Innovation will help us leave a positive health legacy from COVID-19

Ashley McKimm

Correspondence to
Dr Ashley McKimm, BMJ, BMA House, Tavistock Square, London WC1H 9JR, UK; amckimm@bmj.com

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Sitting in his garden in Berkeley, England, in 1796, Edward Jenner injected James Phipps, an 8-year-old boy and son of his gardener, with pus from a cowpox patient. It was the first recognised step in the development of modern-day vaccines and would also ultimately lead to the eradication of smallpox, which is estimated to have been responsible for the deaths of around 300 million people.[1]

Jenner's innovation was an evolution of existing ideas—inoculation or variolation had been known about since the 1600s spreading from China and Africa to Europe—but his experimentation with cowpox was widely recognised as the world's first controlled vaccination against smallpox. He was also the one who named the procedure vaccination from the Latin word for cowpox—'vaccinia'.

At the time, like many novel innovations, Jenner struggled to get traction and was ridiculed by many, including those in the medical community. Few recognised the importance or potential of what he had achieved. Jenner's discovery of vaccination went on to be widely accepted and, to this day, is estimated to save the lives of 2–3 million people each year.[2]

There has been no pandemic since smallpox that has been without huge human and economic cost, and COVID-19 is no exception as we approach 3 million deaths this month. History has, however, shown us that each pandemic brings a huge imperative to save lives, spurning new and accelerated medical innovation. This COVID-19 pandemic will be no different, and inevitably some of the innovations that were developed because of it will go on to save the lives of millions over the coming decades.

One of the most important advances we have seen during the past 14 months is the first global delivery of mRNA-based vaccines, which is one of the most promising advances since Jenner's initial discovery. These 'genetically coded' vaccines have the potential to revolutionise how humans fight infectious disease and offer potential solutions for huge killers, such as malaria, which have so far eluded us.

It is impossible to predict the impact of the innovations during the time of COVID-19. In addition to the paradigm shift in vaccine development, we have seen the widescale adoption of telemedicine and significant leaps forward in the application of artificial intelligence in disease prediction and diagnosis. Many innovations will fail, but many others will also have a lasting impact on health long after we have brought the COVID-19 pandemic under control.

Alongside the well-publicised advances, such as the mRNA vaccines and telemedicine, there are many more that are less well known or yet to be realised. In this issue, we are publishing submissions from our special call for papers on the innovations that were developed or matured during the COVID-19 pandemic, many of which will go on to have a lasting positive impact on health.

On behalf of both the *BMJ Innovations*' Strategic Advisory Board and Editorial team, we congratulate everyone who has been working to innovate and improve care during this difficult time. It is an honour to publish this work, and we hope that as we evolve the journal we can continue to support you in evidencing and sharing your work.

There has been a devastating loss of life during COVID-19, but the work published in this issue shows how innovators will continue to drive forward new ideas to improve health outcomes even in the most difficult circumstances. Like Jenner's innovation during the smallpox pandemic, we

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hope that some of the innovations from this time will leave a positive legacy from COVID-19.

Twitter Ashley McKimm @ashleymckimm

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ORCID iD
Ashley McKimm http://orcid.org/0000-0002-1398-9335

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