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Prevention is as good as a cure

Priorities for the US Cancer Moonshot Initiative face an uncertain funding future — but it must not ignore proven prevention programmes in favour of glitzy research.

As the United States and the wider world tries to work out what President Donald Trump will and won't do, one thing is clear: some Republican lawmakers feel no compulsion to govern until he takes office in January. This could leave funding for some of President Barack Obama's scientific mega-initiatives — including the Precision Medicine Initiative and the Cancer Moonshot Initiative — in limbo until next year. At present, there is a push in Congress to delay any decisions on the budget and pass a continuing resolution that will hold funding levels steady until March.

The Cancer Moonshot Initiative, one of the newest schemes on the block, had been scrambling to get its goals in order ahead of the budget decision in time to impress lawmakers with its worthiness. But it could face more months of uncertainty — a harsh outcome for an initiative that had already committed to an aggressive timeline of doubling the pace of cancer research in five years.

In recent months, the moonshot's architects have laid out an ambitious menu of projects, and prioritizing those was always going to be a challenge. Given the absence of a clear fiscal future, deciding which projects take priority has become even more crucial.

How to choose? It may be tempting to select and focus on the most superficially impressive and eye-catching science. But one of the moonshot's greatest strengths has been its willingness to take on not only cutting-edge research, but also the more mundane hurdles that can block the translation of findings to the clinic. Those low-tech projects should continue to receive emphasis, even as project leaders grapple with financial reality.

When the moonshot's advisory panel of cancer experts released its ten scientific recommendations in September, for example, it highlighted the expanded use of proven cancer-prevention techniques. In doing so, it drew welcome attention to these techniques and how improving their deployment could reduce deaths — from cervical cancer by 90%, from colorectal cancer by as much as 70% and from lung cancer by up to 95%.

The tools are at our fingertips, if only society could muster the means to use them. Take smoking — it is still on the rise worldwide, despite its clear link to cancer. In 2015, about 30% of US cancer deaths were from lung cancer. By 2030, smoking is projected to kill 8 million people globally each year. Researchers need to learn more about the barriers that have held back efforts to reduce these numbers, and how best to implement strategies for stopping smoking.

Similarly, colorectal cancer could be reduced through wider use of recent advances in non-invasive screening methods. But not many physicians are aware of these techniques, and too few people who are at risk of the disease are targeted for early screening.

Many cancers caused by human papillomavirus (HPV) are now preventable with a vaccine given to adolescents. However, uptake of the vaccine still falls below targets, in part because of parental concerns and misconceptions about the risks of vaccination.

Following the September report, the Moonshot Task Force — a separate group looking at how government agencies can work together to accelerate cancer research — released its own recommendations. These, too, included unglamorous but vital initiatives, such as a push for stop-smoking strategies in people who receive Medicaid, a US health-care plan for those with limited resources. And it announced an offer from some car-sharing companies to give discounts to cancer patients travelling to and from doctor's appointments. This helps to tackle one of many logistical hurdles that contribute to low public participation in clinical trials.

“When budgets are constrained, it is important not to let the glitzy outshine the familiar.”

The more high-tech recommendations from the Moonshot Initiative are also worthy projects. They include large-scale genetic analysis of tumours to push forward the fledgling field of personalized medicine, and clinical-trial networks to better harness the information gleaned from trials of immunotherapies and treatments for paediatric cancers.

When budgets are constrained, it is important not to let the glitzy outshine the familiar. Too often in health research, straightforward prevention programmes, and the social science needed to implement them correctly, are pushed aside in favour of the basic research that fills this journal. A balance must be struck: the Cancer Moonshot and other initiatives should continue to emphasize the uptake of proven prevention strategies, even if the next administration tightens funds further than expected. ■

Daunting data

The power of big data must be harnessed for medical progress. But how?

There is art in 'big data' — in the poetic claims that it competes in volume with all the stars in the firmament. And in the seductive potential of its exponential, uncontrolled, ungraspable growth to improve our lives: by allowing medical treatments to be developed and approved more quickly — and, ultimately, truly personal medicine.

But at a workshop held in London by the European Medicines Agency earlier this month, just how much science has to happen to make this beautiful future a reality was apparent to all. Patient groups and research scientists attended, alongside computational heavyweights from IBM Watson Health and Google Cloud Platform. Together, they tackled chewy questions to which there are few answers.

How many data are 'enough' to reliably predict clinical effect? Which