for us to come together and mourn our colleagues lost during the pandemic.

**Post-COVID-19**

As we start to emerge from the pandemic and try to get back to a degree of “new” normality it is clear that many of the changes in education delivery are here to stay. The silver lining from COVID-19 has been the transformation to “digital” as a usable and functional educational platform, which importantly we have now become accustomed to and adept at using. Clearly, there is still a place for face-to-face live events as the real-time engagement and networking with colleagues is, at present, difficult to replicate virtually, although this is an area of focussed effort such that the landscape may change in the future. Going forwards, we at the
BCS realise that a pragmatic and individualised approach for each educational event is required. In our view, smaller scale national educational events with a duration of less than 1 day will in most cases be better suited to a fully virtual strategy of delivery, whether this is a mix of pre-recorded and live content or fully live streamed. This becomes even more attractive as virtual platforms develop breakout rooms for small group discussions. For the end user, the benefits of not having to travel or stay overnight in a hotel, in terms of financial expense, time and convenience must not be underestimated particularly as they translate further to the protection of “family time”, supporting those with caring responsibilities, those in less than full-time training (LTFT) and on a bigger scale, better for the planet in terms of carbon footprint. Virtual platforms are also attractive to those on extended leave who may want to keep their continuing professional development up to date but are unable to attend live events. These benefits may well outweigh the disadvantage of the lack of real-time discussion and networking with colleagues. For larger national events at larger venues where there is a focus on networking, a face-to-face event is clearly still preferred. However, the issue of travel, expense and convenience will still be relevant for many, particularly if they live some distance away from the venue, and therefore offering a true hybrid version where there is live streaming of the face-to-face event will offer delegates a robust choice in mode of attendance, and hence far greater accessibility for the target audience. A true hybrid option does have a significant additional cost implication and the pricing structure of delegates needs careful consideration in order to achieve that balance of significantly increasing registration numbers (as compared to traditional face-to-face event) to mitigate the costs of streaming the event. Registration fees have been a key issue that medical societies have had to navigate during the pandemic. During the pandemic, there was a deluge of webinars and digital events, many

Figure 1. (a). BCS 2021 virtual annual conference platform. (b). BCS 2021 hybrid annual conference with live faculty.
of which were free to attract delegate numbers including big-ticket events such as the European Society of Cardiology 2020. Although this is feasible for larger scale organisations, smaller societies struggle with this model and as we emerge from the pandemic, societies are trying to find a sweet spot in registration fees that heads back towards normal pricing structures and maximises attendee numbers whilst recouping costs for hybrid events.

Harnessing the Digital Revolution

In many ways, the BCS has been the busiest it has ever been during the pandemic, but despite this hive of activity we have had the chance to pause, reflect and consider how the society needs to adapt to meet the needs of the cardiology workforce in the aftermath of COVID-19. The emphasis on digital will inevitably be a universal theme but every society needs to consider the needs of their individual membership to ensure they remain relevant. At the BCS, our strategic vision is to become the leading voice of UK cardiology, and education is a key focus of this mission.

One of the key educational successes during the pandemic was the weekly virtual education programme for trainees, which was hosted up by our affiliate organisation, the BJCA. It is now evolving into a more structured national educational programme aimed at covering the UK core cardiology curriculum for UK trainees but is freely available to anyone wanting to access the teaching sessions, whether at work or at home. The aim is to mitigate regional variances in training and provide a solid backbone of knowledge to enable cardiology trainees to pass the European Exam in Core Cardiology (EECC), which is a curriculum requirement for Certificate of Completion of Training (CCT) in the UK.

In recent years, medical education has seen a huge increase in the number of content creators and providers, which has led to the inevitable fragmentation of resources with content that is often difficult to find and access. The pandemic accelerated our realisation that there was a pressing need to centralise resources for busy clinicians, which led organically to the development of the BCS Digital Knowledge Hub (DKH). The vision of the DKH (https://www.britishcardiovascular society.org/resources/DKH) is broad and all-encompassing with the aim of providing educational content in a succinct and bitesize format that is easy to consume but imparts actionable knowledge.

To truly harness the digital revolution for a project, such as the DKH, content must be presented in a user-friendly manner, utilise smart indexing to enable faster searching and ideally incorporate machine learning based content recommendations. Learning from previous interactions with the website, recommendations are continually refined to the end users experience, expertise, and interests to deliver a truly personalised portal of education. For a national cardiac society, this type of endeavour is not simple and requires solid information technology and website design knowledge, meticulous project planning and governance, as well as substantial funding to translate and deliver aspiration to a robust end-user product.

BCS Centenary

A significant part of modern-day cardiology is founded upon the seminal work of eminent British cardiologists. This forthcoming year (2022) marks the BCS centenary, and the society is gearing up to celebrate the rich historical tapestry of British cardiology with an exciting array of events including the annual conference (Figure 1(a,b)). The centenary also marks a significant turning point in the society’s history as we look towards a more modern and contemporary society that adapts nimbly to the ever-changing needs of our membership. It provides the perfect backdrop to push important initiatives such as digital education, equality and diversity, and women in cardiology, all of which underpin key BCS principles of fairness and inclusivity.

Conclusion

The global pandemic has been a major inflection point in digital innovation, and online learning has emerged as a disruptive and important tool for the future of medical education. Through necessity, we have seen the rapid dissemination of knowledge globally to help countries deal with this crisis, and as a result, we have seen the stratospheric rise of online learning. Given the sudden switch to online learning, the tools we use at present have not yet had the chance to mature, but despite this, we have still seen significant benefits in faster and more efficient learning, improved engagement, and reach. The full potential of online learning has yet to be realised and as a result, this delivery method is here to stay with a hybrid approach of offline and online learning as the optimal model for the future of education.

Disclosure Statement

No potential conflict of interest was reported by the author(s).