NEIGH BOUR HOODS OF THE FUTURE

HEALTH & CARE

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Working smarter, not harder

The gains and opportunities will redefine what it means to be human in the 21st century.

Martin Green OBE
CEO, Care England

In 20 years' time, our lives will be transformed by technology. The building blocks of this revolution are already in place. This will be remembered as a period of seismic change akin to that of the Industrial Revolution. There will be no aspect of our lives left untouched. The gains and opportunities of this new era will be immeasurable and will redefine what it means to be human in the 21st Century.

Whilst I extol the virtues of this technological era, I am also conscious that there is a caveat. Like with any major upheaval, there is the potential for positive or negative outcomes. Success requires society to have a clear vision for the technological age, and for all the agencies of society and Government to work in harmony to deliver the best outcome possible.

The ripples of change will start with a personal transformation in how individuals use technology. It will then go into our homes, where technological advances will enable us to interact with our immediate environment in new ways. Beyond this, our neighbourhoods will evolve. The patterns of how we work will develop beyond recognition. In this new era, our nation's status will be defined by the technological advance of our country, in comparison to others.

Monitor, advise and intervene

One of the myriad of things that technology will help us to do is to proactively monitor health. The future will see everybody wearing a device which will take constant measures of our health and wellbeing. These devices will identify the interventions that will support us to maintain our health. The hospital will become obsolete because the vast majority of services will be delivered remotely through digital means. In the last few years, we have seen the rise of computer-based diagnostics, which are showing a much higher level of accuracy than humans in diagnosing health conditions.

In the future, our fitness trackers will tell us the state of our health and find the solutions that will enable us to live well. We will not only receive dietary advice, but we will know exactly what our food intake has been and to what extent this either enables or impedes a healthy life. There will be continual checks on cholesterol, blood pressure, eyesight and all other aspects of health. Before a condition can reach an acute phase, the system will have identified it and sought to cure it.

Within our home there will be enormous changes to our lifestyles. In the coming years, we will see the automatic vacuum cleaner becoming commonplace, robotic assistants that can do things such as stack and empty the dishwasher, put our clothes into the wash and iron them when they are finished. These robots will be so intuitive that they can respond to a range of commands and will be able to act as both servant and companion. This sort of artificial intelligence and robotics will be particularly supportive of people who are living with long-term conditions, such as dementia or physical disability. The robot will be available 24/7 and will not need to have time off. This will lead to more independence, autonomy and choice for the citizen.

Bringing residential care into the heart of the community

The care sector, and residential care in particular, is well positioned to transform from services that support particular individuals with needs, into becoming the centre of local communities. In these centres, a range of health, care, information and lifestyle activities will be brought together in one local resource. Not only do we need to transform our buildings and our services, but we need to transform our attitudes to care and to redefine what we do and how we do it.

I have a vision which puts residential care firmly at the centre of the community. I want to see residential units providing care and support to the people who live there. I want them to be open to offering care, support and information to local people on how they can live well with a range of long-term conditions. I want us to understand that residential care centres can be the place where people's wellbeing takes centre stage, as well as their physical needs. It can become a place where every generation is catered for in a dynamic and creative environment. We have good evidence that intergenerational connections improve the lives of every citizen. We need to build on this and see care services as multi-generational spaces, where reciprocity and community connection can flourish.

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Tackling the deficit model

One of the key challenges of the 21st-century is loneliness and isolation. I think the care home of the future could be a local space where people come together to reduce isolation, to hear preventative health messages and to engage in activities that will prolong active life and sustained well-being.

All too often, current services work on the deficit model, which focuses on what people cannot do, rather than champions their abilities and work to maximise independence. However old, frail or sick we may be, we are still a citizen with a great deal to contribute. I have seen countless examples of older people acting as advisers and mentors to younger people, helping them to navigate the challenges of life. I want to see care homes nurturing the capacity of all residents and ensuring that this experience is available to all communities.

There is a paradox at the centre of our 21st-century challenge for care. That is that we will increasingly become more specialised in how we treat particular conditions. But we must remember that everything we do should be about the person, not their diagnosis. We need to be generalists as well as specialists, and this will require a revolution in how we train and support staff. Currently, residential care services tend to train people to do things to residents. In the future, we will have to be enablers and supporters, who do whatever is needed to deliver a good quality experience and a life worth living.

Harnessing data

Neighbourhoods of the future will also be very different. Our homes will be equipped with a myriad of ways in which data can be collected. Data will be brought together and used as the basis for predicting the needs of the locality and delivering creative solutions. There is currently the capacity to deliver enormous amounts of data, but often this is not well used. We are reaching the century of data, when every single act will be analysed and the data will be collected in order to inform future decision-making. This data analysis will inform such things as energy requirements within the locality, identifying any areas where there is not maximum efficiency in terms of the use of both buildings and energy. The power of data is that it can be used to inform decision-making on a large scale, and at the same time, can be used to personalise and tailor services to the needs of the individual.

Our current transport system, which is heavily reliant on human operation, will be changed into a system that works without humans and is flexible, delivering a service whenever you need it. Not only will we see driverless trains, but local areas will be crisscrossed by a range of autonomous vehicles which the citizen can call up to take you automatically from one destination to the next. The way in which the services will be controlled by computer will enable far greater use of the current road network. There will be no such thing as a traffic jam, because the system would

have identified how many people will be using the road and would have automatically re-calibrated the signalling and traffic flow system to make it work to optimum capacity. One of the most promising aspects of new technology will be the way in which we can flex and change the system in line with the needs of our society. Data collection will be done in real-time, so that the response to any challenges in the system will take place immediately.

Reaping the rewards of research

One of the areas where there have been the most significant developments technologically has been in warfare. We now have the capacity to shield ourselves from attack using satellites and drone-based weapons. These technological developments have been brought about by billions of dollars of investment, just like we saw with the space race. Eventually those technologies will make their way into our lives and will be given peaceful and useful applications. There are few of us who could imagine life without the non-stick frying pan; yet this invention is a dividend of the race to the moon. Similarly, we will see the delivery of our groceries and a range of other commodities coming directly to our door via a drone.

