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GENERATION NOW

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The impact of the
millennial healthcare
professional on
our world

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GENERATION NOW

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The impact of the
millennial healthcare
professional on
our world
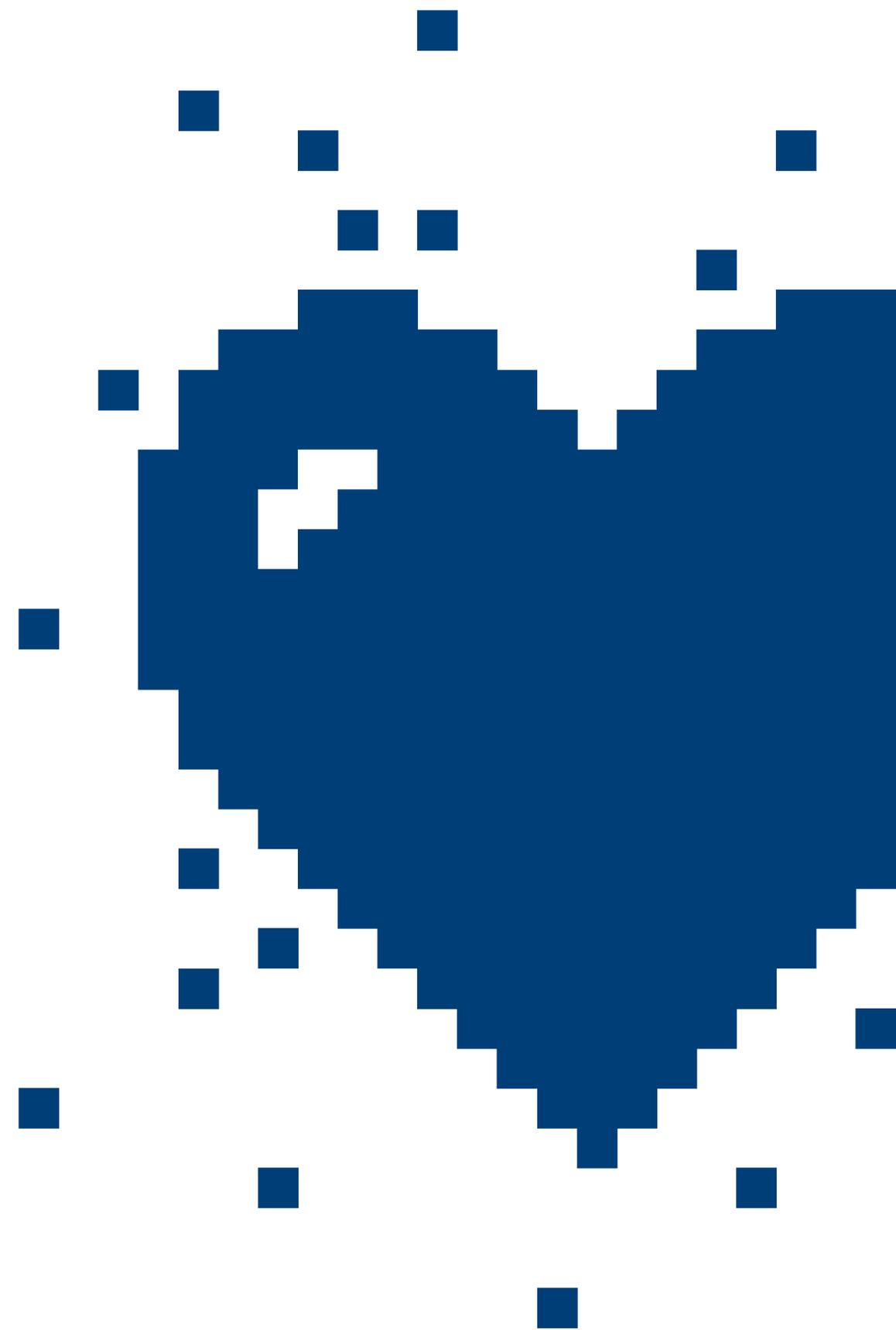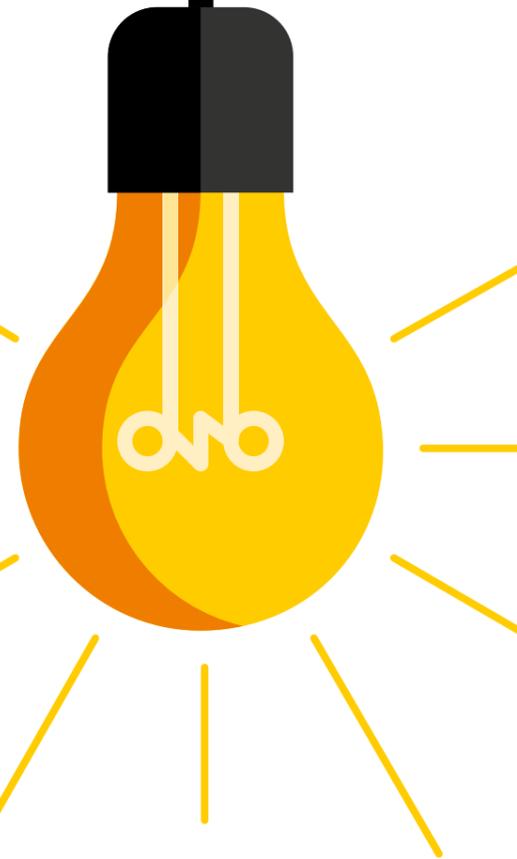
> *The young do not know enough to be prudent, and therefore they attempt the impossible — and they achieve it, generation after generation.*

Pearl S Buck
Writer and novelist

We believe that pharma companies have a choice to make: they can either be commodity-based manufacturers of pills, or they can be partners to patients and physicians in the design of better treatment journeys. And, in the age of the socially conscious, there is only one choice for sustainable success.

Healthcare is in an age of transformation, with new science, new technology, new funding models and newly empowered patients. But at the heart of this transformation will be the millennial healthcare professionals (mHCPs). They exhibit different behaviours, different triggers and different ambitions, which must be understood by pharma if the true benefits of their progress are to be realised.

In this paper we will discuss the changes in society that are transforming physicians, and how we as an industry can best evolve to support stakeholders, improve outcomes and build brands.

This paper draws on in-depth interviews with leading mHCPs, as well as with medical students, academics, technologists, prosumer patients and entrepreneurs from around the world, including the EU, North America and Asia.

GENERATION
NOW
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The impact of the
millennial healthcare
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03
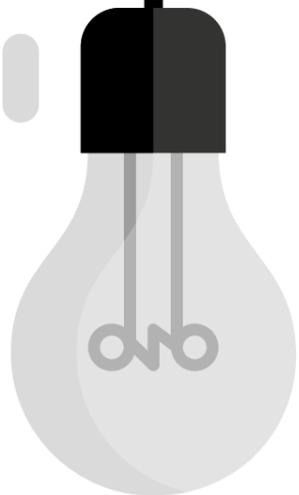
MI LLEN NIA LS?

