

# A young doctor's note to self: Information is imperfect. Live with it.

We either know too little about certain conditions or can't sift through the deluge of information. Let's embrace these limitations.

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We've finally arrived at the time of the year that all of us have been gearing up for, our heads buried in books: the Bachelor of Medicine and Bachelor of Surgery (MBBS) examinations.

The MBBS is the graduation exam for local undergraduate medical schools, the qualifying milestone that gives medical trainees the green light to provisionally practise medicine. It serves as the culmination of five years of medical education, consisting of both written papers for theory and viva-voce (oratorical) stations assessing clinical skills. Most students approach the MBBS with a mixture of resigned humour and inspired fear, trading medical memes and pats on the back to make light of the month-long gruelling exams. The amount of content to study can be overwhelming and the variety of clinical cases daunting.

One of the most poignant memories I have from medical school: standing in a line with my friends in our white coats along the corridor, waiting to enter the classrooms for our viva-voce stations. We clutched our clipboards nervously, counting down the time till the bell sounded. Each room had a different task or patient to examine, and we never knew what awaited us behind those closed doors. Every clinical exam was a series of unknown scenarios, a carousel of mysteries.

The clinical component of the MBBS provided us with the opportunity to encounter "known unknowns" in a controlled and simulated environment. Every patient we meet for the first time in the future as a doctor is a blank slate – with an unfamiliar disposition, an unknown diagnosis and an undetermined response to treatment. In fact, the entire edifice of medicine lies upon eliminating diagnostic uncertainty through a methodological process of history taking, physical examination and investigations to rule in or out conditions, with the differentials narrowing as more information becomes available.

However, despite decades of cutting-edge research and development, medicine as a practice remains riddled with uncertainty. Until now, we are still unable to explain the sequelae of long-Covid, the unexpected side-effects of the Covid-19 vaccine as well as what predisposes people to these malaises. We understand the mechanisms of cellular mutation and how cancer seizes control of our bodies, but have yet to invent a durable cure that reverses the rampage of the disease beyond halting its progression. We have mapped out the whole of the human genome, but are only at



ST ILLUSTRATION: CEL GULAPA

the tip of the iceberg of uncovering precision medicine, which personalises and tailors treatments to each individual's genetic, environmental and lifestyle profile.

Uncertainty arises when there is a lack of knowledge from the past and/or the present – "our ignorance", as described by Professor David Spiegelhalter, a statistician and chair of the Winton Centre for Risk and Evidence Communication at the University of Cambridge.

#### INFORMATION OVERLOAD

Yet uncertainty can also arise from a surplus of information. In the medical realm, the amount of knowledge doubles every 73 days, with the number of articles with the word "stroke" increasing five times from 2000 to 2020, and investigative treatments targeting cancer quadrupling between 2010 and 2020. "Most doctors are feeling lost about keeping up to date," remarked Dr John P. A. Ioannidis, professor of medicine at Stanford University School of Medicine.

To provide a centralised repository of information that doctors can refer to, UptoDate reviews the most recent medical literature to write up overviews of topics for doctors.

Uncertainty also arises due to inaccurate or incomplete information, or conflicting accounts from different narratives. "The vast majority of new studies are either wrong or

not useful, but physicians cannot sort out which are those studies," says Prof Ioannidis. According to a report by *Nature*, 44 per cent of randomised controlled trials (RCT) – the gold standard of medical research – contained flawed data: impossible statistics, incorrect calculations or duplicated numbers or figures. If we are unable to trust even facts and statistics, the premise of evidence-based medicine and the foundation of all scientific innovation and inquiry, where is the path through the fog?

Beyond doctors, patients are similarly inundated by the information age. Given the low barrier to publication, lack of rigorous review and commercial-driven incentives, online websites giving health advice and instruction can often be misleading or erroneous. This leads patients to develop misunderstandings or misconceptions, contributing to greater confusion and anxiety. In a recent study by the World Health Organisation (WHO), the prevalence of health misinformation on social media reached up to 51 per cent in posts associated with vaccines, up to 28.8 per cent in posts associated with Covid-19, and up to 60 per cent in posts related to pandemics.

#### FACING THE UNKNOWNNS

In the face of widespread ambiguity, perhaps the best solution is for us to acknowledge

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the unknowns, embrace uncertainty and learn to possess an independent mind. It is prudent to always think through issues on our own, be discerning and cross-corroborate sources before forming a viewpoint – maintaining a healthy degree of scepticism while guarding against the risk of cynicism. By realising our world is an unpredictable one, with imperfect information and flux as the only constant, we become more clear-eyed and confident in facing the unknowns. In addition, uncertainty forces us to be agile in thinking and flexible on our feet, adapting rapidly to evolving situations.

Rather than being vessels and conveyors of information, medical professionals today have

to ascend to the role of interpreters and translators, and to a certain extent, guardians and regulators of information as well. For the scientific community, especially those involved in research, the onus is to create more explainable science that is clear, reliable and accurate.

For those who communicate the results of science – for example, policymakers and politicians during the Covid-19 pandemic – the challenge is to recognise and acknowledge uncertainty, helping the public to navigate uncharted waters. Lastly, all actors must work in tandem to institute systems and best practices adhering to the highest standards of truth and integrity.

To this end, research has shown that acknowledging uncertainty could make a source of information more credible. A study published by the National Academy of the Sciences recently explored the effects of communicating uncertainty on public trust in facts and numbers, and found being transparent does not harm the public's belief.

"Being trustworthy depends not on conveying an aura of infallibility, but on honesty and transparency," echoed Mr Ed Humpherson, the director general of the Office for Statistics Regulation in the UK.

As an incoming junior doctor, I am aware of my limitations and knowledge gaps as I start work as a medical professional – the transition from being a student of medicine to a practitioner of

medicine. I am full of excitement yet ambivalent about what being a junior doctor will be like – the steep learning curve, long working hours and the emotional roller-coaster ride of dealing with ailing patients in a high-stress, high-stakes environment.

I wonder how I will respond to situations I have never encountered before. I wonder if the five years of medical training I have received in school will be sufficient to brace me for the emergencies I will be called to see. I wonder if I will ever be ready. But perhaps that is not the point.

As historian and writer Adam Tooze states: "There isn't any longer that anchoring; we drift in a permanent state of being out of equilibrium." Yet perhaps uncertainty is not without its value, as it compels us to be versatile and responsive, open our eyes and ears to the world, and have courage in confronting our limitations.

In his book *The Unbearable Lightness Of Being*, Milan Kundera puts it beautifully when he writes: "And what can life be worth if the first rehearsal of life is life itself? That is why life is always like a sketch."

I look forward to adding to my repertoire of experiences as I gain certainty with time, working towards becoming a more self-assured and seasoned doctor.

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