The only thing that could be an impediment to the march of technology and data is the response of governments. What we need is the Government to create a vision for a caring technological society and then enable individuals and organisations to respond positively to the technology challenge. This will allow them to deliver a system that works for us all in the future.

It is good to see that the Government has developed The Industrial Strategy Challenge Fund, because this will give impetus to change and a framework for development. We cannot rely on this revolution being delivered in a haphazard way, with each organisation doing things in a piecemeal, uncoordinated fashion. The reality of the 21st-century is that we will neither have the capacity nor the personnel for business as usual and our future will be dependent on our ability to harness technology and to work smarter, not harder.

It is all to play for. The future is looking very exciting.

Photo credit: Image courtesy of Care England

The blueprint for a new public health

Shirley Cramer OBE
CEO, The Royal Society of Public Health

Public health has never stood still.

Traditionally, the mission was seen as 'prevent and protect', addressing the 19th and early 20th century issues of sanitation, personal hygiene, and epidemics. But as the 20th century wore on, our population health challenges shifted towards non-communicable diseases caused by poor diet, substance abuse, and smoking. The public health vision shifted accordingly, focusing more on the social determinants of health and behaviour change. Today, these challenges are still far from resolved. If we are to keep pace with the 21st century, we must think carefully, but also boldly about the new challenges and opportunities facing us. So, if the 19th century was about health protection, and the challenges of today are around health improvement, what changes in society should shape our future vision for the public's health?

> **If we are to keep pace with the 21st century, we must think carefully, but also boldly about the new challenges and opportunities facing us.**

Our ideal neighbourhood of the future should have more inter connectivity, more green space, better footpaths, efficient and accessible public transport and more outdoor seating and venues, encouraging frailer, older people to venture outdoors.

With our increasing ageing population come new opportunities for learning and working longer. Both employers and governments need to work on policies to enable life-long learning and to keep people in the workforce. This will have benefits for society, particularly in terms of health and wellbeing. Too often, old age is debated in disparaging terms, with older people described as a burden rather than an asset. In the new era of public health, our focus should be on developing all our assets. We know that healthy retirements involve planning, continued involvement in some type of meaningful work, and engagement with communities to maintain an active social life, as highlighted by the Chief Medical Officer in 2016.[1] Making sure that those transitioning into retirement are well prepared and well plugged into their local communities is important not just for their own wellbeing in retirement, but because people in later life have a huge amount to contribute to society.

Accommodating for population shifts

Arguably the most significant ongoing shift in population in the UK is down to the successes we have had in public health. People are living and working longer than ever before, and the trend is set to continue, with nearly one in seven projected to be aged over 75 by 2040.[2] This is a positive trend, but we have done little to plan for this demographic change. We need to confront the issues that disproportionately affect the older generation – loneliness, social isolation, and insufficient

social care. These are critical problems that cannot be ignored. We must also consider the opportunities that an increasing older generation will bring to society. Key to this will be harnessing the influence of neighbourhood, community, and more generally, place as a determinant of wellbeing.

The failure to meet the accommodation needs of older people has reached a critical stage. Poor quality housing disproportionately affects older people, and much of the current stock is not designed to adapt to people's changing needs as they age; whether that be through the increasing prevalence of home-working among older people, or the increasing number that will require home healthcare. It's also vital that housing for older people is integrated into the local community and not provided in silos.

Ideas from overseas

There is a lot that can be learned from work going on overseas. One interesting example is a private sector programme in Belgium called the Inter-Generational Family loan,[3] whereby reduced rate loans are offered to low-income families who want to adapt their property to allow them to house older relatives. This is a financial incentive scheme which rewards behaviour that promotes social cohesion and community development. Indeed, schemes that promote the co-habitation of the old and young are cropping up across Europe, trialing innovative ways to bring generations together in a sustainable and positive environment.

Homeshare – when an older person with a spare room is matched with a younger person in need of low-cost accommodation – has been successful around the world, including in the USA, Australia and Europe. Here in the UK, a three-year funded and evaluated programme was recently completed, revealing a significant reduction in loneliness and isolation of those involved.[4] This chimes with the evidence about the effects of intergenerational contact that is based on trust and mutual companionship. In Spain, a project with similar aims has seen the construction of 'inter-generational buildings', consisting of rental homes reserved for both over 65s living independently and under 35s who commit to providing services to the local community.[5]

Another idea gaining international momentum is that of intergenerational care homes – co-locating nursery services and older person care under the same roof. These have been introduced to varying degrees in countries including Germany, Australia and Japan, and in late 2017 the first one in the UK opened its doors in South London.[6] In a context of scarce public finances and increasing numbers of people in need of different forms of care, it makes sense to bring groups that require similar care services, but traditionally operate in isolation, under one roof. It is an approach we would want to see emulated across the UK. Centres could provide valuable community services, such as youth groups, support groups for young mothers, and activity hubs sensitive to the strengths and needs of the local area.

Optimising health and wellbeing through our neighbourhoods

What should our homes and neighbourhood look like to optimise health and wellbeing? We would need to incorporate the very best of international and national practice which would comprise flexible, technology enhanced homes, which are well connected to people and services to ensure that no one is left without the support they need. We know that older people want to stay in their own home for as long as possible which is the best outcome for the individual, family and society as a whole. We urgently need to reduce demand on the NHS and residential care which means providing tailored home care and using technology to increase access to GPs, allied health professionals, hospitals and to decrease social isolation. We need people whose role is to coordinate a variety of services for improved individual health outcomes and to make sure that we are using public resources effectively. Buurgholz in the Netherlands operates a brilliant home care system which provides personal, tailored, compassionate support, enabled by technology, loved by families and cost effective for the state. We need all professionals in the neighbourhood to be part of the wider workforce for the public's health and to understand prevention.