WHO ARE THE

Technically speaking, the millennial generation came of age in the new millennium, born in the 1980s[1], with the oldest now in their mid-30s.

1   Pew Research
     Center, Millennial
     Research. 2015
     http://pewrsr.
     ch/1O0XSSe
     (Accessed May
     2016)

2   Havas Worldwide
     Report. Millennials:
     The Challenger
     Generation.
     Vol.11 2011. http://
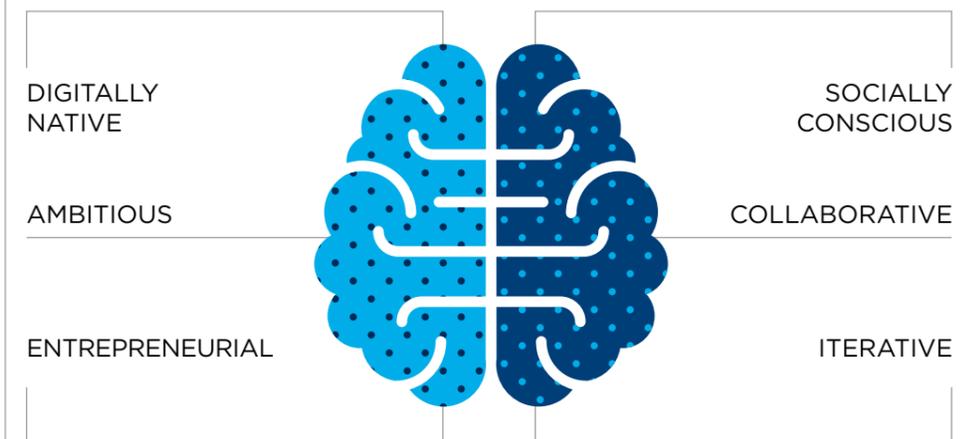   bit.ly/1XwOIle
     (Accessed May
     2016)

This new generation is challenging the status quo the world over. In Norway they are called 'Generation Serious', in China they are referred to as 'ken lao zu', or "those who bite the old folks", and in Japan they are called 'nagara-zoku', "the people who are always doing two things at once", a term that could be seen as crediting their ability to multi-task or, more likely, criticising their lack of focus.
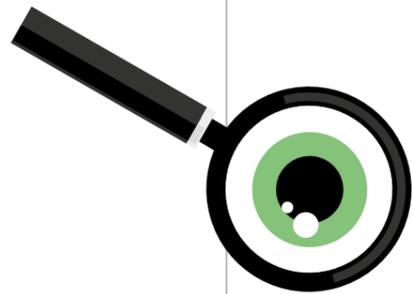
As digital natives, they have spent their adult lives in an ultra-connected world; for them, the web, social media and mobility are just part of the scenery. They were Googling at 10, using Facebook at 12, and have had a smart phone since they were 15; they've not lived through a digital revolution, for them it has simply been a digital evolution.

However, for the purpose of this white paper, we believe that millennials cannot be classified simply on production of a birth certificate. The millennial generation are defined by their attitudes, their behaviours and their ambitions, not their date of birth.

As Darwin would suggest, they have evolved to meet the new environment. The question now remains, can pharma follow suit?

MILLENNIAL CHARACTERISTICS[2]

DIGITALLY
NATIVE

SOCIALLY
CONSCIOUS

AMBITIOUS

COLLABORATIVE

ENTREPRENEURIAL

ITERATIVE

GENERATION
NOW
—
The impact of the
millennial healthcare
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our world

04

WHO ARE THE
MILLENNIALS?

NEW
SCIENCE
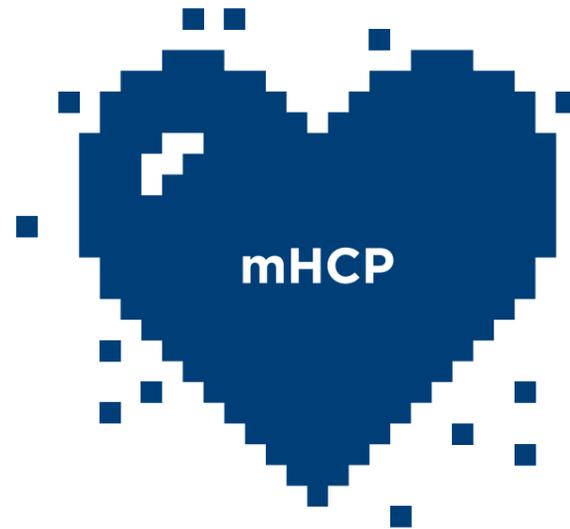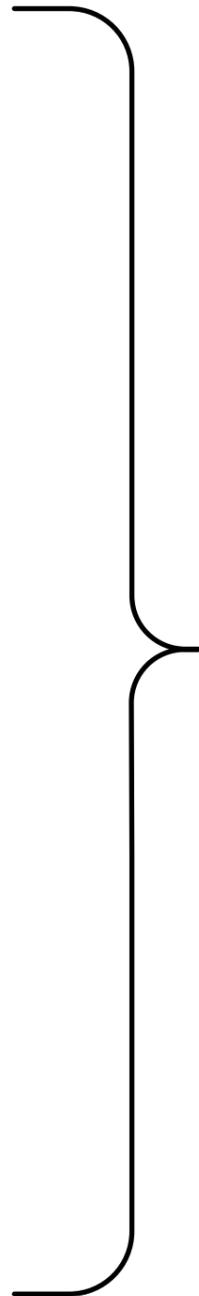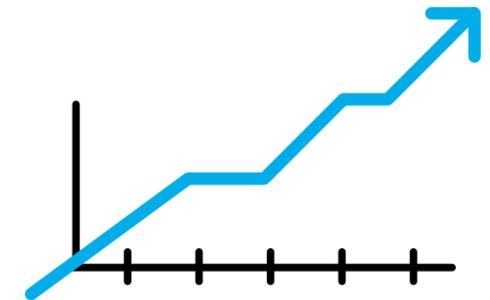
NEW
TECHNOLOGY

NEW
PATIENTS

NEW
FUNDING
MODELS

mHCP

=

IMPROVED
OUTCOMES

DRIVING
COMMERCIAL
SUCCESS

THE MILLENNIAL HEALTHCARE PROFESSIONALS

GROWING UP IN A DIGITAL WORLD

3   The Henry J. Kaiser Family Foundation. State Health Facts 2015. http://kaiserf.am/1VfEncN

4   Ofcom. Media Use and Attitudes Report 2015 http://bit.ly/1E3fFyO (Accessed May 2016)

5   Microsoft Canada. Attention Spans Reports. Consumer Insights. 2015. http://ind.pn/1KJFWr0 (Accessed May 2015)

6   Bangor University & TalkTalk Mobile. Linguistics Research. 2015 http://bit.ly/1HseRrW (Accessed May 2016)

7   Pew Research Centre. Millennials Report: Confident, Connected, Open to Change. 2010 http://pewrsr.ch/18DDEvR (Accessed May 2016)

