

## Derby Medical Society - 12<sup>th</sup> February 2019

### **'The NHS at 100: What will the NHS be doing in 2048?'**

#### **Apologies**

Stuart Holloway

Shehla Imtiaz-Umer

Tom Fryatt

David Young

Mr Peracha

**Speaker** – Professor Tony Young, National Clinical Lead for Innovation NHS England

The meeting was opened by Miss Hewitt and everyone was welcomed. Derbyshire integrated healthcare, managed with Alexin, have donated £500 sponsorship to DMS, Miss Hewitt will convey the society's thanks.

Introducing Tony Young – Professor Young is a Consultant Urologist, with a PhD who has founded 4 medtech start-ups. He was appointed national clinical director of innovative with NHS England. He also founded the Clinical Entrepreneur programme and was awarded an OBE in this years' honours list.

#### **'The NHS at 100: What will the NHS be doing in 2048?'**

Professor Young was born and bred in Essex and is now the first ever clinician to be put in charge of a nation's healthcare innovation. He founded his first company aged 30, providing specialist equipment for Urology procedures, and throughout his career has founded four start-ups in total. This process has allowed him to learn a great deal along the way about entrepreneurship.

Entrepreneurship has not always been welcomed and is sometimes resisted. He was once interviewed for a consultancy post and was offered the job but on condition gave up innovation and entrepreneur projects. He declined this and was instead welcomed to Southend and subsequently raised millions of pounds for that trust through innovation.

Professor Young explained that he is very lucky in that he loves his job, enjoying the fact that hundreds of different companies approach him to pitch ideas, in order to try and improve the NHS.

The NHS is the world's first unified healthcare system, which has existed for 70 years. Many healthcare innovations were first pioneered within the NHS, for example CT scans and hip replacements. However, since its conception 70 years ago, lifespans have shot up by an average of 15 years. So how do we make positive change in a system in which we have 23 million A&E visits and 75 million OPAs? It can seem insurmountable, but this is the system we are working in and it is possible.

Recently we had the NHS '5 year view', in which there was emphasis on prevention and sustainability of the NHS:

1. Health and wellbeing (for example, the sugar tax)
2. Care and quality gap

### 3. Funding gap

This year we have had the 'NHS Long Term Plan' – from this we can see ultimately, we are doing somewhere in the NHS what we need to do everywhere.

Key priorities in the NHS Long Term Plan:

1. Early diagnosis cancer
2. Investments in mental health care
3. Investment in primary care
4. Investment in digital healthcare and technology

Professor Young explained that the best way to predict the future is to study the past. We can look at how people in the past predicted what the future would look like. For example, Douglas Adams imagined a super computer in Hitchhikers guide to the galaxy, along with the Babel fish to translate languages. Whereas now, we have Skype Translator, which can translate into 7 languages in real time.

So, what are our current hopes and predictions for the future? In short - Personalised, Empowered Health and Care Revolution. This involving data analytics, machine learning, AI, advanced technology and robotics, real-time predictalytics (aim for early diagnosis or to prevent the problem from occurring), social inclusion and networking. There is a drive to move away from the intermittent, reactive sick care model of the past, to a more continuous, proactive healthcare in the future.

#### **Digital applications**

Many of these things are already happening. Take digital applications for example, there are now over 360,000 apps on apple and google stores about health.

One of these is 'Happy sun' – the mobile phone to works out UV exposure, calculates how long the person can be out in the sun before more suncream is needed. It also logs cumulative sun exposure, this could be used in the future to see who is more at risk of developing skin cancer.

#### **Artificial Intelligence**

In Data analytics, there are already many AI start-ups, especially present in Radiology. There is recent, innovative thinking such as assessing CT scans for osteoporosis that was not already diagnosed, using CT scans that already exist from CT chests/abdomens.

'Optellum' is an AI based system which reviews lung nodules to assess the likelihood a nodule is cancerous. Use of artificial intelligence is booming, in Professor Young's first year in his current job about 5 companies were proposing AI in medicine, now it is more like over 200.

AI does not necessarily hold all the answer thought, Professor Young directed the audience to an article in 'Nature Medicine', by Eric Topol, which warns about possible problems.

#### **Ultra connectivity**

With advanced tech, comes increasing internet speed. With 5G we can now download a Hollywood film to phone in a second. Google is focusing on diabetes, to provide continuous glucose level monitoring. Painless monitoring would be excellent for monitoring children with diabetes.

'Matternet' in Zurich use drones to take pathology samples autonomously, to a pathology lab across the city. Just a few years ago this was thought to be impossible. This is currently being looked into, with the prospect of creating safe corridors for drones between certain hospitals down in London.

'Occado' is an online supermarket, which uses robotics and homogenous swarm robots. Largely due to this efficiency, it is set to become largest supermarket in the world. The techniques it uses are relevant to NHS as we also have huge stores and warehouses.

Professor Young met with the leader of the UK Space Agency, pitched NHS problems to the space agency, offered 4 £1 million prizes to address problems facing the NHS. Can we use satellites and space science within the NHS? Yes, we have already started to look at mobile diagnostic units, such as stroke assessment in ambulance, the trials are promising.

Mr Young talked about many new healthcare related apps and explained how they can improve health and how they could be used within the NHS, such as portable USS technology on smart phone, semen analysis on smart phone. Also 'Cordio' – through voice recognition software can tell who is at risk of deterioration in heart failure.

We know the benefits of new ideas and innovation, so how are we training our clinicians to deal with these new innovations?

### **The Clinical Entrepreneur Programme**

- Mentoring and coaching
- LTFT offered
- Advanced internships
- Connections to customer and funding
- Education and networking

Mr Young set up the above and at end of year 2, £118mil of funding has been raised. 113 start ups created. 81 clinicians returned to NHS, delivering core services, in essence, reversing the brain drain. Many clinicians and entrepreneurs wish to impact single patients and also impact millions.

Some of the many start-ups to come out of the Clinical Entrepreneur programme were talked through:

- 'Touchsurgery' – surgical registrars on the programme raised 60 million pounds through an app which outlines operations and how to do them in a step-by-step fashion. They have the largest video dataset of operations.
- 'Proxime' – plastic surgeon registrar in London set up this company to guide surgery through augmented reality. The expertise of other surgeons can be utilised by remotely guiding another through an operation, can even be in another country.
- 'Seek' – smart phone camera guiding wax microsuction. Financially successful and reduces hearing loss and isolation in the elderly.
- Training programme to identify modern slavery - FY2 in London spent her gap year in Tibet, found out afterwards that the orphanage she was in was actually at the heart of a slavery and human trafficking programme. So affected by this discovery she joined the entrepreneur programme and set up a training programme to teach everyone to identify signs of modern slavery.

Applications for the Clinical Entrepreneur Programme open in March for next year.

Questions were taken from the floor.

Full members - 17

Guest Members - 2

Doctors in Training - 2

Medical Students - 16

Total attendance - 37