

FOUNDERS FORUM HEALTHTECH X LTW

2020 REPORT



FOUNDERS FORUM
HEALTHTECH

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HEALTH & YOU

CONTENTS

A Word of Thanks	3	COVID-19 Unplugged: Mental Health	14
#LTWConnects Welcome Address and Opening Remarks	4	Has the pandemic shifted our narrative on technology?	15
The Future of Pharma	6	How can we achieve digital health equality?	16
What does the global pandemic mean for the future of pharma?	6	Are there any positives to be found from crisis?	16
Is AI better than a very good chemist?	7	Close – Finishing with a Guided Meditation	17
Fireside Chat: No More Ivory Towers	8	References	18
Today, we live in a truly global society	8		
Can we reduce waste in medicine?	9		
The Sound of Medicine: Music Health & Wellness	10		
Music and sleep	10		
Can we improve outcomes using music in combination	11		
with medicine?			
What makes now the time to make a difference with music	12		
and medicine?			



A WORD OF THANKS

Thank you for joining us at our first ever virtual Founders Forum HealthTech event, as part of #LTWConnects 2020, hosted by Dr Jack Kreindler – Founder, CHHP & Chair FF HealthTech.

The COVID-19 pandemic obviously dominated the discussions for many of our sessions, leading our experts to ask 'What is the Future of Pharma?' in session one, plus our session 'COVID-19 Unplugged' dug into the critical importance of good mental health during the pandemic. We also explored the healing and therapeutic powers of music, grappled with inequality in access to healthcare around the world, and ended the day with a guided meditation session with Headspace co-founder, Andy Puddicombe.

The afternoon began with an address from UK Prime Minister Boris Johnson, who highlighted the importance of the tech industry to the UK economy, stating "Today UK tech start-ups attract more investment than all their counterparts in the rest of Europe put together". As well as highlighting that the UK government have provided over £1bn to help innovative firms across the country during the pandemic.

The digital tech sector is big business. It grew nearly 6x faster than that of the rest of the UK economy in 2018 – contributing £149bn,¹ and digital tech employs 2.9m people in the UK, an increase of 40% from 2017, now accounting for 9% of the national workforce.¹

The tech sector was already a driving force re-defining several other aspects of our daily lives. With the onset

of the pandemic, the healthcare industry has had to catch-up rapidly. Where GPs in the UK once saw 95% of their patients in the office, now 99% are using virtual services, with telemedicine being hailed as the 'new normal'.²

We wanted to get the latest insight from experts across our industry on the recent trends in healthcare tech, and how this is being shaped by the pandemic.

This virtual session will **lead into the forthcoming London Tech Week festival** in September, where we as a community will continue to drive these conversations to fuel the ambition and momentum of the tech sector.

**Dr Jack Kreindler – Founder,
CHHP & Chair FF HealthTech**

"Technology is one of the greatest forces for uniting and levelling up across the country, for social justice. And you're the people who can help make that happen"

U.K. Prime Minister Boris Johnson



THE TECH SECTOR
CONTRIBUTED
**£149
BILLION**
TO THE UK
ECONOMY
IN 2018¹



99%
OF GPs IN THE UK
ARE NOW USING
**VIRTUAL
SERVICES²**

01

#LTW WELCOME ADDRESS AND OPENING REMARKS



Carolyn Dawson – Managing Director – Informa Tech

Caroline Dinenage – Minister of State for Digital and Culture

Dr Jack Kreindler – Founder, CHHP & Chair FF HealthTech

The pandemic has highlighted the **critical role technology will have in our future society**, to both keep us safe and boost our economy.

Tech has played a **fundamental role during the pandemic; connecting people to their support networks, delivering food and medicine, enabling patients to access care, and providing lifesaving medical interventions**. The UK tech sector has been at the forefront throughout the pandemic, with **NHSX gathering data to understand and predict the spread of the virus**.

The **government is pledging £500m investment fund for high grade companies and £750m for small and medium businesses**, with a strong focus on research and development, as well as the **digital boost platform** to support small businesses and charities impacted by the pandemic.

The COVID-19 pandemic has taken us from **BC to AD; 'before computers' to 'after digital'**, to a place where WhatsApp, a channel not used or accepted as recently as 10 years ago, is now a **platform used to easily discuss important medical decisions**.