Our ideal neighbourhood of the future should have more inter connectivity, more green space, better footpaths, efficient and accessible public transport and more outdoor seating and venues, encouraging frailer, older people to venture outdoors. Physical activity, fun and friends is important for all ages and older people need a broad range of participatory activities including dancing, singing, art, comedy, cooking and all the kinds of learning opportunities offered by the University of the Third Age. The Campaign to End Loneliness estimates that 10% of the UK population aged over 65 is lonely all or most of the time, this doesn't have to be the case.

Reimaging our public services

RSPH's vision for the future of the public's health and wellbeing, particularly for the most vulnerable, is that a much broader group of professionals and volunteers will be involved in improving and protecting the public's health. We call this the wider workforce for the public's health. It involves the fire service, police, and ambulance service as well as housing officers, leisure centre workers, occupational therapists and even hairdressers. We are making progress

with this vision, as thousands of individuals have received training and gained confidence in having 'healthy conversations' with people they meet as they do their jobs. Firefighters are able to coordinate prevention services with 241 fire services in England now doing safe and well checks rather than fire safety.

If we are to create the kind of neighbourhoods we want to grow old in, we need to develop comprehensive strategies around 'place'. This will involve planning for homes and neighbourhoods across a range of sectors including local government, health, transport, education, the public, voluntary and private sectors. It will involve creating a single vision; but with distributed leadership and thoughtful coordination. Most importantly, it will require us to invest wisely for the long term. Our political cycles have too often left us with short-term solutions to long-term problems, which are costly for the individual and the public purse.

If we are to successfully maximise the wellbeing of our ageing population, Government, employers, families and local communities must all play their part. Then we can support those entering and living through later life in being healthy, skilled and active members of society.

1   Baby Boomers: Fit for the Future, Professor Dame Sally Davies, Chief Medical Officer for England. Available at https://www.gov.uk/government/news/health-of-the-baby-boomer-generation

2   Future of an Ageing Population; Government Office for Science, Foresight report. Available at https://www.ageing.ox.ac.uk/files/Future_of_Ageing_Report.pdf

3   https://www.flw.be/

4   Evaluation of the Homeshare pilots, 15 May 2018. Social Care Institute for Excellence. Report available at https://homeshareuk.org/hs-resource-library/homeshare-offers-solution-to-loneliness-and-housing-crisis/

5   Foresight Future of an Ageing Population – International Case Studies; Centre for Policy on Ageing, 2016. Available at http://www.cpa.org.uk/information/reviews/CPA-International-Case-Study-12-Intergenerational-living-in-Spain.pdf

6   Apples and Honey Nursery, Nightingale House https://www.applesandhoneynightingale.com/

Photo credit: Images courtesy of Shirley Cramer

Smart homes for health and wellbeing

George Crooks
CEO, Digital Health and Care Institute (DHI)

The digital revolution has created a growing expectation that technology and information services should be integrated throughout the delivery of health and care services. The need for digitisation of health and care is fuelled by the effort to deliver more person-centred services. Ideally, these services will be delivered out of the standard clinical environment — at home, or in a community setting when appropriate. Services will be supported through self-management on the part of the citizen and the use of evolving remote monitoring technologies.

This change in approach, combined with an aging population who will typically have multiple long-term conditions, highlights the need for innovative approaches to housing. Smart housing and neighbourhoods will be pivotal in revolutionising how healthcare is delivered and will enable citizens to live long, healthy and independent lives at home.

Driving innovation

An increase in real-time data collection, driven by developments in smart housing technologies, will enable healthcare professionals to provide more appropriate treatment, support and care for their patients. The resulting datasets could inform future research, potentially helping improve prevention and early intervention. By detecting and delaying the onset of frailty, it will enable professionals to provide better support for those living with long term conditions.

In the next 10-20 years, our homes will remain largely the same. The next batch of housing stock is based on current designs and is likely to have the same structural issues we are already faced with today. However, the natural demographic shift of the young becoming older means we have a more digitally literate older population. This will more easily allow the introduction of digital tools to help us avoid some of these issues.

This means that instead of having a small number of people living in purpose built smart housing, every person will have the opportunity and capability to live in their own, digitally enhanced smart home. This can be achieved through the development of standardised smart health kits. These can be tailor made for the individual and their own health and care requirements. This will be similar to the British Gas heating and hot water HIVE system, which offers differing plans for its users and a range of supplementary smart technologies for home security and energy control.

We can bring digital health solutions together to create smart home health kits that monitor health and wellbeing. Rather than wearable technologies, the use of passive sensing will become the norm. This is technology that detects and responds to the environment, rather than the user, removing the need for individuals to remember to put on their device. Our aim is to utilise technologies that will become part of everyday living in the home and don't just remind the user that they are unwell!

The importance of collaboration

For smart neighbourhoods to be realised, we must combine the disparate array of existing digital health solutions, products, devices and services into interoperable sets, designed for easy deployment and use. It is imperative that smart home health technologies are aligned with the design of smart neighbourhoods, as well as the health and care services that support their users. Interoperability is key. In an ideal system, every device should be contextually aware of what the other devices are doing and be able to share and adapt to information without human intervention. The roll out of low-power wireless networks across the UK, and 5G mobile technologies, can transform the Internet of Things into a powerful vehicle for the common good, if we are smart in our thinking and planning.

Additionally, these neighbourhoods need to be adaptable to future change, to ensure user experience is not affected by emerging technologies. For health and wellbeing, this is especially necessary, as new health trends begin to emerge and impact citizens in ways yet unforeseen. Smart houses, neighbourhoods and cities must be developed as flexible spaces, to ensure integration of new technologies doesn't require regular physical adaption.