8   LeadDoc. Peek into the world of generation Y physician. 2014 http://bit.ly/1TVqMCj

There are nearly 20,000 medical school graduates each year in the US alone.[3] During the seven years that have passed since completing their secondary education, these graduates will have spent nearly a year and two months of their time online.[4] Millennials have had to adjust their habits throughout their digital lives, from dial-up to broadband to 4G and soon to 5G, Facebook statuses and tweets to selfies and SnapChat snaps. More than previous generations, they are open to change, existing in a constant state of beta with their digital tools and services of choice. Those that become a constant, such as Facebook, Amazon, Apple, etc. must themselves evolve and innovate. The services that don't will burn brightly before fading away. It is this perpetual state of change that ensures that the behaviours and habits of millennials are fluid and dynamic, and that they are the chameleons of the digital world.

Their constant connectivity has increased their ability to multi-task; research has found that the average attention span has fallen to just 8 seconds.[5] The same survey revealed that early adopters and heavy social media users front-load their attention and have more intermittent bursts of high attention.[5]

93% of 16- to 24-year-olds have a social media profile, and they make much greater use of image and video-based services, being three times more likely to use SnapChat and twice as likely to use YouTube than adults in general.[4]

This prolific use of social and instant messaging platforms is changing the very essence of how we communicate. Research by TalkTalk Mobile in 2015 found that emojis are the fastest growing language ever, with eight out of 10 people using the symbols and icons to communicate. The survey even revealed that 72% of 18- to 25-year-olds found it easier to put their feelings across using emojis than with words.[6] This new visual language is key to engaging millennials.

83% of millennials sleep with their cellphones.[7]

Millennials don't just rely on digital for entertainment and socialising, they learn and develop in the digital world. Dr Jack Kreindler states: "This concept of libraries of books that were written based on research that took 5–10 years for scientists to publish, is not the reality of how disease and treatment works or indeed how knowledge is now shared." As a result, medical students now use online academic databases rather than textbooks in medical school libraries – not only does this suit their habits more, but also, the fast pace of research has made real-time databases a far superior source of current knowledge.[8] Their online learning experience is far richer, through use of films, podcasts and remote one-to-one teaching.

A survey of 2,000 people found that the average person hasn't written by hand for 41 days.[12]

9   Ashfield Healthcare. The future of meetings. 2016 http://bit.ly/1TrNAcv (Accessed May 2016)

10 ON24 & Meddata. Survey of Physician Digital Behaviour. 2012 http://bit.ly/1W0dryU (Accessed May 2016)

11 M3 and Pharmaphorum. How do Doctors want to engage with pharma on new products? 2014 http://bit.ly/1R6IIP7 (Accessed May 2016)

12 Docmail. The death of handwriting. 2012 http://bit.ly/1srFRoG (Accessed May 2016)

Healthcare is a profession that relies on continuous education. Historically, congresses have played a big part of this education, however, with the increasing sophistication of virtual conferencing technology, the heightened expectation of HCPs, and their increased inclination for live and recorded medical education, we are seeing a transition to virtual conferencing. One survey found that 40% of specialists are dissatisfied with physical meetings.[9] Another survey revealed that 84% of physicians would prefer to attend CME (continuous medical education) events online.[10] Those surveyed listed the benefits as the ability to view the content on-demand whilst avoiding the hassles and costs of travelling.[10] Another survey revealed that more than 80% of European doctors agree that they are interested in staying up to date with new developments about pharmaceutical products.[11]

With professionals able to retrieve so much data and information via a swipe of their smart phone, students may not need to learn so much by rote, and could instead spend more time developing the expertise as described by Dr Kreindler:

"We know more from the advertising industry about when to inspire and motivate people to make a change, than we do in medicine. And we need to harness that and learn from it, in order to make everyday practice on the wards better."

Social media habits[4]
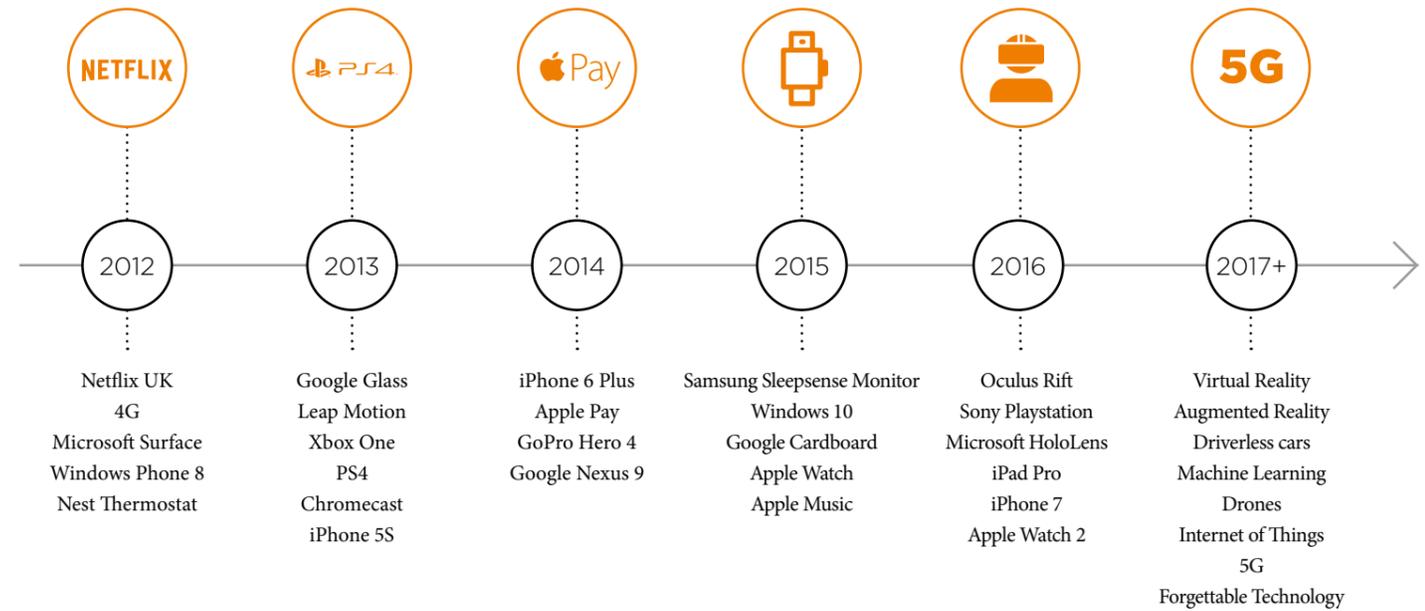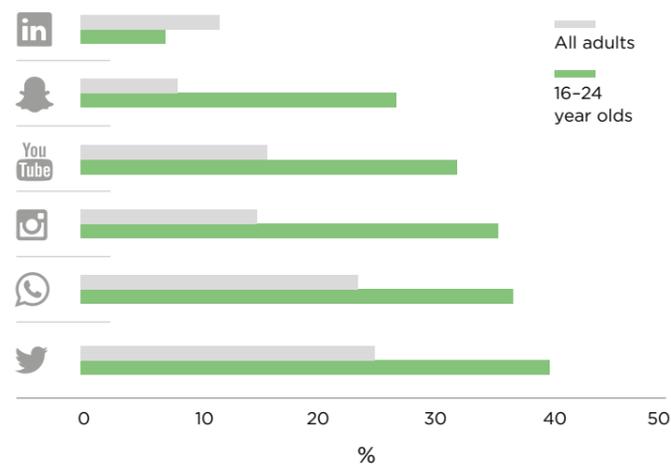
mHCPs have grown up in a digital world. They are digital natives. They understand the digital landscape and respond effectively to its many evolutions and incarnations. They appreciate the visual nature of the environment. They are confident and bold, and are capable of leveraging the full power of the digital world, whilst broadening their horizons, interests and skills.

