

No more Dr. Google: Meet Medwise, the AI powered clinical information platform that could revolutionise healthcare

Maddyness UK spoke to Keith Tsui, CEO and cofounder at Medwise, about his personal journey from doctor to cofounder, the AI platform changing the way clinicians research medical information, and the impact of COVID-19 on the world of healthtech.

Before founding *Medwise*, I was a medical doctor. I was trained and practised in Hong Kong, where I'm from. Throughout my time as a doctor, I saw a lot of problems within the healthcare system that I really wanted to solve.

As a result, I decided to pursue healthcare, innovation and entrepreneurship more seriously, completing a Master's degree in Bioscience Enterprise at Cambridge. There, I learned how to take something from an idea like a new, potentially life-saving medicine, clinical diagnostic test, device or digital product, to a tangible solution used in health settings to create meaningful change for patients and clinicians. The experience was a pivotal part of my transition from a frontline clinician delivering care, to someone with the confidence and expertise to build a meaningful product for patients and clinicians.

Following my time at Cambridge, I became a management consultant, specialising in productivity projects across multiple hospitals in an STP (sustainable and transformation plan – now called Integrated Care Systems/ICSs) footprint, which later led to a new role as a clinical product manager, a leading remote patient monitoring company Huma.

The problem: doctors need better access to the right information

All this experience is ultimately what culminated in the birth of Medwise two years ago. Initially, I was just exploring an idea and I got really excited about the development in AI, particularly in the natural language processing space. I watched AI models surpass human performance in different natural language processing tasks like question and answering, or even the general language evaluation task. I soon realised that there may finally be a solution to a problem that constantly plagued me when I was practising as a medical doctor.

Like many doctors, my hours were very long. On night shifts I would frequently need to make decisions about patients' care and I often struggled to find the information or the evidence that would support me in making those decisions.

I had a tiny pocket booklet filled with medical knowledge from seniors. I used to ask myself, 'Is this up to date? Is this evidence-based? Is it safe?'

Patients are getting more complex and treatments are becoming increasingly personalised. Comorbidities are more common and there are new innovations and therapies being developed and launched every day. Fifty years ago, if you were treating someone with diabetes, there were one or two treatment options; now the list is almost endless.

Consequently, the explosion of healthcare information and knowledge that has come with it has meant that national and local guidelines are updated more often, which present a real challenge for clinicians to keep pace. With increasing pressure on the NHS and limited time for each patient encounter, it can be difficult to find the right information at the right time.

The unmet need is not just for clinicians, health systems and patients are affected too. If practice

cannot keep up with these changes, clinicians understandably default to previous approaches to patient care, which consequently causes unwarranted variation in care.

Therefore the exact same patient being treated in hospital A versus hospital B could receive a slightly different diagnosis, treatment or management plan, resulting in varied patient outcomes. This could lead to a longer hospital stay or additional complications, which impacts the patient's recovery and quality of life, as well as causing a capacity and financial burden for the health system.

It's estimated that unwarranted variation in care costs the UK around £5B per year. At Medwise, we think we can solve this problem to make a real difference in the lives of patients and clinicians, enabling associated costs to be diverted and invested elsewhere in the system to improve patient care in other ways.

Building the trust of healthcare professionals

Building trust with clinicians will require time - Medwise doesn't have the

innate trust that big health and tech names like Microsoft, Google or J&J do, but I've learnt a lot by working very closely with clinicians to understand exactly what they need from the platform to feel confident and assured.

One of those is integration into the clinician's workflow. Therefore, the Medwise platform utilises and highlights the information sources that the clinicians already use and trust, while making it more easily accessible and discoverable.

Thanks to my medical background, we realise that every healthcare professional is different. Everyone will have their own preferences for sources and how they like to search, as well as their own information needs.

For example, women tend to go to women doctors for their health problems so a male GP tends to have less knowledge of women's health issues and would therefore have a higher information need in this area. By working really closely with clinicians, building a solution that they love with seamless user experience, while generating data and evidence of Medwise's impact and potential, we can begin building trust with healthcare professionals.

A multi-level transformation in the healthcare sector

Necessity is the mother of invention and the pandemic meant we were all unable to meet with people face-to-face, it has triggered a huge improvement in the uptake and adoption of telemedicine: not just patient consultation over phone or video, but also remote patient monitoring solutions. It instigated a reconsideration of what care could look like for people living with chronic conditions, without being able to see them in person.

This transformation caused a shift in thinking for many doctors, in the absence of their usual approaches to care. The perception of those that had previously been resistant to innovation changed, and having experienced the power of new approaches and solutions, became much more open minded.

Despite the torrid times the pandemic brought with it and the consequential strain on the health system, the positive impact of new innovation is undeniable. However, there were already challenges before COVID19 hit, and still now as we navigate through, many of those challenges still remain. Healthcare services are still under monumental pressure and clinicians remain resolutely overburdened; GP consultations have increased by 31% compared with pre-pandemic, and that is one of many examples.

The burnout rate amongst healthcare professionals is increasing daily;

statistics show that up to 21% of doctors in the UK want to leave immediately to pursue a different career, and 32% are planning to quit early. Nurses are affected just as severely with 22% also planning to leave.

It is time to create innovative solutions that care for people working in healthcare; without them, there is no healthcare.

The promising future of healthtech

Currently an increasing number of ICSs are forming collaborative organisations, which will eventually become responsible for delivering care to local populations. At Medwise, we're excited to see how we can create complimentary partnerships with these kinds of organisations to support the provision of the best care for patients.

The interest and potential for *AI in healthcare* is huge right now, especially in computer vision, with radiology or digital pathology startups doing big things in the space. Despite the excitement, I still believe that you're only just pushing on the first frontier and there is so much more to come, especially use of NLP, which is what we're doing at Medwise.

NLP already has multiple clinical use cases, from identifying trends in a person's health record, to making documentation and administrative tasks much easier, which can significantly reduce costs and increase capacity. These elements might be less sexy, but they're the ones that I truly believe will bring the greatest impact for patients, clinicians and health systems like the NHS. At Medwise, we are just starting to build the healthcare stack for the 21st century.

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