"Healthtech companies in the UK should be so proud of the positive impact they've made on people's lives"

Caroline Dinenage – Minister of State for Digital and Culture



Carolyn Dawson



Caroline Dinenage



COVID-19
HAS TAKEN US FROM
BC TO AD-
'BEFORE COMPUTERS'
TO 'AFTER DIGITAL'



Dr Jack Kreindler

THE FUTURE OF PHARMA

What does the global pandemic mean for the future of pharma?

Prior to the global pandemic, we were already witnessing the first steps towards a tech revolution in pharma. But now, we see accelerated growth through this revolution, as we witness the desire and need to embrace the manifesto of 'digital by default' throughout all stages of the healthcare value chain.

As Stephen Hahn, US commissioner of the FDA, put it; "Necessity is the mother of invention. History teaches us that crises often lead to accelerated change and, innovations and new discoveries".³

Regulation

The pandemic has caused a dramatic change within regulatory bodies of the pharma industry. Organisations such as the FDA have increased their speed of response throughout all stages of pharmaceuticals development. The urgency of the pandemic has called in for review the current processes in order to consolidate timelines, often working in parallel rather than sequentially, to save precious time.

Clinical trials

Similarly, processes within clinical trials have been critically reviewed to identify where they can become more efficient, more innovative, and more productive across key areas like site monitoring and drug discovery.

Haseeb Ahmad – Managing Director (UK, Ireland & Nordics) and Country President (UK) – Novartis

Thomas Clozel – Co-Founder & CEO – Owkin

Vivek Ramaswamy – Founder & CEO Roivant Sciences

The many hurdles of getting a trial site up and running, plus the logistics in co-ordinating contract organisations and CROs, can delay the speed of drug delivery. The pandemic has enabled increased speed of co-ordination through necessity and without the need for additional technology, including monitoring data as it's collected to find information in real time from the sites.

"Necessity is the mother of invention. History teaches us that crises often lead to accelerated change and innovations and new discoveries"

Stephen Hahn, US Commissioner of the FDA



Thomas Clozel

Collaboration across pharma

Previously, there would have been many drugs in development in parallel, often with a similar mode of action. Today, we see more collaboration in pharma than ever before. Whilst this trend might have begun prior to the pandemic, there's no doubt the situation has forced companies to set aside competitive interests to work together to achieve common goals.

Adaptive trials

A topic commonly discussed, and something we've spoken about in previous Founders Forum meetings, is the rise of the adaptive trial. Whilst our panellists did not think this innovation was the 'rate-limiting variable' holding us back from progress, increasing the flexibility of drug trial design is almost certainly in all our futures. This can increase the efficiency of clinical trials to make better use of resources and reduce the number of required participants.

Is AI better than a very good chemist?

The computational powers of AI can now outdo human capabilities to find pharmaceutical agents faster that target a specific site in the body. However, it's argued that finding the therapeutic site in the body to target in the first place is often a combination of human understanding and history, something which we humans are much better placed to do.

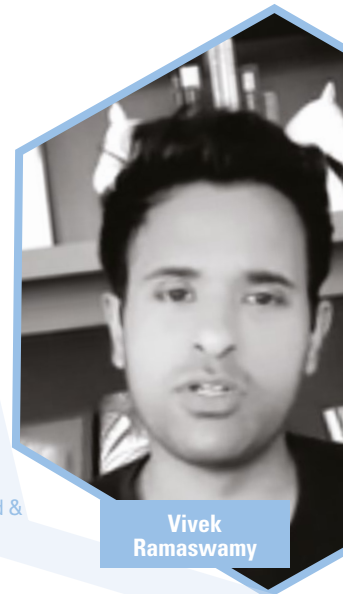
AI is an exciting prospect, and cultural changes brought about by the pandemic have allowed scientists the opportunity to delve into this further. Indeed, computational chemistry may potentially become a replacement for medical chemistry at the heart of pharmaceutical R&D. However, many challenges remain. These lie in the issue of data sharing and the associated ethics, as well as in the validity of the data collected. The human body is such a complex and unpredictable thing, we also must remember that history isn't the best predictor of what might happen in the future.



Haseeb Ahmad

"What we're seeing right now, particularly in drug development, is a really tech-enabled operation coming to the fore"

Haseeb Ahmad – Managing Director (UK, Ireland & Nordics) and Country President (UK) – Novartis



Vivek Ramaswamy

Looking forward

When assessing these large-scale changes to the pharmaceutical industry, it begs the question, if we can do it now, why not always? And for all conditions where there are patients requiring treatments? Many other health conditions account for more deaths, and are no less pressing, just without the 'pandemic' label attached to them. There will no doubt be much public consolation and bureaucratic work to embed this into our system, but we also need to work towards changing the clinic and patient behaviours that lead to many of the suboptimal outcomes in healthcare.