The Millennial HCP

Timeline:
- 2012: Netflix UK, 4G, Microsoft Surface, Windows Phone 8, Nest Thermostat
- 2013: Google Glass, Leap Motion, Xbox One, PS4, Chromecast, iPhone 5S
- 2014: iPhone 6 Plus, Apple Pay, GoPro Hero 4, Google Nexus 9
- 2015: Samsung Sleepsense Monitor, Windows 10, Google Cardboard, Apple Watch, Apple Music
- 2016: Oculus Rift, Sony Playstation, Microsoft HoloLens, iPad Pro, iPhone 7, Apple Watch 2
- 2017+: Virtual Reality, Augmented Reality, Driverless cars, Machine Learning, Drones, Internet of Things, 5G, Forgettable Technology

© Havas Lynx

AN EVOLVING MIND

13 Pepsi Optimism Project. 2008. http://bit.ly/1R6meY1 (Accessed May 2016)

Millennials have lived through almost constant change, in politics, technology, and communications, to name a few. As a generation they are comfortable with change and happy to embrace new ideas and opportunities. It is no surprise that a 2008 Pepsi Refresh Optimism report on millennials found that they tend to embrace change, and 95% make positive associations with the word.[13]

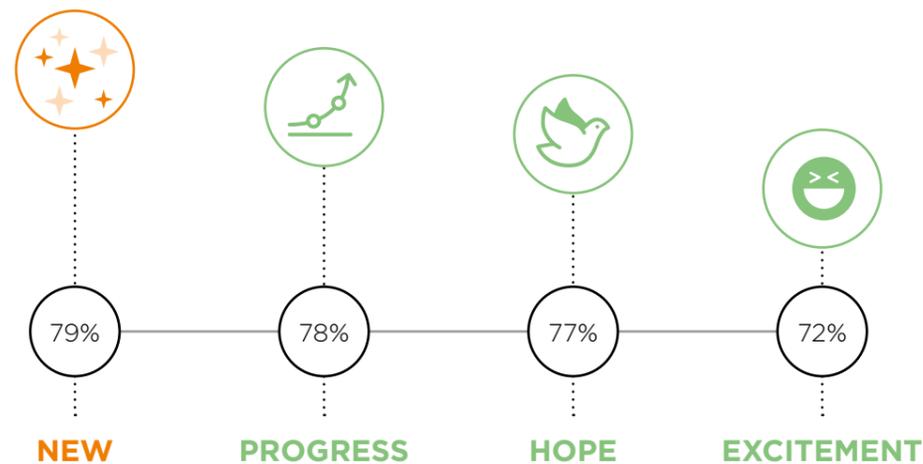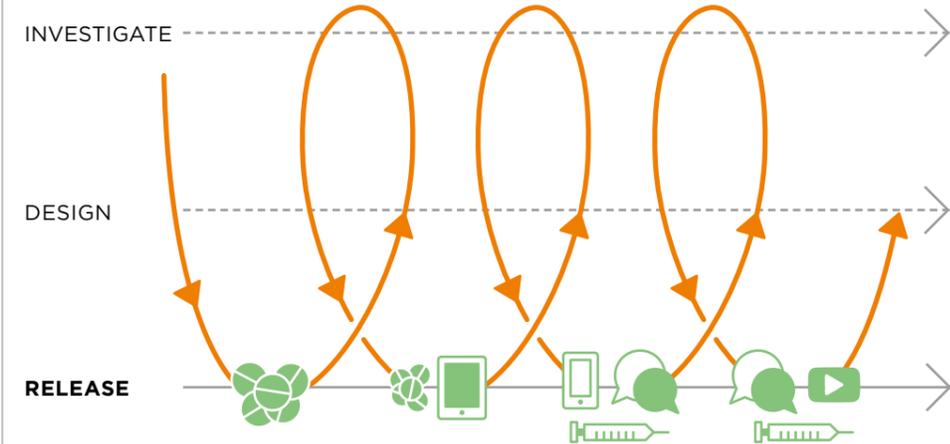Patients and healthcare professionals now have access to ever-increasing amounts of information, both from big data and from personal data. However, it is not the overwhelming amount of data that is important, it is how we use it.

The top words millennials associated with change were[13]

NEW	PROGRESS	HOPE	EXCITEMENT
79%	78%	77%	72%

The challenge to mHCPs will be to leverage their agile, iterative methodologies within an established, rigorous industry that, rightly, prioritises not failing.

INVESTIGATE

DESIGN

RELEASE

"The next generation of medical students should be trained in what all these types of new data mean," says Dr Jack Kreindler. "Taking data and making it quickly digestible by human beings – who in the end are still making decisions for other human beings – is going to be a big area of challenge."

This will involve software looking for patterns in patients' data that preceded previous incidents of a disease, then watching for their re-appearance. Better use of patient data will also allow ongoing, iterative trials of drugs and processes, learning from what works and what fails, Kreindler says, allowing personalised, precision healthcare.

Iterative development in healthcare will allow faster improvements, greater involvement of patients in their care and much-needed increases in productivity.