Digital solutions cannot and should not replace face to face care for those who require it, but they can empower individuals and communities to become more self-reliant. They can also improve the efficiency and effectiveness of formal community health and care services utilisation and management. Most importantly, they can reduce anxiety, and the feelings of loneliness and helplessness that are drivers of increased health and care service use.

The role of government

For smart housing to benefit all citizens, governing bodies across the public, private and third sector must work with health and care services to develop the infrastructure, technical architecture and clear standards for these technologies. These standards must include the development of stringent security measures, and information governance and privacy policies to which all health technologies must abide.

The health technology industry must work with governing bodies to develop new business and procurement models. This will help accelerate the uptake of technology and boost market growth within the health and care sector. Additionally, these bodies and leading industry figures must work to foster a cultural and capability shift across health and care services. This will enable the health data collected from smart housing technologies to be trusted and acted upon by health and care professionals.

However, to allow this technology to scale, there is a need for data to flow freely to where it is needed. The key to success, is a simplified but robust consent model, owned by us as individuals. It will be based on a clear set of principles and supported by a trust architecture designed to empower appropriate use. With this in place, we can truly start to make a difference.

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Reimagining the pharmacy of the future

Sarah Haywood,
Chief Executive, MedCity – partner in DigitalHealth.London

The traditional model of community pharmacy is being challenged, as £170m cuts, rising patient expectations, increasing use of automated dispensing, and the use of e-prescribing bear down on community pharmacies' income and drive change. In the next 10 years the pharmacy world will look very different – but as the third largest health profession, what do we want to happen and what changes do we need to start making now to disrupt the status quo?

State of play

The NHS is not one organisation, but many different organisations, units and departments with differing priorities, which, historically, have been a challenge to join up. However, with new models of care, roles are overlapping. The pharmacist is now expected to wear many hats: as caregiver, educator, business developer, researcher – and often as a stand-in for the GP. Services are being configured to be closer to patients' homes, as compelling evidence suggests that patients recover quicker in their home environment.

As a key member of the community where patients live, this means that the pharmacist is ideally placed to play a more prominent role in helping patients to stay and be cared for within their communities and neighbourhoods.

The system is gradually changing to allow for this, with better joining up of the healthcare system with social and community care, allowing patients to receive medications, consultations, and follow-ups at home. In addition to this, there is an emphasis on earlier screening and diagnosis to enable health practitioners, in particular pharmacists, to deliver care in the community and so prevent patient flow to primary and acute care.

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The advent of mobile apps such as Babylon Health and Push Doctor, is allowing patients to video call a private doctor, creating the potential to support pharmacist delivered care in the community. Patients, as consumers, are increasingly utilising technology to help them manage their condition, improve their health and wellbeing, and improve medication adherence, which in turn brings opportunities for pharmacies. More people managing and monitoring their condition leads to more data which can be shared with healthcare professionals, which can in turn improve diagnosis and condition management. This may will provide new opportunities for pharmacies to be at the heart of managing and curating this data.

The future

As some GPs are attracted to offering online consultations and patients are increasingly open to engaging electronically, the community pharmacy will need to fill the gap for face-to-face consultations and medicine delivery. Pharmacists should become ever more visible, providing proactive patient care, including care of people with long-term conditions, the management of medicines for people taking multiple drugs, the provision of advice for minor ailments, and the delivery of public health and health improvement services.

For example, if you are visiting your pharmacy to collect your statin prescription, the pharmacist will be best placed to advise on adherence and to determine whether your blood pressure and type 2 diabetes is being controlled. All of this can be delivered in the location that is most convenient for the patient, and in the case of community pharmacy, providing valuable continuity of contact and relationships with patients.

Medicines will continue to be supplied from community pharmacies, but as new incumbents enter the market, fulfilment will be done in new ways – through mail and even through new means, such as drones.

> **The future pharmacy will put emphasis on a health-care environment that looks at the whole person.**

The future pharmacy will put emphasis on a healthcare environment that looks at the whole person. Care will go beyond prescriptions; it will provide a view of individual health and wellness needs, with NHS and private services that offer a range of preventative and diagnostic services, as well as wellbeing services. These could be delivered in the home setting for house-bound patients, through advanced services such as genetic testing to determine suitability for certain types of medication, diagnostics for bacterial infection, and tele-pharmacy.

As Mark Ackland-Snow, who is Head of Category, Commercial Strategy and Shopper Marketing at Bayer Consumer Health, told us:

"A mindset shift is needed to ensure community pharmacy is in the best position to thrive in the future. Pharmacies that invest in understanding the needs of their customers and who tailor their offering accordingly will ensure they retain their position at the heart of the community."

The future pharmacy will no longer look like a shop of medicines, but increasingly could become more like an Apple store, where patients will access information on technologies to support early diagnosis, health education and preventative advice and services. Along with health and wellness programmes, the pharmacy of the future could offer a 'technology counter' where people can learn about new technology, such as the latest wearables and devices. These will link into existing patient care records and offer support on medicines adherence, patient information relating to medicines, apps linking to carers, appointments for services, tele-pharmacist support, link to homes through the internet of things and interface with other parts of the ecosystem such as district nurses and mental health services.

We should also not neglect the importance of relationships. As older patients become more isolated and loneliness becomes a health issue in its own right, we need to find new ways to help anchor health services to the individual and their carers and to localities. Pharmacies, by nature positioned within communities, have a pivotal role to play in developing new services and acting as the glue that brings different components together – NHS, private sector, community, social care, consumer health – deploying technology and data to act as trusted advisor and convenor. This is not without its challenges, particularly in rural communities, where the local pharmacy may not be just around the corner, but several bus rides away. There is also a need to define new business models so that pharmacy business – stand alone individual businesses and multi-national chains – are incentivised to develop services and secure their role at the heart of healthcare provision.

What now?

