



# PHYSICIAN, DISRUPT THYSELF

## A Cautionary Tale of the Incumbent's Dilemma in the Digital Age

Text by Dr Charlene Liew

Two nights before my birthday, I had a vivid dream that took me back many years, to when I was a junior doctor in the wards. Strangely enough, I'd never dreamt about the past before. The mind plays psychological tricks on you close to birthdays.

The thing about dreams is that they can take you far into the future or far back into the past. Many years ago, when the news of Apple Inc's plan to build a smartphone broke, Palm Inc's chief executive officer Ed Colligan responded, "We've learned and struggled for a few years here figuring out how to make a decent phone. PC guys are not going to just figure this out. They're not going to just walk in."

My chosen specialty, radiology, is right at the forefront of this

technological change, with more than 70 percent of our work taking place in the digital space. Much like other industries which have undergone disruption, we are the proverbial canary in the coalmine, the first to be impacted significantly. At the same time, like the Chinese word for crisis: 危机 (wēi jī), which can be taken to mean both "danger" and "opportunity", we are also in the privileged position of the first mover. That is, if we choose to take the chance.

Herein lies what we term the "incumbent's dilemma": the same processes, assets and rules which made our field great in the first place may be the very same roadblocks preventing us from moving forward in this digital world. Just ask Nokia,

Motorola and the blockbusters of the world, whose size, complexity and fixed ways of doing things became obstacles to change.

### Digitisation of healthcare: an ongoing process

The adoption of electronic medical records (EMR) has been a gradual and ongoing process for the past ten years. EMR systems have been a great boon for healthcare systems, providing doctors with access to medical records from all interlinked public healthcare institutions so that care is continuous and patients can experience seamless transitions from hospital to community and from specialist centre to non-specialist centre. The increasing digitisation of medical

records may have had unintended consequences though: doctors now spend more time on digital record entry, which can detract from time spent communicating with patients. However, artificial intelligence (AI)-assisted scribe systems which can accurately take down physician notes using voice commands may help alleviate this issue. Furthermore, EMR systems generate a huge amount of data, mostly unstructured, and are therefore “trapped”. The ongoing challenge now is to implement EMR systems that are contextual, searchable and structured, so that this data can be harnessed for population-based research leading to new insights and discovery.

### What does it mean for you?

If you are a patient (most of us are, including myself), then you already know that things will never be the same. Most of the changes we experience will increase convenience for patients and caregivers. Some are already in use; you can use telemedicine for GP consultations, book appointments on your smartphone and access some of your medical records online. These help us spend less time in queues and shuttling about hospitals, and make the running of our lives increasingly efficient. Big data is poised to be the epidemiologist’s and public healthcare doctor’s silver bullet, allowing them to predict where the next cluster of flu or dengue fever will erupt so mitigating action can be taken.

The next wave of change we will see is in the sphere of clinical medicine which directly impacts, and hopefully improves, clinical outcomes. These will include early warning systems for discharged patients at risk of readmission, inpatients at risk of acute kidney injury or the deadly and swift killer – sepsis – and those at risk of falls. These systems will begin to positively impact lives, saving

thousands, if not millions, of quality-adjusted life-years worldwide.

Eventually, digital transformation and AI will transform the whole of healthcare and bring in new models of care, some of which are currently being developed. In the realm of imaging, opportunistic screening for cardiovascular risk may occur with routine images taken for other purposes, and screening for cancer and neurodegenerative conditions in our bodies can be partially automated and may be as commonplace as sending our cars for an annual inspection check. We may be told at a young age which diets to adhere to and avoid, and at a ripe old age which symptoms to be aware of and what personalised medicines to take. In this utopian picture of the future, we should also be prepared to live much longer and healthier lives.

### Keeping data safe

Cybersecurity will continue to be a clear and ever-present risk that we will have to contend with. With our records digitised and replicated within Singapore’s medical electronic systems, we as clinicians will extend our doctor-patient relationship and fiduciary duties into cyberspace, ensuring that these systems are limited to medical usage only and not sold for profit, while also making sure that our patient’s privacy is even more tightly guarded by anonymisation and encryption than it ever could be under physical lock-and-key. Already, in several industries such as banking, data may be moved back and forth on Singapore-based cloud servers. Similarly, for healthcare, the cloud must be secured with defence-grade, un-hackable perimeters.

### Moving forward

Medicine has always been, and will continue to be, a “high-touch” profession. Digital automation will help unshackle doctors from much of the mundane and soul-draining

manual entry of clinical records, and allow us to become more like the doctors of yesteryear – at our patients’ bedsides where we are needed most.

What this means for jobs in my area of practice, and everyone else working in today’s industrial revolution 4.0, is that we need to be acutely aware that the assets, services and processes that once made our profession a success will not ensure success in the future and may actually hold us back. Symptoms of this “incumbent’s reflex” are the reticence to go on the offensive or to disrupt our own model of practice. Since healthcare is more tightly regulated to protect patients as compared to other industries, this may be a good reflex to have while balancing on a tightrope between moving forward and being left behind. One must reflect upon the medical traditions gifted to us by generations of our founding doctors, and carry those whispery dream-voices of wisdom with us, while steadily fixing our gaze and planting our next steps towards the future. ♦

Dr Liew (FRCR) is the Deputy Chief Medical Informatics Officer, and a chest-trained radiologist working at Changi General Hospital. She co-founded the Artificial Intelligence and Informatics section of the Singapore Radiological Society. She does miss spending more time with patients, and hopes she was prescient many years ago in choosing to be at the digital coalface that she may help to shape the progress of medicine’s future.