Thomas Watson Sr, the Founder of IBM, said, "The fastest way to succeed is double your rate of failure." In many industries, particularly technology, this is sound advice. However, in healthcare the consequences are much more severe. The challenge to mHCPs will be to leverage their agile, iterative methodologies within an established, rigorous industry that, rightly, prioritises not failing.
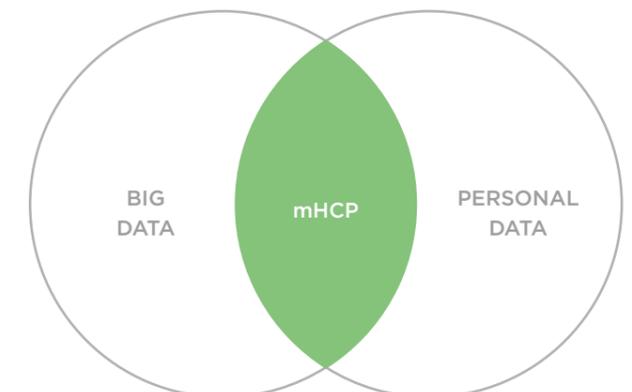
BIG DATA   mHCP   PERSONAL DATA

WELCOMING
THE ENTREPRENEUR

Research by Indigenus Network found that 2% of mHCPs are currently involved in entrepreneurial activity and 31% aspire to it.[17]

14 http://merseyburns.com/ (Accessed May 2016)

15 https://www.youtube.com/user/ZDoggMD (Accessed May 2016)

16 http://www.turntablehealth.com/staff/zubin-damania/ (Acessed May 2016)

Healthcare systems are encouraging mHCPs to broaden their career structures, allowing them to take time away from clinical practice to explore other opportunities to improve health. NHS England has set up a Clinician Entrepreneur Programme, with the initial group applying in December 2015, which is designed to let trainee doctors spend part of their time working as entrepreneurs. "It's an opportunity for clinicians to broaden out their skill sets to areas they wouldn't have done before," says Dr Mahiben Maruthappu, adding that young clinicians are likely to seek portfolio careers, where they combine medical practice with technology development and entrepreneurial work.

As a result of this programme, Dr Jack Kreindler believes that mHCPs will "actually now have the opportunity to spend half of their time in start-ups and in transformative companies that are going to do more for outcomes-based medicines". However, he adds that pharmaceutical companies such as Novartis and Merck are involving themselves by setting up venture-capital funds.

We are starting to see more and more examples of mHCPs coming up with great results from their entrepreneurial work. Chris Seaton, a former Royal Army Medical Corps captain, developed the Mersey Burns app while studying for a PhD. It automates the process of working out fluid levels for burns victims, which was previously calculated with pen and paper, and is one of the first medically-regulated phone apps in the UK.[14]

Dr Zubin Damania produced a series of YouTube musical parodies as 'ZDoggMD'[15] and gave an April 2013 TEDMED talk that combined stand-up comedy with his problems with insurers, poor technology, and his fear of making a mistake that will kill a patient. He has founded Turntable Health, an innovative primary healthcare clinic in Las Vegas, funded by Zappos boss Tony Hsieh as part of the latter's $350m Downtown regeneration project. The clinic focuses on keeping members healthy, providing inclusive classes on yoga and nutrition – the latter through an in-surgery kitchen.[16]

17 Indigenus Report. Paging Dr. Millennial. 2015 http://bit.ly/1W0fOlj (Accessed May 2016)

18 WebMD. 7 key traits of the ideal Doctor. 2006 http://wb.md/25aE6yb (Accessed May 2016)

19 Under 30 CEO. 10 qualities of a successful entrepreneur. 2010 http://bit.ly/1cp8kmW (Accessed May 2016)

Dr Arrash Arya Yassaee says newly-qualified doctors want, "a far less linear career," and that letting them look at issues facing organisations can make a difference. "We're seeing a healthcare system that is facing pressures that its never had to deal with before. Looking at it from an armchair perspective isn't particularly useful. We need people who have actually experienced it on the ground, and to not just have theoretical change but actually realise why things could practically be better and what needs to be done to empower that."

In short, millennials have watched their parents struggle through tough global economic climates. They have grown up in a world where recessions claimed retirement funds, banks crashed and housing bubbles burst. This generation has witnessed global financial crashes on an unprecedented scale and they have been left to pick up the pieces. As a result they have little trust in the traditional career path chosen by previous generations. The main question that now faces the millennial entrepreneur is what problem should I solve? And in healthcare, for the mHCP, there are many problems to choose from and they are encouraged to solve them.

CHARACTERISTICS OF A HCP[18]	CHARACTERISTICS OF A MILLENNIAL[2]	CHARACTERISTICS OF AN ENTREPRENEUR[19]
Confident	Iterative	Disciplined
Empathetic	Multi-tasking	Confident
Humane	Digital	Open minded
Personal	Global	Self driven
Forthright	Flexible	Creative
Respectful	Conscientious	Determined
Thorough	Brand loyal	Passionate
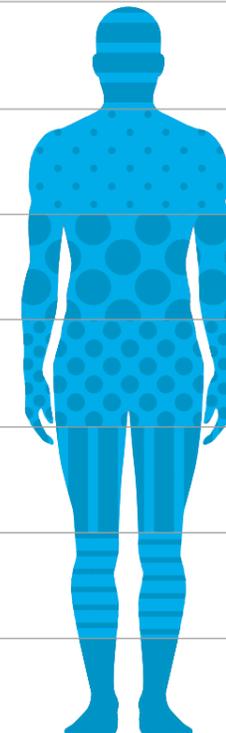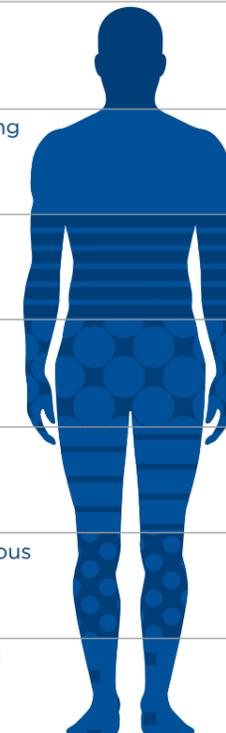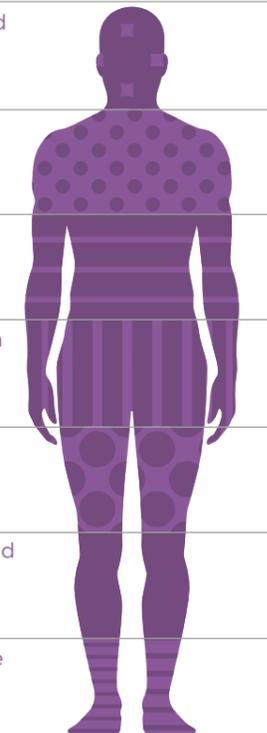
A GENERATION TO DO GOOD