As the GP role changes and pharmacies take on some of their workload, they should prepare to be more actively involved in decision-making and taking on greater leadership responsibilities. Pharmacists will need to be able to move more flexibly, such as between hospital and community settings, and to understand that their roles will change throughout their careers.

To have a chance of making this happen, pharmacy must move to a culture and practice that works as one with other care providers and is centred around people's needs. The goal should be to become the care hub for a community. This also involves significant culture change within broader primary care community, including from general practice.

Increased use of technology and automation does not mean that centralised dispensing and robotics are always the solution; however, if they cost-effectively release capacity to deliver more health-related services, then they should be considered seriously.

New knowledge and skills, including enhanced clinical knowledge and technological capabilities, will be required to take on these roles and to offer a 'one stop shop' for patients to access knowledge and devices to help them manage their care. Most importantly, premises should be located in the community, and pharmacists should be prepared for home visits, whilst technicians should be handed the responsibility to prescribe and ensure accurate monitoring.

We are in an era where people are drawn to new and shiny technology, but to reach the people who have the biggest problems with medicines management, pharmacists will still need to rely on more old-fashioned methods – including face-to-face discussions and rationalised medicines routines. By retaining their proven strengths of patient interactions and medicines expertise, while taking their pick of the most relevant technological innovations, pharmacists will be able to find a solution that works for each of their patients.

Photo credit: Images courtesy of MedCity

Services are springing up to help pharmacists take on this challenge. Mark Ackland-Snow adds:

"Our research shows that pharmacists are one of the most trusted sources of advice for healthcare information. Pharmacy teams should therefore focus on keeping themselves up to date on the latest offerings in healthcare, be that new products, services or information and guidance. At Bayer Consumer Health, we've launched a training programme called Business Fit for the Future, specifically designed to build commercial confidence and business acumen, providing pharmacy teams with the practical skills to support their efforts to run a profitable business that is ready for the future."

While younger and fitter patients may appreciate the convenience of app-based medicines ordering systems, fulfilled by online marketplaces, individuals with complex, multiple health needs will require a personal and relationship-based approach and service.

With NHS budget cuts and increasing restrictions on pharmacies in their prescription duties, pharmacies have had to explore new business avenues and communications to enhance their status as healthcare providers in their own right. Adopting Healthera has been one of the strategies community pharmacies employed to control patient retention and advance their business.

"Online pharmacies have recently adopted new growth strategies by using digital marketing to target specific audiences. Although they still control less than 1% market share, their rapid rise is causing concern to high street pharmacies as more patients become aware of and trust online suppliers. Community pharmacies will need to adapt to compete with this, which is why pharmacies are turning to app-based prescribing solutions as a digital channel of patient acquisition while still maintaining the advantage of a local presence."

Quintus Liu, Chief Executive Officer at Healthera Ltd

Reducing NHS demand with digitally-enabled prevention

Dr Mark Jenkins
UK Managing and Medical Director, Oviva UK Ltd

As an NHS doctor working in A&E, and as Medical Director of the digital health company Oviva, which combines professional support from dietitians and an app & learning portal to help people change their diet & lifestyle, I was very excited when I saw that NHS England Chief Executive Simon Stevens had made prevention a key priority for the NHS as part of the Five Year Forward View. I founded Oviva as I saw the growing tide of demand from lifestyle related conditions in the NHS. I felt we had to transform the patient experience to make advice on changing their diet, activity levels and habits, such as smoking, both easier to access and lower cost than traditional face-to-face services. Fortunately, Matt Hancock, the new Secretary of State for Health & Social Care, shares this focus on prevention and digital transformation.

Prevention is so high up the agenda because of the spiralling costs of treating the avoidable complications of health conditions related to diet, physical activity, mental wellbeing and smoking. These are conditions such as malnutrition, type 2 diabetes, obesity, cardiovascular diseases and chronic obstructive pulmonary disease – conditions that I saw daily in A&E. Indeed, the costs of these conditions to the NHS per year are estimated at £20 billion, £10 billion, £6 billion, £9 billion and £2 billion respectively (BAPEN, NHS England, British Heart Foundation, British Lung Foundation).

The NHS is seeing 4% year-on-year growth in demands placed on it. This is due to the current 'reactive' care model where we only intervene when people present to A&E departments or to hospital outpatient clinics with complications of their conditions, which are often associated with long hospital stays. The UK and the NHS need to shift to a 'proactive' care model, where people at high risk of multi-morbidity and associated complications are identified in the community and supported to improve their own health before they present to hospitals.

Such a 'proactive' shift requires advanced analytics on population risk levels, in-home patient monitoring and healthcare-professional supported digital self-help tools. However, these areas have struggled to achieve investment against the backdrop of mere 1-2% annual increases in total NHS funding. Many hospitals are in significant financial deficits due to the aforementioned 4% annual demand growth. This situation is likely to further deteriorate due to 5% year-on-year cuts in Local Authority public health budgets.

The UK and the NHS need to shift to a 'proactive' care model, where people at high risk of multi-morbidity and associated complications are identified in the community and supported to improve their own health before they present to hospitals.

Excitingly, pockets of innovation are occurring. In 2017, the NHS England Diabetes team launched the largest ever evaluation of digital health solutions for diabetes prevention in the world. They recruited 5000 patients to test 5 solutions, including my company Oviva's services. Meanwhile, falls prevention technologies such as Kinesis are being tested in East Lancashire.

What we could achieve with digitally-enabled prevention in 10-20 years

The neighbourhood of the future will have 3 circles of support for people with long term health conditions that dramatically reduces their risk of requiring a hospital admission.

First, Local Authorities and NHS Clinical Commissioning Groups will have powerful risk-profiling and monitoring tools at their fingertips. This will enable them to map at the street and house level which of their local population are most at risk on a number of metrics. These include family support, mental wellbeing and presence of physiological risk factors and highest intensity users of current services. With this data, they can work with local health service providers to stratify people to undertake different intensities of monitoring and interventions that maximise reductions in future service use whilst ensuring these interventions are cost effective.

