

Digital health strategies in the war against COVID-19 and beyond

This editorial explores how technology has helped clinicians during the COVID-19 pandemic, from patient care to education, the changes that have been made and the numerous exciting possibilities of where technology can amalgamate with health care.

Swetha Byravan¹

Armin Fardanesh²

Hasan Tahir^{3,4}

Arumugam Moorthy^{1,5}

Author details can be found at the end of this article

Correspondence to:

Arumugam Moorthy;
arumugam.moorthy@uhl-tr.nhs.uk

The COVID-19 pandemic has driven drastic changes in the way healthcare is delivered around the world. The introduction of social distancing meant that, in a matter of days, significant changes were required to the way that medicine was practiced. Technology has been the main tool allowing clinicians to adapt to such a dynamic, challenging situation. The COVID-19 pandemic has proven to be a catalyst to incorporate the vast possibilities of technology into clinical practice, making what went before now seem like an outdated approach. This editorial reflects on the roles of different technologies, with an emphasis on ensuring healthcare delivery is safe and effective.

Virtual clinics

One example of the positive impact of technology is the increased use of virtual clinics. The introduction of telemedicine in outpatient clinics has enabled these services to continue in a near-normal fashion, when previously they would have had to be suspended. Virtual consultations allow patients to speak to their specialist from the safety of their homes. These consultations are suitable for most follow-up appointments, although a face-to-face consultation is still superior where examination is required or if a new patient needs to be assessed (Greenhalgh et al, 2020). Virtual consultations have many benefits for the patient – they alleviate the stress of travelling and parking, the patient does not have to take time off work and they enable those at high risk to continue self-isolating. Indeed, recent cohort studies demonstrate that, during the pandemic, video consultations were associated with greater patient satisfaction than face-to-face consultations (Ramaswamy et al, 2020). However, they do rely on the patient's access to and ability to use technology, with those over 65 years old, with a lack of digital skills, who are non-English speaking or patients with a disability being most likely to struggle accessing digital platforms (Williams et al, 2017).

Medical education

For both healthcare professionals and medical students, approaches to medical education have dramatically changed. Teaching is now undertaken largely on virtual platforms such as Zoom or Microsoft Teams, where presentations can be shared and sessions can be interactive with live video audience participation. These platforms enable meetings to still take place virtually which is especially useful when people live in different geographical locations. Before COVID-19, professional meetings would be conducted in person, making arranging a suitable time for all members challenging. On a larger scale, many medical conferences have taken place virtually. The main advantage of this is that it enables people from all over the world to connect in real time, in a convenient and efficient manner. No extra time is needed for travel and it is cheaper. The presentations can be shared virtually and interesting discussions can still take place (Rose et al, 2020). The same is true for webinars, which have the added benefit of being available online after they have taken place. This means that viewers do not need to take time off work, which was traditionally the only way of attending training events. These digital platforms enable trainees to earn their continuing professional development points for career progression and revalidation.

How to cite this article:

Byravan S, Fardanesh A, Tahir H, Moorthy A. Digital health strategies in the war against COVID-19 and beyond. *Br J Hosp Med.* 2020. <https://doi.org/10.12968/hmed.2020.0684>

Student placements

As a result of social distancing requirements, medical students were not allowed into clinical areas as freely as they had been previously. However, some innovative ways of providing clinical teaching have been developed. A university in Philadelphia, USA, created a new virtual surgical rotation, comprising teaching methods including virtual operative room experience with live streaming of surgeries, telemedicine with patients to practice history taking and examinations, and virtual teaching in small group sessions (Chao et al, 2020). Using the sharing platforms and virtual rotations, students can progress to meet the General Medical Council's (2018) standards of a junior doctor. Royal college exams were cancelled in the first wave of the pandemic, but now some written articles and elements of practical exams, such as history taking or communication stations, are being undertaken online. This allows postgraduate progression to continue.

Patient education

The use of technology can also be extended to patient education and counselling. This was previously carried out at nurse-led clinics, where patients could discuss the details of their condition and medication. Patient education is a vital part of patient empowerment and drug adherence in chronic disease management, but information can be conveyed in other ways using technology. Virtual clinics with nurses are one option, but other platforms can also be used to relieve pressures on clinics. During the pandemic, information on the virus was circulated through various social media platforms, one of which was YouTube. A review conducted in Canada screened the top 150 videos on YouTube in relation to coronavirus, which cumulatively had over 250 million views (Li et al, 2020). This demonstrates the power YouTube can have in disseminating information in a rapid and easy way. The major drawback was the accuracy of information – most YouTube videos about coronavirus contained misinformation (Szmuda et al, 2020). This was also true in an earlier analysis of patient videos for chronic obstructive pulmonary disease (Stellefson et al, 2014). YouTube and other social media outlets such as Twitter, Instagram and Facebook have great potential to provide patient education in a simple, accessible way. If reliable sources can be identified or created, it will ease the pressure on health services and encourage patients to take ownership of their health.