20 Comparing millennial and generation X medical students at one medical school. 2006 http://1. usa.gov/22f70ru (Accessed May 2016)

21 The Times. Heart attacks are blamed on statin scare stories. 2016 http://bit.ly/1smQjOg (Accessed May 2016)

22 The Guardian. MMR links to autism dismissed by huge study. 2008 http://bit.ly/1WBr6Ng (May 2016)

23 Bad Astronomy. Gardasil: More anti-vax nonsense collapses under the gaze of reality 2016. http://slate.me/1JFqYqs (Accessed May 2016)

24 http://www.marckoska.com/profile.htm (Accessed May 2016)

25 The Guardian. One man's campaign to eradicate the dirty needles that kill 1.3 million a year. 2015 http://bit.ly/1EnQBHa (Accessed May 2016)

26 http://safepointtrust.org/ (Accessed May 2016)

27 Adroit Digital. Millennials, The new age of brand loyalty. 2014. http://bit.ly/1UCDUSr (Accessed May 2016)

28 ABPI. Patient support programmes with medicines optimisation - the pros and cons. 2013 http://bit.ly/1Yz1r5l (Accessed May 2016)

29 Havas Lynx. Smiles that save lives. 2015. http://bit.ly/1WILUYt (Accessed May 2016)

The internet has dramatically changed the way we communicate and there are more opportunities than ever before for HCPs to engage with patients. Kristian Webb commented, "It was the inaccuracies in medical information online that worried me and I have a professional responsibility to put more accurate information out there. I found myself on these inaccurate websites and starting to comment." Since then, Kristian has seen his career progress at an enviable pace and has been presented with some incredible opportunities as a direct result of his online communications with patients and peers.

Research in the US in 2010 found that prosumers are less likely to automatically accept and more likely to ask for a second medical opinion, with the internet seen as a good source of information and support.[20] However, in a few cases, inaccurate information can kill by causing patients to give up medicines or avoid vaccinations. Danish research published in 2015 covering 700,000 people taking statins suggested that exposure to negative news stories about the drugs were linked to 1% of deaths from cardiovascular disease associated with early discontinuation of statins.[21] The UK experienced a massive increase in measles cases following the 1998 publication of since-discredited research linking the MMR vaccine to autism[22], and 'anti-vax' campaigns in the US and Australia have led to similar increases, in some cases even linked to deaths.[23]

"I believe that the responsibility of providing accurate information falls with doctors and pharma companies. No-one knows their product like pharma companies so they obviously have a responsibility to start to educate and inform, not only to the patients that are already on their drugs but also to patients who are looking at their options," says Kristian Webb.

CASE STUDY

MARC KOSKA

In 1984, Marc Koska read an article that predicted HIV would spread widely via the use of unsafe injections. He writes, "Appalled at the prospect of such an avoidable catastrophe, I decided there and then to try and do something about it."[24] The prediction, sadly, turned out to be true: syringe reuse now accounts for 1.3 million deaths[24] – more than malaria. Koska set out to learn everything he could about public health policy and syringe design.

Today, over 30 years on, Koska's solution to the problem, the low-cost K1 syringe – that locks down after a single injection, preventing reuse – is in use by millions. But he hasn't stopped there: in 2006 he launched the SafePoint Trust, which aims to educate both healthcare workers and the general public in the developing world about the dangers of syringe reuse.[25]

My generation has the power to change the world[2]
18–25 year olds agree

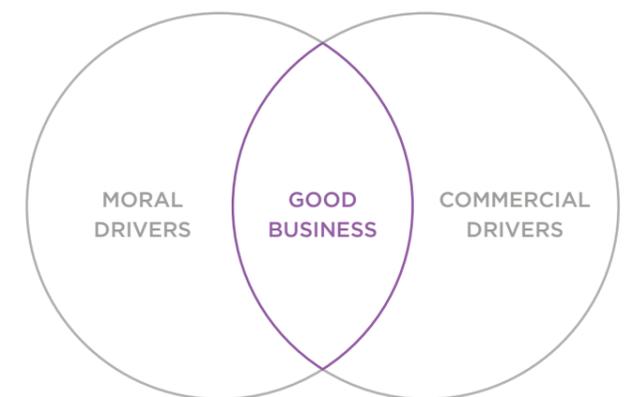| 82%	89%	81%	88%	80%	68%	83%	91%
WORLDWIDE	PROSUMERS	MAINSTREAM	UNITED STATES	UNITED KINGDOM	FRANCE	CHINA	INDIA

In healthcare, the availability of multiple treatment options and choices, and the rise of the empowered patient (typified by shared treatment decision making) means pharma companies need to find new patient-focused ways to compete and stay ahead. Beyond-the-pill services, patient support programmes and the like represent a well-trodden path, but the millennial patients of tomorrow are more demanding. They require tailored treatment programmes that consider their lifestyle and work around them. Adherence is flipped on its head and the problem becomes reframed, from "How can we make a patient adhere to our drug" to "How can our drug adhere to this patient's lifestyle".

Consumers are fiercely loyal to the brand's they like to consume, and see a brands values as an extension of their own. One study revealed that 64% of millennials are more brand-loyal or as brand-loyal as their parents.[27] But what does this mean for healthcare? Could the millennials' brand loyalty be secured in healthcare by providing and supporting a seamless patient journey? If a patient feels so understood, supported and cared for by one pharma company's approach, would they not want to go back to that same company when they have a different ailment requiring a different drug?

One study found that 61% of specialist physicians would choose a treatment partly based on the availability of the patient support programme[28] suggesting that mHCP brand loyalty can be secured through supportive treatment programmes that meet more than the minimum requirements.

Millennials are ambitious and they want to change the world for the better. They live in a world of transparency and value ethically minded and socially conscious business models. In healthcare, this means our business should focus on treating the patient as a whole rather than merely selling a drug. Not only is it the right thing to do, it is also the only sustainable business model in the millennial age.

