# Dr Mike Cadogan takes the medical world beyond social media

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Senior emergency physician, digital visionary, medical educator and bestselling author Dr Mike Cadogan has big ambitions for medicine.

Back in the mid-1990s, before Facebook and Twitter took the world by storm, emergency physician Dr Mike Cadogan was in the UK studying natural science on a scholarship at Oxford University. When he'd completed that, he moved on to Edinburgh University to study clinical medicine and later surgical training and orthopaedics. It was there, in Scotland, that Cadogan first ventured into the little known area of social media. It was also the beginning of an adventure that was to define his relationship with medicine for the next 17 years.

With Professor Chris Oliver, an orthopaedics colleague in Scotland, Cadogan discovered the phenomenon of online communication and its potential for sharing information between medical professionals. As a result, he and Oliver founded OrthoGate, an online community for fellow orthopaedic surgeons to share their expertise and clinical images.

'We could upload images of complex fractures and discuss the best options for treatment,' he said. 'We were able to gain access to people we'd never met before, but who we knew did well in a particular field.'

By 1998, Cadogan had moved from orthopaedics to emergency medicine and was living in Australia. Working in a Brisbane hospital he realised that he was able to download and store electrocardiograms and orthopaedic X-rays from the wards. Along with the clinical images he had brought with him from Scotland, Cadogan put together a substantial medical database. He scanned all the images in on a duplex A3 scanner, stored them on zip drives and organised a server.
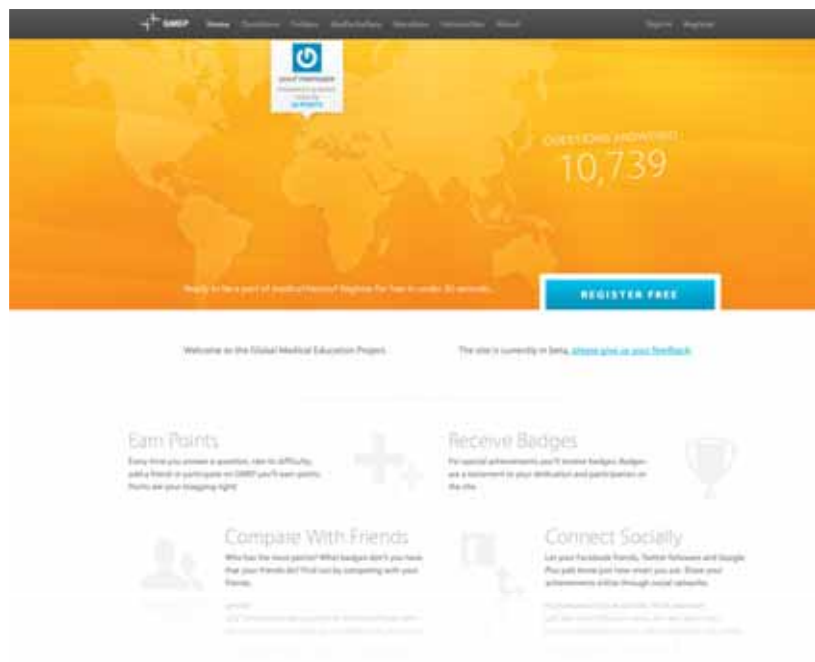
Over the past 15 years Cadogan has uploaded 140 000 images onto the server. 'I got a Kodak .8 megapixel camera', he said, 'to start off the process, then just started collecting the photograph plus the actual pathology plus the fixation'. He initially collected images of fractures, then electrocardiograms, clinical cases and clinical case scenarios. In 2001, he built the first stand-alone image-collating database using FoxPro – a text-based, procedurally oriented programming language and database management system. He was able to store all 140 000 images as metadata tapes.

'I did a total of 25 metadata tapes for each piece of information, but every time I built something it was basically at a time when technology wasn't advanced enough, computer programming wasn't advanced enough, cameras weren't powerful enough, scanners were too slow,' he explained. 'I was doing 2600 dpi scans – whereas now I do 9000 dpi scans. I was taking pictures on one megapixel cameras – now I take them on 14 megapixel cameras.'

A decade later – as pioneers often do – Cadogan looks back and acknowledges that the enormity of his work now appears a little less significant than it was in the making. 'You could pick up the program I built in 2001 for $20 off the shelf or get it for free,' he said. But he also points out that the collation, collection and curation of information in the clinical image database was important progress for global medical education. The 'local and parochial'

nature of education in the past, where 'you could be a great little teacher in your own little group of four or five people,' doesn't account for getting the teaching content out to other people who need it, Cadogan said. 'You could have a PowerPoint, you could have an email mailing list', but that audience is too limited and the need for knowledge sharing is too great.