Mobile apps

The use of mobile applications (apps) has greatly increased in the healthcare sector recently. COVID-19 has required clinicians to work more remotely and apps can facilitate this. For instance, in the authors' hospital, an app has been created which remotely reviews a patient's blood test results. This has been particularly useful in monitoring patients with acute kidney injury (The Royal Free London NHS Foundation Trust, 2020). Apps can also be used by patients to communicate with their specialist such as in cardiology, sending blood pressure readings taken at home, or in dermatology sending pictures of rashes or lesions which can reduce the need for face-to-face appointments (Boulos et al, 2011). Apps can also be used to educate and monitor patients in the community. For example, the 'My SpA' app allows patients with axial spondyloarthritis to monitor their disease burden by completing Bath Ankylosing spondylitis Disease activity Index (BASDAI) assessments, provides them with exercise regimens and can function as a diary, enabling patients to become expert in their condition.

The main limitations of apps are ensuring everyone has access to hardware capable of running them, and issues of security and confidentiality. Local trusts are issuing iPhones to staff members to ensure that they have access to the technology they require for their work. Over the last few years, patients have become technologically adept with smartphones and tend to be well versed in use of apps. Cyber safety and information governance is another important consideration. Most apps now have integrated encryption and passcodes, but the security of confidential information must be carefully considered when using third party applications.

Another virtual platform is podcasts, which have become popular as they are readily available and accessible. Podcasts are not widely used in medicine but could be useful to discuss topical subjects in healthcare as a form of medical education and could also be used by patients to share experiences and create a community that can act as a support group.

Key points

- Virtual clinics enable safe delivery of patient care, complying with social restrictions.
- Delivering medical education virtually increases accessibility, and saves time and money.
- Social media platforms can be used to deliver accurate, up-to-date patient education.
- Mobile apps can be used for remote monitoring, enabling communication between a patient and their doctor.
- Virtual methods adopted during COVID-19 will result in more innovation in health care.

Conclusions

The applications of technology and digitalisation is endless in medicine, and has massive benefits for both healthcare professionals and patients. The pandemic has given us an opportunity to see how technology can amalgamate with health care – we should take advantage of this and build on these pivotal developments.

Author details

¹Department of Rheumatology, University Hospitals of Leicester NHS Trust, Leicester, UK

²Department of General Medicine, Royal Free London NHS Foundation Trust, London, UK

³Department of Rheumatology, Royal Free London NHS Foundation Trust, London, UK

⁴Division of Medicine, University College, London, UK

⁵College of Life Sciences, University of Leicester, Leicester, UK

References

- Boulos N, Wheeler S, Tavares C, Jones R. How smartphones are changing the face of mobile and participatory healthcare: an overview, with example from eCAALYX. *BioMed Eng OnLine*. 2011;10(1):24. <https://doi.org/10.1186/1475-925X-10-24>
- Chao T, Frost A, Brody R et al. Creation of an interactive virtual surgical rotation for undergraduate medical education during the COVID-19 pandemic. *J Surg Educ*. 2020. <https://doi.org/10.1016/j.jsurg.2020.06.039>
- General Medical Council. Outcome for graduates 2018. 2018. https://www.gmc-uk.org/-/media/documents/outcomes-for-graduates-2020_pdf-84622587.pdf (accessed 28 November 2020)
- Greenhalgh T, Wherton J, Shaw S, Morrison C. Video consultations for COVID-19. *BMJ*. 2020;368:m998. <https://doi.org/10.1136/bmj.m998>
- Li H, Bailey A, Huynh D, Chan J. YouTube as a source of information on COVID-19: a pandemic of misinformation? *BMJ Glob Health*. 2020;5(5):e002604. <https://doi.org/10.1136/bmjgh-2020-002604>
- Ramaswamy A, Yu M, Drangsholt S et al. Patient satisfaction with telemedicine during the COVID-19 pandemic: retrospective cohort study. *J Med Internet Res*. 2020;22(9):e20786. <https://doi.org/10.2196/20786>
- Rose C, Mott S, Alvarez A, Lin M. Physically distant, educationally connected: interactive conferencing in the era of COVID-19. *Med Educ*. 2020;54(8):758–759. <https://doi.org/10.1111/medu.14192>
- Stellefson M, Chaney B, Ochipa K et al. YouTube as a source of chronic obstructive pulmonary disease patient education: a social media content analysis. *Chron Respir Dis*. 2014;11(2):61–71. <https://doi.org/10.1177/1479972314525058>
- Szmuda T, Syed M, Singh A et al. YouTube as a source of patient information for Coronavirus Disease (COVID-19): a content-quality and audience engagement analysis. *Rev Med Virol*. 2020;30(5):e2132. <https://doi.org/10.1002/rmv.2132>
- The Royal Free London NHS Foundation Trust. Audit of the acute kidney injury detection system known as Streams. 2018. http://s3-eu-west-1.amazonaws.com/files.royalfree.nhs.uk/Reporting/Streams_Report.pdf (accessed 28 November 2020)
- Williams O, Elghenzai S, Subbe C, Wyatt J, Williams J. The use of telemedicine to enhance secondary care: some lessons from the front line. *Future Hosp J*. 2017;4(2):109–114. <https://doi.org/10.7861/futurehosp.4-2-109>