Moral & commercial drivers[29]

MORAL DRIVERS   GOOD BUSINESS   COMMERCIAL DRIVERS

WORKING TOGETHER AND SHARING

30 https://www. doximity.com/ about/press (Accessed May 2016)

31 http://www.sermo. com/what-is-sermo/overview (accessed May 2016)

Personality score[20]

| | Millennial mean | Generation X mean |

Perfectionism
Self-reliance
Openness to change
Apprehension
Sensitivity
Rule-consciousness
Emotional stability
Reasoning
Warmth

2.5 3.5 4.5 5.5 6.5 7.5
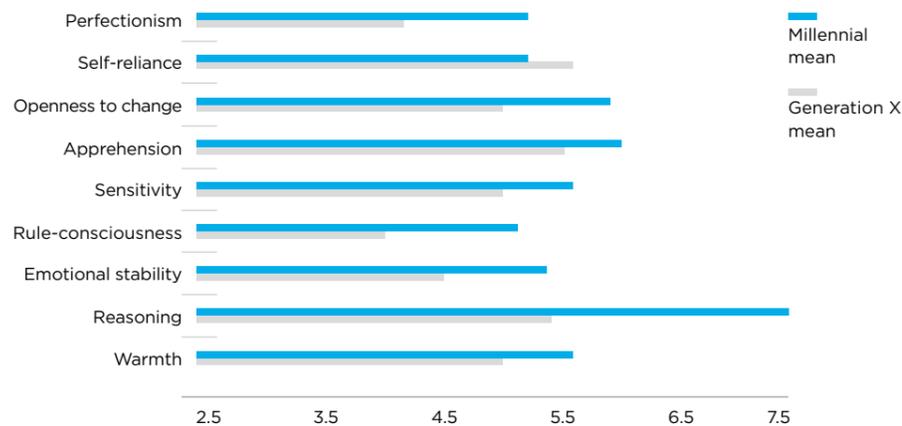
Personality tests carried out on 809 graduates of North Eastern Ohio Universities College of Medicine who graduated between 1989–94 and 2001–04 found distinct differences between millennials and 'Generation X' (born before 1980).[20] When considered together, these personality traits point towards a collaborative attitude.

mHCPs and prosumer patients are more able than previous generations to contribute to medical science, according to Dr Jack Kreindler, as research previously needed to be undertaken in a lab "is shifting rapidly to the use of technology, the use of artificial intelligence, the use of connected devices, and the use of smart phones to really address these grand challenges that we face".

Doximity and Sermo are healthcare professional's only social networks. Doximity is used by more than 60% of American physicians[30] while Sermo is used by over 550,000 doctors in 24 countries[31]; both are restricted to medical professionals and students.

32 Wired. This app passively tracks your mental health. 2014 http:// bit.ly/1Dvskhs (Accessed May 2016)

33 Havas Worldwide Report. My Body, myself, our problem. 2012 http:// bit.ly/1rTkm0b (Accessed May 2016)

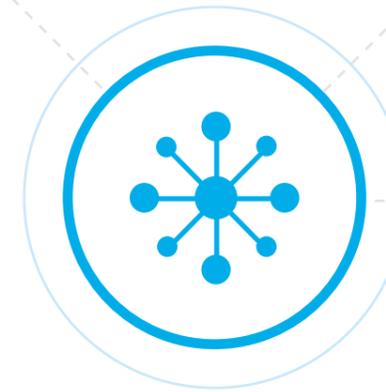"We are seeing more and more diverse people going to conferences that are there not to display scary looking graphs and lots of statistics, but actually to give a high level overview of what amazing groups are finding," says Dr. Jack Kreindler. "More and more of the audience are not the scientists or the established clinicians but they are the medical students, they are junior doctors and I'm loving seeing this emergence of great conferences."

Dr Kreindler says that social media could in future be used to collect data on the effectiveness of treatments through post-approval social trials. "Governments are being overthrown as a result of people using Twitter," he says. "The healthcare industry will be transformed as a result of not just 107 people in a trial reporting what has happened over the course of a couple of years but 10 million people having real metrics measured at home multiple times, over the course of 10 years."

Kristian Webb thinks that many HCPs would benefit from guidance on how to use social media professionally. Having never received any formal training himself, he feels that it is a key way to communicate with patients, and as such we should be encouraging others to embrace the medium.

CASE STUDY
STUDENTLIFE

There's an app for most things these days, and Professor Andrew Campbell and his team at Dartmouth College are doing the groundwork for an app that can diagnose depression.[32]

StudentLife was a ten-week trial in which 48 students had passive and automatic sensing data recorded from their phones to try to gauge their mental wellbeing. The prototype application took data from each phone's microphone, accelerometer, light sensor and location sensor, and ran these data sets through a machine learning algorithm to find patterns in sleep, conversation and activity data.

"The big leap is yet to happen but we've made a great start," says Professor Campbell. Campbell's ultimate goal is to see a system that can not only detect your mental state automatically, but intervene where necessary. So that if it notices someone isn't sleeping enough or seeing many people, it can deliver some timely advice or book them in for a medical appointment.

Millennials' relationship with health[33]
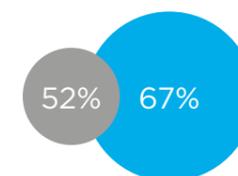
52% 67%	44% 62%	62% 75%
I pay a lot of attention to health issues and consider myself well informed in this area.	I have become a stronger advocate for my own health and/or my family's health; I no longer automatically accept what the doctor tells me.	The Internet is a good source of information and support for people with health problems.
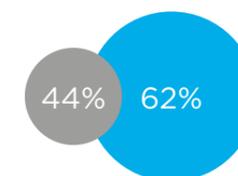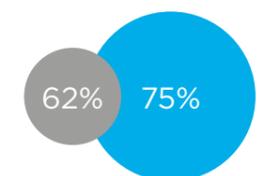
MAINSTREAM | PROSUMERS

CASE STUDY
NOVARTIS

There's plenty of scope for pharma to play a part in facilitating and contributing to collaborative initiatives between not only mHCPs, but also specialists from other industries. In June 2015, Novartis partnered with the COPD Foundation to host COPD Crowdshaped.[34] The two-day event brought together 50 problem-solvers to develop interventions to support people living with COPD in a fast-paced 'hackathon' environment. Made up of bright minds from the likes of Google, MIT and Panasonic, and chaired by world-leading tech innovator and entrepreneur, Yossi Vardi, the team generated and honed seven "brilliant and potentially life-changing new ideas".

34 Novartis. COPD Crowdshaped. 2015 http://bit.ly/1YBiXWq (Accessed May 2016)

Kristian Webb adds that given the rise of online reviews, mHCPs need to be encouraged to go online: "We have to get online to protect ourselves, to voice our opinions, voice our thoughts." He points out that many review sites do not offer the opportunity for healthcare providers to reply, and anyway, responding would be likely to fall foul of confidentiality rules: "By putting themselves online, they have a bit more control over their online presence and how they are portrayed to the public."

Indigenus Network's research found that 54% of mHCPs think that pharma has a valuable role to play, although only 43% think the relationship is currently good.[17]

35 Forbes. Can Doctors Improve Patient Outcomes With Social Media? 2015 http://onforb.es/1WCkIW9 (Accessed May 2016)

36 Wired. Diabetes Patients Are Hacking Their Way Toward a Bionic Pancreas. 2014 http://bit.ly/1xguSji (Accessed May 2016)

In a recent interview with Forbes magazine, Dr Kevin Campbell, MD, FACC commented: "When I started using social media, I realised it was a powerful tool to communicate to patients, to other physicians, interact with scientists across the world, educate myself, educate others, and share ideas. I saw that, although many of the top level executives in the Forbes 500 are on Twitter, few doctors are. I made it my mission to figure out why that was, and then to change the culture." He then added, "Social media is a great way to support patients. Patients are already in cyberspace, and social media allows physicians to figure out what they are thinking, what they are doing, what we can do better to serve the patients' needs."[35]

Millennials have grown up in a world of constant connectivity, with access to more information, more people and through more channels. They are no longer just witnesses to decisions and developments that will inevitably have an impact on their lives, they can now actively join in the debate and be heard. These new channels of communication present new opportunities for collaborative partnerships between companies and individuals. Together, their collective knowledge and shared experience will dramatically enhance products and services to improve outcomes.

