

Innovating Healthcare



Embracing the Future

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Hitachi Smart Digital Diabetes Prevention

Prevention 3.0

Over the past decade, there has been significant and impactful evolution in prevention models, coupled with a change in mindset and policy across healthcare systems. Despite the progress, the prevalence of chronic diseases continues to build pace. Recent analysis undertaken by Diabetes UK identified 2.8m people in the UK alone with type 2 diabetes and this is set to increase to 4 million people by 2025. Direct costs to the NHS are estimated at £10bn per year, but the overall social-economic cost is much greater. Stemming the onset and prevalence of the disease requires a multi-faceted strategy to prevention - including strategies for education, social infrastructure and clinical services. The problem is evidently too large for one solution or organisation to address. We must also remember that citizens are at the centre and must be provided with appropriate options, choice and safety.

The limited evidence on the long-term effectiveness and benefits of prevention is still a major challenge, largely due to the difficulties in monitoring the sustainability of outcomes for individuals after randomised clinical trials (RCT) or receiving commissioned interventions. Without this evidence, budget and priority for prevention has been constrained, but there are clear signs that the tide is turning - and prevention is firmly on the agenda. The rollout of the Digital Prevention Pilot in January 2018 and recent establishment of the '[NHS Healthier You: NHS Diabetes Prevention Programme - digital stream](#)' national UK pilot are clear indicators of this. A recent report by Frost &

Sullivan showed that the percentage of global healthcare budgets for prevention rose to 7% in 2012, from 5% in 2007, and this is forecast to increase to 12% by 2025.

Hitachi's Smart Digital Diabetes Prevention solution leverages the collective experience and innovation in technology and clinically-led prevention of Hitachi and our NHS partners in Salford Royal NHS Foundation Trust and Salford CCG. It represents over 10 years' experience in delivering and evolving technology-enabled lifestyle change intervention and we have come a long way... the next stage in our journey is Prevention 3.0.

Personalised Pathways

Traditional prevention models have tended to follow a structured coaching model that predetermines the number of patient interactions with healthcare professionals. There is good reason for this status-quo, in a non-digital setting focused on group or 1:1 lifestyle coaching, regular interaction and support has proven a necessity for effecting change.

It is clear the role of the healthcare professional and patient-engagement is critical to lifestyle change, but equally, clinical workload is a pre-determinant of access, cost and capacity. However, by enabling regular sharing of information, different modes of communication and actionable insight on progress and outcomes, we believe technology can be leveraged to deliver not only personalisation of the lifestyle change goals, but personalisation of the pathways themselves.

Soon, we will engage with personalised and dynamic pathways - adjusting the mode and level of health professional engagement to our needs and preferences based on credible and actionable data-driven insights.

Improved Support

A key factor in helping individuals to make and sustain lifestyle changes is the support network around them.

- **Health professionals** build trust with individuals and work with them to determine achievable lifestyle changes to improve their health outcomes – what should I do?
- **Groups** leverage behavioural dynamics to establish peer support between participants and breakdown isolation – we can do this together.
- **Education** provides individuals with another important element of support – how can I do this?

For a multitude of reasons, many individuals either need, or would benefit from further support. In our increasingly connected world, we believe technology will play a vital role in connecting people to relevant resources to support and engrain their lifestyle changes.

- **Social & Community** – “...is there a walking group or gardening club near me?”
- **Educational** – “...what recipes can I cook to lower my carbohydrates?”
- **Commercial** – “...can I have these ingredients delivered to me?”
- **Digital** – “...is there a digital fitness app that can coach me on 10min low-intensity exercise routines?”
- **Family and Friends** – “...my family and friends understand my challenges and progress and provide me with encouragement and support.”

Through the application of behavioural science, we can also use digital engagement models to

automatically help and reward progress or alert health professionals when further support may be required – during and beyond the pathway.

“My digitally-enabled lifestyle change programme provides me with access to a range of resources that support me in an appropriate way to achieve my goals.”