Second, local providers of care will use advanced in-home monitoring and early-warning solutions, such as tailored falls monitoring tools like Kinesis and InHealthcare, as well as wireless weight tracking with automatic updating on clinician systems and physical activity trackers to identify those at risk of malnutrition and type 2 diabetes complications.

Third, healthcare professionals will be delivering digital-enabled prevention interventions in the person's home. This means combining human support from a coach, technology for the patient to interact with their coach such as a smartphone app or web-portal, and connected devices for monitoring such as blood glucose monitors and activity trackers. Current examples being used in the NHS include Oviva's type 2 diabetes self-management programme, KiActiv's cardiac rehabilitation programme, Oviva's Adult Malnutrition programme and Silvercloud's depression & anxiety treatments. These exciting new programmes typically offer the same clinical outcomes as existing face-to-face services at less than 50% of the cost.

Oviva's type 2 diabetes programme (called Diabetes Support) helps people with diabetes understand their condition through engaging videos and podcasts, learning how to change their behaviour through dedicated support from a dietitian, and monitoring their food intake, activity and weight using the Oviva smartphone app. With this revolutionary approach we have shown equivalent outcomes to face-to-face interventions at less than 25% of the cost, and cost savings of c. £900/patient. If this was scaled to 100,000 people with type 2 diabetes per year, the NHS would save over £90 million pounds per year by reducing avoidable complications and medication costs.

Diabetes Support is now commissioned in over 40 NHS regions (called Clinical Commissioning Groups), and is one of the key reasons why Oviva is one of the fastest growing digital health companies in Europe.

Innovate UK has been crucial to this success by financing our real-world evaluation of the programme, which NHS clinicians state is essential to drive adoption.

What needs to be done now to disrupt the status quo

There are two key barriers to implementing these solutions today.

First, a risk-adverse culture among healthcare professionals where all new models of care are expected to have full randomised control trials to support their use. This is a major barrier for SMEs developing them, as such trials are prohibitively expensive for SMEs to conduct (at £1-5 million each) and also take 2-3 years to complete. This is too long for many of them to wait for first revenues.

> **All funds are pre-allocated to existing services which themselves do not have the money or time to invest in change due to the ever-rising tide of demand.**

Second, as almost all Local Authorities and NHS Clinical Commissioning Groups are in deficit there is very little money to invest in new solutions. All funds are pre-allocated to existing services which themselves do not have the money or time to invest in change due to the ever-rising tide of demand.

To address these barriers, a clear, concerted effort is required from the government to develop protected funding envelopes (i.e. that cannot be used to plug gaps in existing budgets) for best-in-class digital health solutions to be evaluated at scale within the NHS. Crucially, this funding has to also include protected NHS clinician time to support the evaluation and embedding of new approaches. Otherwise they will not achieve their desired outcomes.

Innovate UK is playing a key role providing funding to advance real world development & evaluations of new innovations through its Digital Health Catalyst grants, which could help overcome this barrier. Furthermore, recent initiatives by the NHS England Diabetes team, such as the digital diabetes prevention programme evaluation, have shown that such approaches are possible. We look forward to seeing this approach being rolled out in other disease areas.

About Oviva

Oviva is a digitally-enabled provider of healthcare services including dietetics, psychological therapies and nursing. Oviva's transformative approach is combining healthcare professional support, with a smartphone app for self-monitoring, engaging online learning materials, and IoT wearables for tracking – allowing us to treat a broad array of health conditions 100% remotely, including malnutrition, type 2 diabetes, complex obesity and paediatric allergy.

Oviva was formed by former NHS clinicians, academics, and experts in health IT and user experience design and support health insurers, such as NHS Clinical Commissioner Groups, and providers, such as NHS Trusts, to dramatically lower the cost of care delivery whilst increasing both access to care and care quality.

Photo credit: Images courtesy of Oviva UK Ltd

Joining the dots for care innovation

Paul Gaudin
CEO, The Carerooms Ltd

Looking back on my 30s and 40s, bringing up three lively children and travelling the world to build a business, I realise that the last thing on my mind was preparing for the next phase of life as a carer for my parents. I think that I'm representative of most of us in focusing on what's directly in front of me and hoping for the best. For me, the last 15 years have been a journey of discovery within the health and social care system. I've seen how challenged the whole model is. If only for selfish reasons, I wish I had planned for my parents' care requirements. It would have reduced the impact on all our lives and improved my parents' health and lifestyle outcomes.

Up until the passing of my father in 2016, I had been his advocate and part-time carer for 15 years. My mother suffered a total nervous breakdown with the stress of looking after him. And so, we had two patients to look after, with completely different needs. On this journey, we, as a family, experienced most of the gaps in the system and had to fight for every aspect of my parents' care. They became victims of a system which applies two very blunt solutions to care: a care home bed or a domiciliary care package.

After experiencing a local care home, my father made me promise never to send him there again. So, we turned to domiciliary care as the only option for discharge from his regular visits to hospital. Both my parents found their lives invaded by total strangers visiting at random times of day, to reheat a

meal and to fill out some forms. They lost all privacy. Yet if we weren't available, they were left on their own for 21 hours a day to fend for themselves. In my opinion, this was not care.

When my father passed away, my mother became increasingly socially isolated. After having to fund their care for so long, she had no money, and no purpose in life.

Repurposing care

We had fitted out two rooms for my father's care with all the necessary rails, air mattress and hoists. When it came time to reinstate the rooms, we found there was no second-hand market for the equipment. We had to take it to the local refuse tip.

On the morning of the reinstatement, I had an idea. Imagine if we could find a way to safely rent the rooms to a patient trying to find a local place to recover from hospital treatment, or for respite, or for some simple TLC.