CASE STUDY
JOHN COSTIK

New York State programmer John Costik wrote an Android app which lets him monitor the output of an implanted glucose monitor in his four-year-old son Evan, who has diabetes. This means he can use his smart phone, rather than having to rely on a display unit that had to stay physically close to his son, making it easier for Evan to play football. Costik tweeted about his app leading others to do likewise, with one programmer blogging about an app he wrote for his girlfriend. However, they are wary about sharing code and algorithms, partly due to the fear of legal consequences from an incorrect dosage.[36]

Belief in social
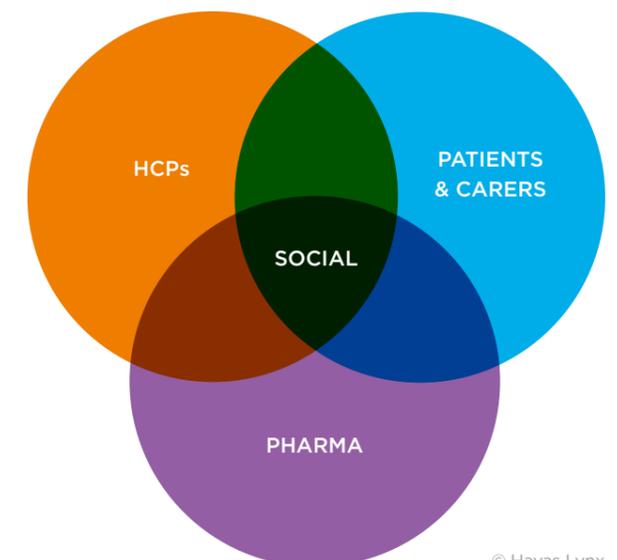
© Havas Lynx

NEW AMBITION

mHCPs are a new breed. They present an incredible opportunity for our industry, pushing boundaries, and challenging conventions.

37 Pricewaterhouse-Coopers. Medical cost trend. 2016 http://pwc.to/1WCkTke (Accessed May 2016)

38 World Health Organisation. Global health workforce shortage to reach 12.9 million in coming decades. 2013 http://bit.ly/ZMg8cv

In countries across the world, healthcare has greatly increased as a proportion of national economies, a trend which is clearly unsustainable but is continuing: PricewaterhouseCoopers estimates that US healthcare costs continue to increase at 2% above the general inflation rate.[37] At the same time, the pressures on healthcare continue to grow through increasing lifespans and better survival rates from diseases; while this is fantastic news for us as patients, it means we cost healthcare systems more across our lengthened lifetimes.

The World Health Organisation has estimated that the world will have 12.9 million fewer healthcare workers than it needs by 2035, up from 7.2 million in 2013.[38]

The demographic pressures that are partly responsible for driving the growth in demand for healthcare are also squeezing its supply, as in many countries the baby boomer healthcare professionals born in the 1940s and 1950s retire, exacerbating shortages of staff. The World Health Organisation has estimated that the world will have 12.9 million fewer healthcare workers than it needs by 2035, up from 7.2 million in 2013.[38]

mHCPs are a new breed. They present an incredible opportunity for our industry, pushing boundaries, and challenging conventions. Through technology, science and innovation, they will change the way healthcare is delivered across the world. They have witnessed tough global economic climates and have little trust in the traditional career path model favoured by their parents' generation. Globally, they are accepting and embracing the challenge to fix the failing healthcare system, and they are excited by the changes that will inevitably lie ahead. They have grown up in the digital world and have a better understanding of technology than their predecessors. Combining these factors with their willingness to share experience and knowledge, form new partnerships and collaborate, and take calculated risks, this generation will dramatically transform our industry to enable better outcomes for all stakeholders.

APPENDIX

DR JACK KREINDLER

Jack's background is in emergency medicine with a special interest in high altitude physiology. Jack is a medical technology entrepreneur in the areas of wireless bio-sensors and artificial intelligence. Jack lectures internationally on health risk management, performance optimisation and the future of medicine. Jack has appeared on several BBC programmes and even taken on the UK's number 1 cage fighter to highlight the different treatments people can adopt to manage their pain.

DR MAHIBEN MARUTHAPPU

Mahiben Maruthappu is a practicing doctor and Senior Fellow to the CEO of NHS England, advising on £100 billion of health spending. He focuses on innovation, technology and prevention, co-founding the NHS Innovation Accelerator and the NHS Diabetes Prevention Programme. He has advised a range of organisations, including the Swiss government, Experiment Fund and the WHO. Maruthappu has a strong interest in research with over 80 peer-reviewed publications and 50 academic awards. He is chairman of the UK Medical Students' Association, and has written three medical books. Maruthappu was educated at Oxford, Cambridge and Harvard universities; he was the first person from British healthcare included in Forbes' 30under30.

DR ARRASH ARYA YASSAEE

Arrash is a newly-qualified junior doctor at Newham Hospital and Think Tank Lead for the Faculty of Medical Leadership and Management. Arrash has worked extensively in areas of policy development, including projects with the Department of Health, Public Health England, UN bodies and the House of Lords.

MATT EAGLES

Matt Eagles was diagnosed with Parkinson's Disease aged just eight. He has spent much of his life struggling with the disease, yet he is now able to manage his condition after having electrical implants fitted in his brain to control the symptoms. Matt's story has been covered by the national press and he has appeared on ITV and the BBC, sharing his experience about living the disease. Matt has had several articles published, most notably in Parkinson's Europe and Primary Care Today. He has also written a series of articles for Parkinson's UK in their Quarterly Journal. Matt talks about the importance of listening to, and engaging with, the patient community to improve outcomes for all.

KRISTIAN WEBB

Kristian is on the International Board of Heart Rhythm Examiners (IBHRE), a certified specialist in cardiac pacemakers and ICDs, and the chief cardiac physiologist in a pacemaker clinic that carries out over 4,000 pacemaker checks per year. He is the creator of the world's fastest growing cardiology website www.pacemakerplus.com, and author of several books including Pacemakers Made Easy. Kristian's contribution to patient education saw him collect the NHS Improved Excellence Award 2014 for Improving Patient Experience.

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