Sense of mission and pride in the pharmaceutical industry

One thing our panellists could all agree on, was that in a time when the world looks to pharma to help them out of this crisis, there has never been a greater sense of pride in what we do.

03

FIRESIDE CHAT: NO MORE IVORY TOWERS

Today, we live in a truly global society.

Despite this mobility, great inequalities continue to exist among us, which have been highlighted more during the pandemic than ever before. Robust evidence demonstrates that social factors, education, employment status, income level, gender, and ethnicity, all have a marked influence on how healthy a person is.⁴

In this fireside chat, Dr Alex Kumar – Global Health Doctor and NHS clinician, discussed some of the key areas affected by health inequalities around the world.

Tropical disease

Coronaviruses are currently front and centre of international concern, but many other infectious diseases wreak havoc to the human population, such as; Zika, Ebola, and other neglected tropical diseases. Ebola devastates communities, wiping out entire villages, whilst Zika can rip through a population, and lead to detrimental long-term health effects, especially to neurological health.

More focus and resources need to be placed on these conditions to help those in the developing world, shifting the media focus and attention away from just the white patient in the Western world. This is an issue further compounded by the overrepresentation of white males in clinical trials.^{5,6}

Dr Jack Kreindler – Founder, CHHP & Chair FF HealthTech
Dr Alex Kumar – Global Health Doctor and NHS Clinician

Antimicrobial resistance (AMR)

There is also increasing antimicrobial resistance to the drugs we have in our arsenal to treat these conditions. From a level of zero resistance when first discovered, to the level now where more than two-thirds of bacterial infections caught in the ICU are caused by multidrug-resistant or extensively drug-resistant bacteria.⁷

AMR is an increasingly serious threat to global public health that requires action across all government sectors and society,⁸ and new incentivised models.

“People move more now than they ever have. We migrate more than birds and geographically move more than any other animal or insect on planet for that matter”

Dr Alex Kumar – Global Health Doctor
and NHS Clinician

Can we reduce waste in medicine?

Despite limits to resources, we continue to throw away medical equipment often after only single use. Hospitals produce tons of waste every day, and there is opportunity to reduce the level of wastage. In Europe, it's estimated that waste can be reduced from anything between 75% to 98% reduction from what we currently have.⁹ High levels of healthcare waste is not only inefficient, but can also lead to disease.⁹ With the sterilisation techniques we already have at our disposal, as Dr Kumar put, "there's really no reason to be wasting as much as we do".




Dr Alex Kumar



Robert Wainwright

04 THE SOUND OF MEDICINE: MUSIC HEALTH & WELLNESS

Robert Wainwright – Global Innovation Lead – Havas Health & You
Brian Harris – Co-Founder & CEO – MedRhythms
Nigel Osborne – Co-Founder & CTO – X-System



CERTAIN MELODIES
CAN REDUCE
HEART RATE
BY **15%**¹²

Music is deeply entrenched within us from before we're born, and is a universal feature of human societies, due to its ability to trigger strong emotions and affect moods.¹⁰

The positive effects of music therapy are nothing new and have been known for well over 900 years.¹¹ But only more recently has this started to gain interest from physicians. In Turkey, the Istanbul Memorial Hospital use makams, or melodies, to calm a patient's heart rate, at times by 15%.¹² Some studies have even demonstrated that playing Beethoven's 5th Symphony can improve the body's ability to fight cancer.¹³ New technology, Big Data analytics and AI are finally giving us more understanding than ever in helping us unlock the role music can play in treating disease and promoting wellness.

Music and sleep

Around 40% of adults in the UK suffer from disrupted sleep,¹⁴ and music has been consistently shown to help improve the quality of our sleep^{15,16} by increasing oxytocin and levels of relaxation.¹⁴

In response, Max Richter from Universal Music Group has developed 8.5 hour-long pieces, as a "personal lullaby for a frenetic world... a manifesto for a slower pace of existence",¹⁷ to help us all drift off.

Listen for yourself here: <https://rb.gy/vtbeut>

“We need solutions that are simple to consume and there is nothing simpler than just listening. In the pharma industry we’ve seen a real easing of attitudes towards digital therapeutics but particularly those relating to musical intervention.”

Robert Wainwright – Global Innovation Lead – Havas Health & You

Can we improve outcomes using music in combination with medicine?