We would have to safeguard the patient from my mother's cooking, and my mother from a patient who may become ill, but if this was possible, the idea would solve some key issues in today's society. My mother would have a new purpose in life. She would earn much-needed income, allowing her to live independently. The project would also reduce the social isolation for both her and the patient. Finally, the idea would release a much-needed bed in the local hospital.

We set about researching the idea and the technology. Two and a half years later, we are beginning to get some traction. Our pilots show that there are thousands of wonderful people, many of whom are retired health professionals, who are willing to become hosts, to help their communities and to top up their pensions.

As we have developed the concept, we've refined it by introducing our Care Concierge service. This further reduces the impact on the host, who now does not provide intimate care. We remotely monitor the patient for any health issues, such as a UTI or infection. By introducing preventive health services, we are able to reduce hospital readmission rates. A video GP service run by NHS GPs is available in the room. We have also introduced video education to the computer tablet, to help the patient recover their independence as quickly as possible.

Our carefully selected and vetted hosts support the patients, and they all become part of a local community who continue to care for each other and to help freely, even after the stay. This is the only way to build a sustainable model, as the ratio of younger carers to patients reaches a critical point.

My vision for the next ten to twenty years

In the coming decades, I believe that our communities will have to come together to share resources. It is a human instinct to want to share and to be socially active. People will use their lifestyle and medical data to maximise on our healthy years and to plan for our care needs.

Financial services products will emerge to release capital from our estates. This can then be invested in a care room, just as you might in a flat or a hotel/timeshare room, thus protecting our capital by deploying it wisely. This will leave an asset for our loved ones, instead of depleting our capital. This will be backed up by insurance products, in case we need support earlier than planned.

Governments will create tax incentives for us to invest in our care. Investors, builders and developers will be incentivised to build homes and flats which cater for care. Home owners will receive an income tax break for hosting a person who needs care or support.

There is an opportunity and an urgency for society, government and commerce to participate in this exciting opportunity. The alternative of stagnation will only result in a chaotic and thoroughly sub-optimal last stage of our lives.

Photo credit: Image courtesy of The Carerooms Ltd

> I wish I had planned for my parents' care requirements. It would have reduced the impact on all our lives and improved my parents' health and lifestyle outcomes.

Let's bring people together — To nourish body and soul

Sara McKee
Founder and Market Innovation Director, Evermore Wellbeing

We start growing older from the moment we are born, so ageing is the one thing common to us all. Yet the conversation around ageing continues to be negative. Discussion surrounds 'putting people into care' and 'housing older people' when really, we are talking about lifestyle choices in later life. We need to recognise this subject affects us all and it requires a radical approach. We must engage everyone in a discussion about how we want to live a potential 100-year lifetime.

The home must be at the heart of this discussion. Le Corbusier, one of the pioneers of modern architecture, said "The home should be the treasure chest of living." He recognised that our home is about more than simply occupying a space. It gives us a sense of belonging and enables participation and cooperation.

Equally, the life of a community is as important as the built environment. This means investing in things that bring people together, nourishing both body and soul. This investment can be modest — like a park bench, a play area or even one large dining table — which will lead to small incremental changes. Building informal relationships is a slow process but that's the foundation from which long-term connection and neighbourhood ownership are truly developed.

Driving disruption from within

We've been working with the NHS in Manchester for two years to reimagine their approach to supporting older people in their post-hospital rehabilitation. We were commissioned due to the NHS-wide challenge of Delayed Transfer of Care (DTOC), commonly referred to as bed-blocking, which sees many patients stay in an acute hospital bed longer than necessary.

DTOC occurs for a number of reasons, ranging from patients waiting on non-acute care, through to a lack of social care available to support the patient's safe return home. It's detrimental to patient outcomes and the health system as a whole, as it reduces the number of beds available and costs the NHS millions each year.

You might think the concepts of home and community are unrelated to DTOC but we've proven the positive impact both can have in a health care setting.

Working with staff and patients in Withington Hospital, we introduced the small household model to Buccleuch Lodge — a unit which provides intermediate care for older people. The small household model involves a group of people living together in a domestic setting, with a focus on companionship and living life with meaning and purpose. The goal is to create a normal daily living experience where residents dictate the rhythm of their day, and are supported by staff to participate fully in the household.

At Buccleuch, it has meant removing anything that resembles a typical hospital ward, from nurses' stations to equipment cluttering hallways, to create an environment akin to home. We now have a large dining table where people can share meals or chat with family, there are paintings on the wall, and a small library of books. Homely touches like fresh flowers are dotted throughout the unit.

Power to the people

The introduction of the small household has required more than a physical refurbishment of the unit for it to be successful, it's also required staff to change their own attitudes and behaviours. We've worked with staff to co-design a new cultural approach which encourages people to think differently.

We've abolished the hierarchical and institutional feel of the unit, through the simple act of everyone wearing the same polo shirt. The colour teal was chosen by the Buccleuch workforce and it means staff are identifiable by team rather than rank.

Reinvigorated staff members have created new ways of engaging patients that are not task-based. They've designed new activities, spend more time chatting with patients, and have created zoned spaces, so people can choose whether to be in a quiet area or in the midst of the action! There's no hiding in offices to write up notes, with staff working at the central dining table and pitching in with mealtimes, cleaning and activities. We've got champions across nursing and therapy teams from the bottom up.

Therapy is now undertaken with purpose and imitates real-life. Patients work towards a goal, for example making a cup of tea in the kitchen, rather than spending their entire rehabilitation time in a gym. They are supported by staff and their fellow patients, and have grown in confidence. We've seen fuller participation in daily activities, with patients deciding what to do, with the TV often switched off to make way for conversation.

> **Multiple small households in multiple neighbourhoods can drive connection, collaboration and companionship.**

This low-budget test of concept has disrupted the traditional approach to supporting people through their rehabilitation, successfully increasing patient flow and providing a much better experience. It's been done on a shoestring but there's been positive feedback throughout, with patients and families telling us that Buccleuch feels more homely and relaxed — definitely not like a hospital!