Zero Touch

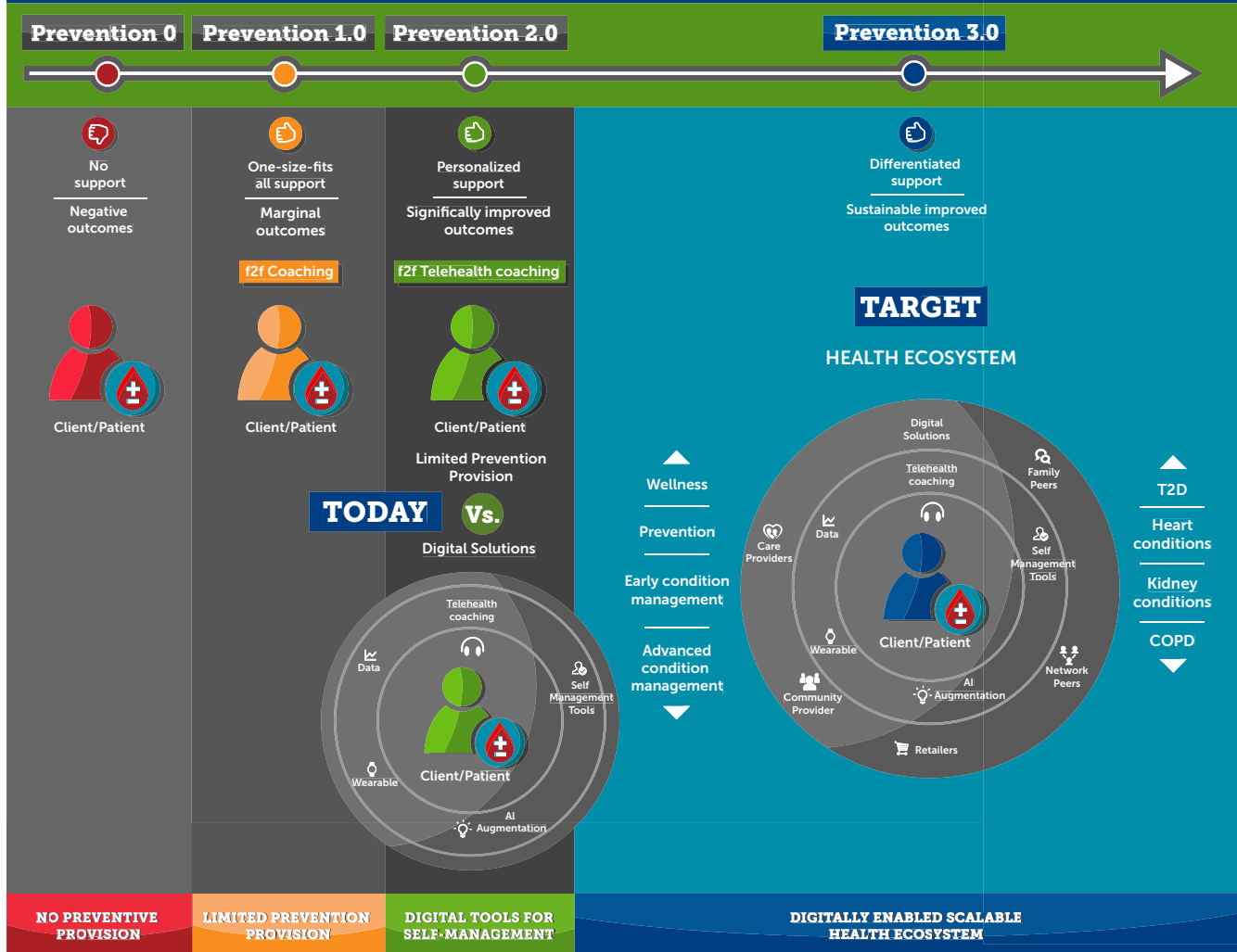
Over recent years, there has been exponential growth in the capability and number of consumer and medical-grade connected devices – leading to improved access, usability and affordability. Smartphones, tablets, watches, scales and other tech have become smarter, embedding sensors and innovative means to increase user interaction and intelligence.

Applied correctly, these technologies can enable people to engage more easily with digital solutions – removing the requirement to collect, logon and submit data on a frequent basis. There are clearly considerations about access, cost and choice that need to be carefully considered – but these need to be measured against the potential benefits of moving towards zero touch engagement and increasing the frequency and accuracy of information.

Whilst there are important considerations around data privacy, the integration of connected devices and advanced analytics does provide a basis for longer term remote observation, not only to contribute towards a better evidence base for sustainability, but also to provide a mechanism for proactive intervention.

“Most of the information my health advisor needed to track my progress was provided automatically, allowing me to focus on achieving my goals.”

Prevention 3: The evolution of smart diabetes prevention



Summary

The prevalence of type 2 diabetes has been on the rise globally. The costs of treating type 2 diabetes have continued to grow, threatening future healthcare budgets. To compound this further, those diagnosed with type 2 diabetes are at significant risk of progressing to other long-term chronic conditions such as coronary heart disease, chronic kidney disease, and COPD.

What was once considered a manageable health issue has now spiralled into one of the biggest healthcare challenges of the 21st century. Clinical research has shown that changes in lifestyle can reduce or even reverse the risk of type 2 diabetes onset and the WHO estimates 90% of all cases

could have been avoided through lifestyle change. Healthcare providers and insurers are now looking for scalable digital solutions and services that support those at risk of being diagnosed to reduce the future burden on their healthcare budgets.

Digital approaches can transform the way care is delivered, enhancing proven clinical methods and facilitating different modes of engagement with patients. Healthcare professionals are critical to care, but technology can help optimise their workflow and allow them to use their time more efficiently and direct it to the people most in need of support. From the patient's perspective, they can receive care remotely – allowing it to fit more easily into their everyday lives and feeling more connected with the tools and services that can



help them improve health outcomes. For society, technology can improve access, drive engagement, build insights and reduce costs – collectively helping health systems to provision better care and improve population health outcomes.

Society will always require choice, allowing the most appropriate form of care to be provisioned for an individual's needs and preferences. Healthcare professionals are vital to delivering clinically-led, safe and effective care. But, by harnessing innovation and advancements in technology, as well as the data-driven insights these can generate, in an appropriate and complementary way we can re-image the delivery of care and bring benefit to healthcare systems, society and future generations.

THE FUTURE OF HEALTHCARE IS OPEN TO SUGGESTIONS

We all want to have happier and healthier lives. Hitachi believes social innovation will play a key role in improving quality of life and establishing a

society in which we can all live with peace of mind. Our goal is to improve quality of life by identifying and addressing issues present in our everyday lives. For example, we are drawing on our accumulated technologies as well as advanced information technologies to advance healthcare services optimised for individuals and to ensure the safety of the social infrastructure. In such ways, we hope to provide support for a society in which people can live comfortable lives.

Through co-creation with the community, Hitachi is bringing innovation to healthcare, from advancing medical solutions to analysing and sharing vital, clinical and nursing-care data in real time. Moreover, with Hitachi's IoT Platform we can connect and integrate healthcare resources throughout the community, giving access to the best care when and where's its needed.

Innovating Healthcare, Embracing the Future

THE FUTURE OF HEALTHCARE IS OPEN TO SUGGESTIONS

Hitachi Social Innovation

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