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India, Brazil and the human cost of sidelining science

Governments that ignore or delay acting on scientific advice are missing out on a crucial opportunity to control the pandemic.

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A COVID-19 care centre in New Delhi. India is recording some 3,500 deaths a day.

Last week, Brazil's total death toll from COVID-19 passed 400,000. In India, the pandemic is taking around 3,500 lives every day and has prompted a global response, with offers of oxygen, ventilators, intensive-care beds and more. Although these two countries are thousands of miles apart, the crises in both are the result of political failings: their leaders have either failed or been slow to act on researchers' advice. This has contributed to an unconscionable loss of life.

Brazil's biggest failing is that its president, Jair Bolsonaro, has consistently mischaracterized COVID-19 as a "little flu" and has refused to follow scientific advice in setting policy, such as enforcing mask-wearing and limiting contact between people (see page 15).

India's leaders have not acted as decisively as was needed. They have, for example, allowed — and, in some cases, encouraged — large gatherings. Such a situation isn't new. As we saw during the administration of former US president Donald Trump, ignoring evidence of the need to maintain physical distancing to combat COVID-19 has catastrophic consequences. The United States has recorded more than 570,000 deaths from the disease — still the world's largest COVID-19 death toll in absolute terms.

As *Nature* reports in a World View article on page 9, India's leaders became complacent after daily COVID-19 cases peaked at nearly 96,000 in September before slowly declining— to around 12,000 at the beginning of March. During this time, businesses reopened. Large gatherings followed, including protests against controversial new farm laws that brought thousands of farmers to New Delhi's borders. Election rallies and religious gatherings also continued during March and April.

Data difficulties

And India has other problems. One is that it's not easy for scientists to access data for COVID-19 research. That, in turn, prevents them from providing accurate predictions and evidence-based advice to the government. Even in the absence of such data, researchers warned the government last September to be cautious about relaxing COVID-19 restrictions (*Lancet* **396**, 867; 2020). And as late as the start of April, they warned that a second wave could see 100,000 COVID-19 cases a day by the end of the month.

On 29 April, more than 700 scientists wrote to Prime Minister Narendra Modi, asking for better access to data such as COVID-19 test results and clinical outcomes of patients in hospitals (see go.nature.com/3vc1svt), as well as a large-scale genome-surveillance programme to identify new variants (see go.nature.com/3vd7fak). The following day, Krishnaswamy Vijayraghavan, the government's principal scientific adviser, acknowledged these concerns and clarified the ways in which researchers outside the government can access these data. This move has been welcomed by the letter's signatories, but they have told *Nature* that some aspects of data access remain unclear.

A letter of protest shouldn't have been necessary in the first place. By identifying themselves, the signatories took a risk: in the past, the Modi government has not reacted well to researchers organizing to question its policies. Two years ago, a letter from more than 100 economists and statisticians urging an end to political interference in official statistics was not well received by officials. The letter was written after the resignations of senior officials from India's National Statistical Commission over what they saw as interference in the timing of the release of government data.

It's never good when research communities have a difficult relationship with their national governments. But this can be fatal in the middle of a pandemic — when decisions need to be swift and evidence-based. By sidelining their scientists, the governments of Brazil and India have missed out on a crucial opportunity to reduce the loss of life.

During a pandemic, we all need our governments to

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succeed. However, it's difficult to make good decisions quickly, more so with incomplete information – which is why health data need to be both accurate and accessible to researchers and clinicians. Denying or obscuring such access risks prolonging the pandemic.

Good research begins long before papers get written

Publishers are redoubling their commitment to transparency and reproducibility – but they can't bring about change alone.

In 2013, *Nature* began asking the authors of life-sciences papers to provide extra information in a bid to tackle the pressing problem of poor reproducibility in research. According to one survey of *Nature* authors conducted in 2016–17, 86% of respondents considered poor reproducibility to be a growing challenge in the life sciences (see go.nature.com/2vm2fxw).

