

Research leaders who work for – and advise – governments must do the same. Open and shared research is better research, because it allows a wider group of experts to check assumptions, verify calculations, interrogate conclusions and spot and challenge mistakes. Unfortunately, when it comes to the evidence underpinning government science advice, that is not happening enough.

The consequences of not publishing evidence is apparent in the United Kingdom's controversial decision to delay the type of compulsory school and workplace closures that other countries are enacting. Part of the initial reasoning, as explained by chief scientific adviser Patrick Vallance, included the premise that, for healthy people, getting a mild illness would help to build up their immunity – and that, if more people became immune, it would reduce virus transmission. According to this reasoning, such a move would also delay – and reduce – the peak in infections. But the evidence behind this approach was not revealed. Not unexpectedly, the approach was questioned by scientists, including epidemiologists and other infectious-disease specialists, and is no longer part of UK policy.

Researchers understand that sudden changes in policy will be necessary in a rapidly evolving situation in which there are many unknowns. But governments risk losing their trust by announcing those policies before the underlying data, models and assumptions have been released.

Ministers and their science advisers seem to have reverted to the Second World War model of making decisions in relatively small groups and then releasing papers and statements, giving interviews or writing articles. Politicians and their science advisers need to get with the times and embrace open research. They should harness the collective expertise – now also accessible through social media – of virologists, epidemiologists, behavioural researchers and others who can help them to better interrogate their models, and therefore improve their decisions. This is imperative now, when they are making decisions on which the future of lives and economies depend.

International cooperation will save lives

It is undeniably difficult for government science and medical advisers to advocate for a more collective, transparent approach when some of their leaders – particularly US President Donald Trump and his administration – are sceptical about the value of international cooperation and are instead making unilateral decisions. The United States' decision to ban flights from China and Iran, and later from European countries, was made without consulting the majority of these nations – and without publishing the evidence for how flight bans might slow the spread of a virus that is already circulating within a country.

But the advisers must persevere. They must persuade their leaders that coordinated collective action is in everyone's interests. If, for example, they disagree with the WHO's analysis, then they should explain why. To defeat a pandemic in an interconnected world, countries need to provide full and transparent evidence to back up their decisions, and be willing to share that evidence so that they can defeat the virus together.

“Russia still has a long way to go before it reaches its full potential in research and innovation.”

Is China coming to Russia's rescue?

As the two countries increase collaborations, there's room in the tent for others, too.

This week, Russia's president, Vladimir Putin, asked the courts to allow him to change the nation's constitution, so it would no longer prevent him from standing for re-election beyond 2024. If he succeeds – and keeps winning elections – Putin could remain president until 2036, more than 35 years after coming to power.

The move to extend Putin's power has major consequences for Russian society – including science. Putin's government helped to stabilize research after the chaos of the early 1990s that followed the dissolution of the Soviet Union. Papers authored by Russian scientists more than doubled in the decade between 2006 and 2016. And in 2018, the government allocated 170 billion roubles (US\$3 billion at the time) for fundamental research and development, a 25% rise over the 2017 basic-science budget.

But, as we report this week in a News Feature (see page 332), Russia still has a long way to go before it reaches its full potential in research and innovation. And as the president looks to strengthen his grip on power, some researchers are rightly concerned. Research funding – at 1% of gross domestic product – is far below that of advanced industrialized nations, and promises to increase this have not been kept. Furthermore, bureaucratic and political interference in research is strong.

Coincidentally, China is pursuing closer scientific contacts with Russia, and at a time of economic crisis, these are being welcomed. This year has been designated as the year of Russian–Chinese science cooperation: 800 activities are planned, including joint research in fields ranging from archaeology to artificial intelligence.

In addition to this, Russia is a leading participant in China's global network of science organizations in the countries that are part of its Belt and Road initiative, known as ANSO (Alliance of International Science Organizations). The organization's next annual meeting is due to take place in Moscow in May – although this will probably be postponed because of the coronavirus pandemic.

Two years ago, we remarked in these columns how China could help to awaken “the sleeping bear of Russian science”. China seems to be doing that, but it is happening as both China and Russia are being isolated by some Western countries. For example, most official US–Russian scientific ties have been suspended since 2014 after Russia's annexation of the Crimean peninsula. That is a short-sighted strategy. Even at the height of the cold war, researchers from Eastern and Western nations were encouraged to keep collaborations going. It is not too late to change course.