MedRhythms is a digital therapeutics company that uses sensors, music, and software to build evidence-based, neurologic interventions to measure and improve walking.¹⁸ Through ‘rhythmic auditory stimulation’, they help rehabilitation for patients following stroke, brain injury and rare brain diseases.

An example patient had suffered a stroke and received an hour of physical therapy, 5 days a week over 3 weeks, to limited success. After a single 45-minute session with MedRhythms, improvements were seen in; stride length, speed, and symmetry of walking, even managing a first walk unaided. There were even **carryover effects** after the session as improvements were maintained, suggesting changes in **neural plasticity** (the ability of the brain to undergo structural or physiological changes).

Their technology has even been shown to increase the efficiency of walking in terms of oxygen consumption by 10% after four 30-minute sessions.

Perhaps most exciting of all, the **‘super responders’** to therapy, who achieved the greatest improvements, were **20 years post-stroke**. These are patients thought to have plateaued so have **very limited treatment options**.

WALKING EFFICIENCY
INCREASED
10% AFTER
FOUR 30-MINUTE
SESSIONS WITH MEDRHYTHMS



Brian Harris

“While we look to equalise the access to quality of care, not only in the United States, England, in Europe, but around the world, we need solutions that are simple to consume, and there is nothing simpler than just listening.”

Brian Harris – Co-founder & CEO – MedRhythms

Find out more about MedRhythms here: <https://rb.gy/gmc9qf>

Professor Nigel Osborne, MBE, alongside the late musician Professor Paul Robertson, developed the **X-system**. This models the **human musical brain**, to predict some of the effects of music. He uses music to achieve relaxation and enlightenment, through to easing **depression and trauma**, which he saw first-hand from his work in Sarajevo in the 1990s.

Chronic PTSD also has long-term physical effects of hypertension, heart disease,¹⁹ and circulating levels of the stress hormone cortisol.²⁰

04 CONT.

The hypothalamic pituitary adrenal (HPA) axis is a major stress system, with cortisol as its main effector.²¹ For patients with PTSD, over-stimulation of the stress response can actually lead to a depletion of cortisol levels in the longer term.²⁰ Music interacts with the HPA system to help increase those cortisol levels, to control the symptoms of PTSD.

Trauma can also affect movement and breathing. Music can help with issues of either hyperactivity or sluggishness, engages the medulla oblongata (part of the brain controlling our breathing activities), whilst singing is the best exercise for the lungs.

To read more about the X-system, click here: <https://rb.gy/zm51g6>



Professor Nigel Osborne

What makes now the time to make a difference with music and medicine?

With the expected rise in PTSD following the pandemic, these strategies are more relevant now than ever.²² The pandemic has created a shift, across relationships and in our thinking, to allow ideas and inventions to come forward, including the collaboration of art with medicine.

Does the genre matter?

It's the rhythm of music that engages the motor system of the body (in our movement) via the auditory system (through our listening). The result may also be greater when we listen to music that we like.

Michael Thaut, Professor of Music and Professor of Neuroscience at Colorado State University summed this up with the phrase **"The brain that engages in music is changed by engaging in music"**²³ highlighting the need for active engagement to see the effects.

Despite this, there is still a universality in music as something that unites us and can benefit us all, as research has shown similar results from people living in India compared to those in Western Europe.





"I do have a hope, and I hope it's not a foolish one that music can bring people together as it has many times in past revolutions that have been much needed in our society"

Dr Jack Kreindler – Founder, CHHP & Chair FF HealthTech

05

COVID-19 UNPLUGGED: MENTAL HEALTH



The pandemic and mental health

'California's lockdown reduced deaths by as much as 1,661 in its first month and [that] each life saved cost at least 400 jobs'.²⁴

It comes as no surprise that following the current pandemic, there is expected to be another wave; the pandemic of mental health problems. The pandemic has put every aspect of our mental health under threat; whether that be psychological, biological, or social.

