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Editorial

Wiser after the event?

Many will say that that the sufferings and deaths that COVID-19 has caused is all they had, but the world has hopefully learned many things and we may have gained new wisdom from this awful experience. It seems that we are nearing the end of the pandemic so let's try to be more optimistic in our thoughts for the future.

1. Development in medicine

There are many that are critical of what has been done in the pandemic, but we should not use that to negate what has been achieved: we must not let thoughts of perfection lead us to deny what has been good, particularly when it has all involved new experiences and therefore has been fraught with uncertainties. We have had to try out new approaches where there were no, or little, tried experiences immediately available.

The obvious success is to be able to develop effective vaccines in a very short time. In great quantity. As it happened using mRNA research for vaccines against viruses was an incredibly brave and imaginative idea of Şahin and Türeci in January 2020 after considering the COVID-19 virus in Wuhan. They decided swiftly that their cancer research company BioNTech should be dedicated to the search for a vaccine against Sars-Cov-2 with new ways of getting those vaccines to activate the immune system with mRNA. To follow them for their safety and efficacy and to get them to millions of people.

Another success has been that so many healthcare patient management initiatives and improvements, supported by technical and logistic revolutions, have occurred. The risks to the carers of those who are sick have been recognised and improvements in protecting them have been made. The efforts ingenuity behind all these medical advances need to be understood, weighed, valued, and remembered.

We must use the fact that there has been open international dialogue and cooperation and that MUST continue. Surely the UN and WHO should be authorized to bring together nations to prevent and optimally mange world disaster?

What science has appeared as less successful is statistics, epidemiology and particularly prediction. To a large extent, overpromotion, misuse, overoptimism and misunderstandings have played a part in this potentially useful area of science. The good news is that anyone who has been following the use of this important public health tool attentively will have learned a great deal. Epidemiology depends upon data, the context of its collection, its fitness-for-purpose to use in a particular new situation, its quality - particularly its level of homogeneity. Confidence intervals and size of samples is critical information. How appropriate and what size is the control group is another matter that determines how we can value the results. These details are just some of the information necessary for interpretation of results. Adding to those matters, we have limited information how deductions from research have been made, and it

has become clear that the public reports have been of little value in assessing how good the variety of conclusions and the nature of the decisions based on them are.

Another obvious matter is that in an evolving catastrophe all the epidemiological work done is based on past experiences, therefore how one interprets trends for future actions is problematic. This has been quite clear from the predictions we have been given. The interpretations of those predictions, and subsequent actions taken are critical and relate to what the aims of interventions are. Concerns about overwhelming the hospitals with seriously ill patients has been one such item, aiming for a zero COVID-19 society was another aim. Are we concerned with the numbers of cases (defined by positive tests and their trends) or should we be more guided by the numbers of the seriously ill and mortality?

It seems that a current view gaining ground is that we accept COVID-19 as endemic, and 'learn to live with it'. That will mean accepting that there will be many minor COVID-19 infections, that many will suffer some illness that will pass causing only reversible symptoms, but that there will be some more serious cases. We will have to accept some small mortality but rely on protecting the vulnerable and defining and improving the best treatments for those with infections. We will also have to cope with more chronic consequences in some patients.

Instead of constantly blaming all those politicians, experts in various fields state that what we need now is a thorough and public evaluation of what we have learned GLOBALLY and how we will GLOBALLY manage our next 'black swan' disaster or, if possible, prevent it. Much relevant information is there: let's use it in a cooperative manner for the world.

2. Politics and economics

Many will say that the politics and economic problems surrounding the pandemic have been a real disaster area in many countries. But we must all think of the challenges faced. Given that there *might* have been better preparedness for major disaster experience has taught us all that the needs and ambitions of everyday life are at the prime considerations of most people. We must prepare globally and in a harmonized way for the next disasters that threaten our planet.

What has been achieved by nations together in being able to find and control the money, resources, and behavior of global societies in anything like fair and practical ways develop and then make available vaccines is an astonishing (though not perfect!) feat of politics as well as research. This is particularly so in the in the face of so many unknowns and diverse demands, and very public media coverage. Accomplishments should always be praised as well as the failures criticized. It must have been dreadful for politicians for having been assailed by so many conflicting expert opinions from so many areas of science, technology, and society.

3. The media and communication

A first impression was that communication throughout the media was just awful chaos, but the media, just as politicians, rely on others for the veracity of their views. Learning is aways important, but this was learning and decision making in the face of an ongoing deadly world threat, and the media attempted to keep us all aware of details as they occurred. No wonder we were all confused and concerned as the stories unfolded with multiple divergent views.

A major consideration for the future is whether there is a better way to communicate. There are, however, some clear lessons that we should have learned:

Even with prior plans it is unlikely that tackling a new health threat will go smoothly, as new and problematic data will become available. As the extent of pandemic problems and their possible solutions unfold, scientific and medical practices will continue to show their own differing kinds of development risks and harms as well as efficacy and benefits. Those risks and benefits must be clearly explained openly and completely with follow up as the situation evolves. Statistical information must include the limits of its values and the limitations of the data and experimental methodology: one size does not fit all. This is particularly true of predictions of what might happen.

All humans will continue to have very variable dispositions: physical, psychological, social/behavioral. The responses to threats will be very variable, with some being damaging in differing ways. Since there are many variable human characteristics, so many contexts in which medical phenomena occur, so many complexities and interaction possible between those phenomena, so that causes and effects are multifactorial and likely to be non-linear. We have seen many instances of poor causal interpretations in the COVID-19 epidemic. We must understand and utilize these lessons: causal attribution is rarely certain and evaluation depends on much more information than statistical analysis.

Everyone with any involvement with the pandemic (all of us!) should have tried, as far as we could, the most empathetic, helpful/supportive and calming environment suitable for our best chances of survival. Many of us did. There were, however, too many who did not. One aspect, that of legal consequences as threats, seem guaranteed to be generally unenforceable and overall has a negative effect on human attitudes and behaviour with an increase in stress. Those who are determined disruptors need managing with less legal and more diplomatic methods.

Finally, all decision makers, the experts who advise them, and providers of information have a massive responsibility to global society. These people have done a much better job than they are credited for in the pandemic. Those who think they might have done better in various aspects of the pandemic are numerous: will they be able to make a real contribution to future planning?

4. Summary

There was much progress in many areas during the progression of the pandemic. There was much uncovered that needs attention and change in the future - lessons learned. Will there be significant planning for future catastrophes that involves no more than a few insiders? Or will we have real democracy with a chance to know and participate in saving our future? Could this be the start of cooperation in affairs of state that is non-segmented, non-sectarian, and even global?

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