Researchers in these fields are now asked to use a structured reporting summary for their manuscript submissions. Among other things, the checklist requires authors to state whether their experimental findings have been replicated; how they determined an appropriate sample size; whether they randomized samples; and whether data have been assessed by researchers who did not know which group they were assessing.

Such a checklist, which is provided to peer reviewers and published with each life-sciences paper, has helped to improve transparency in the reporting of research[1,2]. But editors from many journals and researchers recognize that there is still work to be done.

In 2017, a group met to discuss how such a systematic approach to transparency and reproducibility could be improved and adopted across more journals. The result is the MDAR (Materials Design Analysis Reporting) Framework, which has just been published[3].

The MDAR initiative is the result of an effort by editors at *Science*, Cell Press, the Public Library of Science, *eLife,* Wiley and in the Nature Portfolio, working with experts in reproducibility and research improvement. The objective is to encourage more-detailed disclosures in four areas of life-sciences manuscripts: materials (such as reagents, laboratory animals and model organisms); data; analysis (including code and statistics); and reporting (adhering to discipline-specific guidelines). *Nature*'s standards cover most of the MDAR initiative's objectives, but there are plans for further alignment. At the same time, the group is encouraging other journals beyond the founding members to sign up.

> **"Progress in science comes after years of deliberation, testing and continuous refinement."**

Publishers are not the only important players in this arena, however. A key test will be the extent to which funders and universities also support the new framework. Any initiative that improves transparency and reproducibility should be welcomed. But MDAR comes at a time when some of Europe's largest funders have announced plans to reduce what they regard as burdens and bureaucracy in research. The European Commission, for example, is undertaking a review of its pharmaceuticals legislation, partly in an effort to reduce red tape. And the UK government has appointed Adam Tickell, vice-chancellor of the University of Sussex in Brighton, to lead a review with the explicit aim of reducing red tape for researchers.

For these funders, such measures are designed, in part, to remove perceived obstacles to innovation and competitiveness in science. But if the result is reduced funding for research management and administrative support – which are essential to the success of implementing quality measures – that will have an impact on efforts to improve transparency and reproducibility.

All of those involved – funders, publishers and research managers and administrators – need to be on the same page in this respect. Europe's national and regional funders, in particular, must not forget that efforts to enhance transparency and reproducibility are fundamental to the scientific process – and to scientific integrity – and are far from being red tape.

Fortunately, many researchers appreciate this. In a pilot study in 2019, the MDAR checklist was tested by 33 journal editors and 211 authors working on 289 manuscripts (see go.nature.com/3xaue84). Most respondents from both groups said they found the expanded checklist helpful. And in response to *Nature*'s 2016–17 survey, some three-quarters of respondents said that they would use the journal's checklist to some extent, whether or not they were planning to submit their draft to a Nature journal.

In a parallel and welcome development, researchers and publishers, including the Nature journals, are embracing a format called Registered Reports in which scientists submit a detailed plan for a research project, including the question or questions being asked, study design and methodology (see go.nature.com/335ovtf). If editors approve it for peer review, and reviewers think the proposal is sufficiently robust, the journal commits to publishing the work, regardless of the outcome.

All participants involved in the research process know that good research starts long before papers get written. Progress in science comes not with the sparkle of glitter or the crash of cymbals, but in carefully crafted prose after years of deliberations, experimental testing and continuous refinement. The MDAR Framework is one such achievement. The time has come for science institutions to catch up with the growing desire among researchers for greater transparency and reproducibility. MDAR won't solve everything, but, if it can make research more reliable, then it will go some way towards achieving its promise.

1. Hair, K. *et al. Res. Integr. Peer Rev.* **4**, 12 (2019).
2. The NPQIP Collaborative group *BMJ Open Sci.* **3**, e000035 (2019).
3. Macleod, M. *et al. Proc. Natl Acad. Sci. USA* **118**, e2103238118 (2021).