Small is where the magic happens

The small household approach recognises staff and patients as individuals. They're not defined by a job title or illness, and everyone is treated equally. The unit reconfiguration and the way staff engage with patients has fostered a greater understanding of each other. As one resident, Major John, told us — 'we're not all old plonkers you know'.

Evermore believes that small is beautiful. We also recognise that achieving the aims of this challenge at scale means working cooperatively and thinking big. Multiple small households in multiple neighbourhoods can drive connection, collaboration and companionship. Technology can play a big role in enabling neighbourhoods to flourish, but it won't beget success on its own.

Photo credit: Images courtesy of Evermore Wellbeing

Mobilizing society to tackle isolation

Catherine McClen
Founder and CEO, BuddyHub

It is believed that prehistoric mankind lived together in small, close, intergenerational communities, hunting and gathering and supporting one another for survival — and for the good of the community. Fast forward to the present day and we are instead living in an age of isolation.

The numbers are striking: 9 million people always or sometimes feel lonely in the UK[1]. This can particularly affect older people, who may feel lonely or isolated due to retirement, changes to health, and loss of friends and partners. This may lead to a form of involuntary solitary confinement with 200,000 older people saying they have not had a conversation with friends or family for an entire month.[2]

Yet, as social animals, we need to be connected to one another and feel that we belong to a group which can support us.[3] 'Friendship is the single most important factor influencing our health, well-being, and happiness', affirms anthropologist and evolutionary psychologist Robin Dunbar.

Our earliest ancestors have taught us this, but how do we get back to a way of living that better resembles those supportive and close intergenerational communities in the modern world we live in?

> **The numbers are striking: 9 million people always or sometimes feel lonely in the UK.**

new, meaningful friendships for older adults feeling lonely or isolated. Solutions must reach those who are not digitally literate too. This will help older people to rebuild their social circle at a time of life when it can be extremely hard to do so.

BuddyHub uses technology to enable us to carefully match and introduce an older adult to three new volunteers, creating a new supportive social circle to them close to home. We factor in location, interests, passions and personality to make great matches. This increases the likelihood of bonds being developed so new friendships can flourish naturally regardless of age or background. A flexible approach that uses smart technology to ease peer-to-peer communications also supports these new connections to turn into meaningful long-term relationships.

The objective is to help ensure we have strong social connections throughout our lives, preventing the detrimental impacts of loneliness on our well-being and bringing happiness, comfort and resilience. [4]

Clearing the obstacles and mobilising our modern-day tribe

A key challenge to building these interconnected communities is mobilizing this army of volunteers, whilst safeguarding vulnerable older adults. We need an easier way to conduct criminal record checks. We need to move beyond a system that requires applicants to produce three original paper documents (in our paperless world) to prove that they are who they say they are. The answer may lie in the introduction of national identity cards, to easily verify someone's criminal record status, though this seems politically difficult in the UK. The data needed is already stored. Accessing it efficiently would allow voluntary organisations and employers to more easily mobilise volunteers and staff.

Another obstacle is the too-prevalent and ageist viewpoint of many stakeholders within the public, voluntary and grant-making sectors that older adults or 'pensioners' should have free services paid for via grants or the public purse. Given the lack of available funding, the logical outcome of this viewpoint is to deny choice and services to those who need them. BuddyHub is a membership club with affordable fees based on income. We are seeking third parties to cover the membership fees of those for whom any form of payment is a barrier. We empower older adults as our customers and recognise that engagement with a paid service has better outcomes.

> # A key challenge to building these interconnected communities is mobilizing this army of volunteers.

As a society, we need to feel more relaxed about the 'commercialisation of friendship'. This is similar to our new attitudes towards the commercialisation of dating. Attracting private capital is vital in helping to solve some of society's greatest problems, especially when investment in technology is required. BuddyHub's 'double bottom line' legal structure reflects our firm commitment to the public good and our offer of fair returns to investors. Some stakeholders need to move away from a common `profit is bad' mentality and focus on outcomes.

A global solution to a global problem

Issues around demographic ageing and loneliness are widespread. Therefore, solutions to this problem can attract global interest. However, transporting solutions around the world requires a consideration of cultural and ethnic differences and social norms around community, volunteering and family relationships that could require adaptation. Engaging with organisations, on the ground in other countries, could help ensure that local sensitivities are taken into account and enable successful international expansion.

Taking down obstacles would help mobilise our modern-day tribe and build a community around equality and respect, one that is truly inclusive and welcomes anyone. By 'anyone' I really mean 'everyone'. Nobody should be marginalised on the basis of their mental or physical health, ethnicity, sexuality, age or anything else. That's an ideal world I'd really like to live in.

[1]   British Red Cross and Kantar Public (2016) Trapped in a bubble: An investigation into triggers for loneliness in the UK here.

[2]   Age UK (2017) here

[3]   Roy Baumeister and Mark Leary (1995) The need to belong: Desire for interpersonal attachments as a fundamental human motivation.

[4]   Campaign to End Loneliness here.

Photo credit: Images courtesy of BuddyHub and Angels Vicente

Communities in the modern world

Firstly, the way we live and socialise in our communities should be more varied in terms of age and background. In an ideal world, our communities would be unified. We would easily cross generational, ethnic, socio-economic, cultural and health divides so that people are connected around what they have in common and their passions.

Secondly, the way we connect to each other will need to overcome trends in modern life. Transitory living and places of work don't give people the same sense of belonging than before. Likewise, the growing predominance of digital communications and long working hours are changing the nature of our interactions.

To future-proof our communities, we need to unlock the potential of technology to help remove the barriers which prevent us from connecting with one another and to support our relationships. We should focus on those vital face-to-face interactions with a close friendship group, as our ancestors did, and not substitute them with lower quality virtual interactions.

Addressing the needs

We need to mobilize society around shared interests and leverage technology to create