By creating online communities, initiatives like the **Frazzled Cafe** have allowed people to connect through these uncertain times. Run by Ruby Wax, comedian, neuroscientist and author, these daily meetings allow people to stay connected by speaking to others suffering similar experiences, to restore our sense of community.²⁵

For businesses, **Unmind** is a digital web-based mental health platform to empower employees to look after their mental health, which also sends data to the organisations so they can invest their resources accordingly.²⁶

Partnering with health insurance companies in the US, **Mindstrong** offers free services for those suffering with their mental health, through a smartphone app. The offering includes online therapy sessions over

Dr Jack Kreindler – Founder, CHHP & Chair FF HealthTech

Ruby Wax – Founder, Frazzled Cafe

Dr Cosima Gretton – Physician & Senior Clinical Product Manager – Mindstrong

Dr Nick Taylor – Co-Founder & CEO – Unmind

messaging, video, or on the phone, as well as technologies measuring how users interact with their phones, to link to stress, mental health symptoms, and well-being.²⁷

For many, the experiences of mental health have changed as the pandemic has gone on, from an initial response of shock, panic and uncertainty, followed by a numbness or depression, and then anger.

To face these emotions we need to educate ourselves with the help of technology. This is especially true with more changes on the horizon, as schools and businesses start to re-open, and we learn to navigate our 'new normal'.

"The same thing that has probably caused us to disconnect with people a lot of the time, which is technology, has then saved us in some way, I find that a real paradox"

Dr Jack Kreindler – Founder,
CHHP & Chair FF HealthTech

“Even though people used to put down tech and say it dehumanised us, tech is what’s connecting us now”

Ruby Wax – Frazzled Cafe

Has the pandemic shifted our narrative on technology?

Our technological world has hasn’t always received the best press. Tech was seen as addictive, detrimental to our communication skills and ability to sleep, and associated with many health conditions; from eyestrain to depression.

Through the pandemic, tech has come to the fore as a saviour for many of us, in its ability to facilitate connection.

“As a doctor I saw how physical health can impact mental health and mental health has an enormous impact on physical health”

Dr Cosima Gretton – Physician & Senior
Clinical Product Manager –
Mindstrong

Dr Cosima Gretton

Ruby Wax

With the surge in numbers requiring care, who will provide these services?

There will be a huge issue to face when discussing how healthcare systems will be able to afford this care in the long-term, or where the funding will come from, which is where digital health services can excel.

Frontline workers working in the NHS and in intensive care will undoubtedly need the most support, and digital health apps Unmind, Headspace, Big Health, and Daylight have offered their services free to NHS staff during the pandemic.²⁸

These are digital solutions that can be done alone, in someone’s own time, to equip those most vulnerable with the tools needed for resilience and general mental wellbeing.



**IN CALIFORNIA,
EACH LIFE SAVED
DURING THE PANDEMIC
COST AT LEAST
400 JOBS²⁴**

05 CONT.

“Digital for mental health has a massive role to play in that because of how scalable it is and affordable it is”

Dr Nick Taylor – Co-Founder & CEO – Unmind

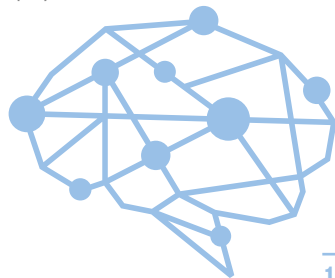


Dr Nick Taylor

How can we achieve digital health equality?

In a time when reports are emerging that BAME communities have been hit the hardest by the global pandemic,²⁹ health tech could offer a solution at the point of person to overcome these inequalities. However, many of these solutions are still limited to video conferencing, creating issues with accessibility.

Changes are therefore needed to allow means of communication through audio or telephone, as well as organisations stepping forward to finance these initiatives for their employees.



Are there any positives to be found from crisis?

Whilst the pandemic has caused panic and devastation for so many, they may be some positive cultural changes.

On a personal level, this could be the ability to find sympathy with others we know to be struggling with their mental health, to admit to ourselves that sometimes when things go wrong, it's not our fault, or to more generally commit the time to become better educated on our own mental health.

This change has been echoed higher up too, where executives are more willing to invest in support programmes to help their employee's mental health.

FINISHING WITH A GUIDED MEDITATION

Andy Puddicombe – Co-Founder –
Headspace

Dr Jack Kreindler – Founder,
CHHP & Chair FF HealthTech

To end the day, Andy Puddicombe from Headspace took us through a 10-minute guided meditation, to encourage us all to take the time to breathe and notice our thoughts. This summarised the afternoon's discussions on the importance of taking the time to protect our mental health and used a brilliantly simple piece of digital healthcare to do so.

To find out more about Headspace, click here:
<https://rb.gy/dzaaad>

"Meditation in these times is not about unplugging, but plugging back in"

Andy Puddicombe – Co-Founder – Headspace

10 
MINUTE
MEDITATION



Andy Puddicombe

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