

By Dr Wong Chiang Yin, SMA President

Doctors Thinking, Thinking Doctors

It's the end of year festive season again and it is time to slow things down a bit and perhaps talk about something more reflective – the way we think.

Recently I received puzzled stares from my friends and colleagues who saw me with a book titled *How doctors think*¹. It is a fascinating book by Professor Jerome Groopman from Harvard Medical School. He is trained in Haematology and Oncology and holds the Dina and Raphael Racanati Chair of Medicine at Harvard and is also Chief of Experimental Medicine at Beth Israel Deaconess Medical Centre in Boston.

I came across the book at a bookshop in Changi Airport and captivated by the title, bought the book at a whim. The puzzled stares were probably from people who wondered why on earth would a doctor like me need to know “how doctors think”? If a doctor does not know how he thinks, then who else knows?

Unfortunately, while doctors think, we may not really have a lot of insight into how we think and arrive at our conclusions. And because of this blind spot, mistakes can arise.

Professor Groopman makes use of real-life cases of doctors and patients to illustrate the many type of cognitive errors that doctors often make.

This begins by recognising how we are trained in medical school – which is training in a discrete-linear fashion – by history-taking, then physical examination, coming up with differential diagnoses, followed up by ordering investigations and coming up with a diagnosis after assigning probabilities to differentials and so on. It is based on Bayesian analysis, a mathematical method that we actually seldom use in real life. In real life, we use short-cuts all the time. Short-cuts are necessary due to the demands of time and workload and can be effective. But it is important

to note that they should be employed only when the doctor is not unduly affected by his own emotions because emotion can negatively affect one's cognitive powers – something they never told us in medical school. *Emotions* can contribute to cognitive errors. Sometimes, we do need to go with our gut feelings but Groopman warns that the ‘gut feeling’ may be the result of the positive or negative feelings you may have for that one patient. Maybe the patient reminds you of your favourite aunt or most disliked uncle.

In addition, history-taking is based on doctor-patient communication, which in itself is fraught with uncertainty. Indeed, how doctors ask questions has a significant effect on what answers we get. Answers that can lead us towards or away from the truth.

Another error we can make is ‘*attribution error*’ – making a diagnosis because the patient fits a stereotype. For example, a male Indian who smokes with chest pain may have an AMI but not always. Don't be caught out. Always consider the other possibility.

The tendency to judge the likelihood of an event by the ease with which the relevant examples come to mind is the mistake of ‘*availability*’. For example, we may think everyone with a low platelet is a dengue patient in dengue season. But he may actually have ITP instead. This is made more likely with ‘*confirmation bias*’, which results when we cherry-pick the few features that fit what we think the patient has and conveniently ignores the other signs and symptoms – a form of “altered pattern recognition”. Confirmation bias is closely related to ‘*affective error*’, which is driven by a wish for a certain outcome while confirmation bias is driven by the expectation that your initial diagnosis was correct. The strategy to counter this is to always generate



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a short list of alternatives and consider them. Never rush to one conclusion prematurely. In fact, Groopman makes it clear that it is all right to take shortcuts if the conditions are right, but unbridled haste makes for more cognitive errors. For example, if being in some managed care schemes means you have to see too many patients, resulting in your practice becoming unsafe, then it is better to get out of those managed care schemes.

We should also refrain from making a ‘zebra retreat’ – shying away from making a rare diagnosis. Because we are not familiar with rare conditions, we tend not to make these rare diagnoses. “Common things occur commonly”, hence our predilection to see horses and not zebras, even when the zebra is right before us once in a while.

A very common cognitive error we make is ‘*diagnosis momentum*’. Once a doctor makes a diagnosis, no matter how preliminary and uncertain, the diagnosis tends to stick. This is reinforced also by the way we present “This is a 45-year-old lady with RHC pain consistent with cholecystitis”. The label of cholecystitis was made on admission by the medical officer or registrar and often sticks and no one down the line questions the diagnosis again. Diagnosis momentum is greater if the diagnosis is made by a senior doctor, but do remember that even a senior doctor can make mistakes.

The refusal to consider and acknowledge uncertainty is yet another source of uncertainty. Biological variation means that there is always uncertainty in medicine, yet it is necessary to have some degree of denial uncertainty, without which, action is impossible. So this denial both guides and misguides. ‘*Denial of uncertainty*’ can come in certain forms – one of which is conformity and dogmatic certainty. “This is how we approach this problem in this department...” or “Here, we don’t nail this fracture, we plate it” are some examples of dogmatic certainty.

‘*Commission bias*’ is a type of cognitive error that tends doctors towards action when inaction is the better choice. Oftentimes, we think *we have to do something* for the patient even when we do not really know what to do or what is wrong.

The book also warns against ‘*search satisfaction*’ – the tendency of doctors to be satisfied and to stop looking for another diagnosis when doctors find something positive. For example, the radiologist may miss the small lung nodule after he has spotted the pneumothorax in a chest x-ray.

Groopman mentions three developments of modern medicine that have been held to be positive

but can also sometimes contribute to cognitive errors: (a) electronic medical templates, (b) clinical algorithms and (c) evidenced-based medicine.

The potential upside of electronic technology are enormous but there is also a potential downside to it – electronic technology risks more cognitive errors because the doctor’s mind is set on filling in the blanks on the electronic template instead of engaging the patient in open-ended questioning, or he may be deterred from focusing on data that do not fit into the template. After all, as the book rightly states, medical care “is a human interaction between patient and doctor within a context and in a social system. As such, it is not a commodity.”

“Clinical algorithms can be useful for run-of-the mill diagnosis and treatment... but they quickly fall apart when a doctor needs to think outside their boxes, when symptoms are vague, or multiple and confusing, or when test results are inexact. In such cases – the kinds of cases where we most need a discerning doctor – algorithms discourage physicians from thinking independently and creatively. Instead of expanding a doctor’s thinking, they can constrain it.”

On evidence-based medicine – “Of course, every doctor should consider research studies in choosing a therapy. But today’s rigid reliance on evidence-based medicine risks having the doctor choose passively, solely by the numbers. Statistics cannot substitute for the human being before you; statistics embody averages, not individuals.

However, the book does think errors are completely unavoidable. Indeed this sobering quote from the book just about sums up one of the greatest ironies of medicine – “The hardest thing about being a doctor is that you learn best from your mistakes, mistakes made on living people.” In the book, the author shares with the reader one of the gravest mistakes he made early in his medical career – a missed dissecting aneurysm, which till today, he has not forgiven himself for it. I am sure we all have our own grave mistake(s) too. Indeed, to err is human. But the most important thing is, we have to learn from mistakes that arise from human frailties and foibles and think better.

This book is supposedly meant to be read primarily by the public. Maybe that is an error in itself. Every doctor should read this book. ■

Reference:

- 1 Jerome Groopman, M.D. *How Doctors Think? Published by Houghton Mifflin Company, 2007, Hardcover, 307 pages.*