In 2008, Cadogan started a medical blog called 'Life in the fast lane'. Today it has developed into the largest emergency medicine blog in the world, with more than 10 000 daily page views and 163 000 unique visitors a month. Cadogan is regarded widely as the number one medical blogger in Australia, and the blog, ably assisted by Dr Chris Nickson, provides highlights from the 'webbed world of emergency medicine and critical care'. But one look at Life in the fast lane reveals it is more than a blog. It's a carefully coordinated offering in an online universe of medical informatics Cadogan has created that includes Australia's largest directory of doctors called HealthEngine; an online database of education and resources for the Australasian College for Emergency Medicine (ACEM) called iMeducate; and Cadogan's latest offering – the Global Medical Education Project (GMEP).

'HealthEngine was fairly straightforward really,' Cadogan said, reflecting on the tragedy that motivated him to create the directory and appointment system when he first moved to Perth from Brisbane. 'On Christmas Day a friend of a friend's mum came in – ovarian

cancer, stage four. I diagnosed it at the bedside; put an ultrasound on her. I knew nobody,' he said. 'I didn't know how to get her into anywhere.' While Cadogan was able to get personal recommendations for referrals to surgeons, he actually needed 'to get a hold of somebody who wanted to do this operation', without his patient waiting unnecessarily.

The experience caused Cadogan so much professional frustration that he spent 6 months creating HealthEngine. He individually typed in 48 000 doctors' names and practices and then found people to host the searchable database off his website. 'Somebody needed to put it together', he said, referring to local collections of doctors' contact details in hard copy notepads, books, and non-searchable jpeg images of pages on the web. Taking an individual, a group and a location he created a database that interlinked and made 'me more findable than an individual page in a magazine', he said.

Cadogan sees himself as an innovator, rather than a businessman or venture capitalist. 'My job is to set things up, find the problems, write the original solutions and then hand them on,' he explained. And true to form, a couple of years ago he handed over all rights to HealthEngine free of charge to the people who currently run it.

Regarding iMeducate, Cadogan said 'There had to be a way of taking these USBs with Excel spreadsheets, remembered questions and past questions – there had to be some way of putting it together', he said. ≫

>> 'Not in a black bank wiki, but in some way that you could actually learn from it.' So he set about creating an integrative online learning process where the medical student could answer high quality peer-reviewed multiple-choice questions based on the core textbooks for the ACEM. Cadogan has expert assistance onboard. Surgeon, lawyer and best-selling medical textbook author Dr Rodney Peyton, who is also an internationally renowned medical educator and examiner for the Royal College of Surgeons in England, is part of the iMeducate team.

Cadogan is currently working on a new element to iMeducate, which is the option to rent a chapter of a textbook, rather than paying for the entire book. About 80% of the students sitting the ACEM primary exam use iMeducate and the pass rate for those students is 100%.

A successful academic author in his own right, Cadogan has co-authored six textbooks including *Emergency medicine*, which is in its sixth edition, and the *Toxicology handbook* now in its second edition. His books have been translated into several languages and are widely used, but he would like to see them freely available to all medical professionals who need them.

Cadogan's most recent project is GMEP, which provides an online forum for doctors and medical students to pose questions about cases, diagnoses and treatment. They receive points and awards for their achievements and have the option to share their scores and posts on mainstream social media. GMEP has gathered more than 1000 members since it started in December 2012, and students from about 50 universities across the world are participating.

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Along with GMEP, Cadogan introduced the world to a new concept called FOAM, which stands for free, open-access medical education. The acronym also stands for the perceived next step – what is going to happen beyond social media.

Cadogan intensely dislikes closed professional networks. He believes that online anonymity is an illusion and that people should not assume what they say online is confidential or anonymous, even behind pseudonyms. But it isn't fear that drives his view – it's a belief in transparency and that education and information should be within every person's reach, not just those who have the means to purchase it.

The joy for Cadogan is that in GMEP and FOAM he has created an online space where educational resources are free and openly available. His determination and commitment have seen doctors in countries such as Costa Rica, Saudi Arabia, Pakistan, the Philippines, South Africa, Brazil, Egypt, Israel, Turkey and Zimbabwe signing up in droves. This, he said, is because for the first time they have an opportunity to be part of a global education movement. The doctors have access to high quality information without the barriers that have always made 'medicine such a closed shop'. And doctors in third-world countries who don't have continuing core education opportunities now have a forum where they can seek core generic information in a collaborative and supportive environment.

It's clear that Cadogan wants to make the world a better place. But he also has room in his life for a couple of other medical roles. One of those is as team physician for Emirates Western Force rugby team. The other is as an emergency physician for VIP Medicine where he cares for the health of visiting VIP guests to Australia. These include musical luminaries such as The Eagles, Rickie Lee Jones, Neil Diamond, Elton John, Michael Bublé and even Justin Bieber. But that's vastly different from his passion for technology in medicine and, indeed, a whole other story.