Insight Driven Health

NHS Futures Summit 2013

Personalised and Preventative Care: Technology Trends and Disruptors that will Shape the Healthcare Transformation

With Contributions From

Airedale NHS Foundation Trust

November 2013
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Personalised and Preventative Care: Technology Trends and Disruptors that will Shape the Healthcare Transformation

Throughout its history, the NHS has consistently improved and innovated, often led by research and science, with technology playing the role of “challenger” of how things can and should be done. Accenture believes technology is an enabler for one of the greatest opportunities in public health: to meet growing demand in health and social care services in a more timely and effective manner while still providing overall value for money.

The NHS faces unprecedented challenges: the population of England is growing older, and increasingly living with chronic conditions. Such patients disproportionately utilize the resources of the NHS, with around 70% of healthcare budgets being consumed by no more than 25% of the population. When patients fall ill, it takes them longer to recover, with readmissions and A&E visits on the rise. Because of increasing demand and flat funding, the NHS faces a £30b funding gap between 2013/14 and 2020/21.

To close the gap, the NHS must address both demand for health services and efficiency of existing resources. Accenture believes that an approach of Personalised and Preventative Care with technology at its heart can achieve the quantum-leap innovation required to create a sustainable health and social care service for the future.

Accenture has carefully selected ten Technology Trends which, if applied at scale, hold the power to significantly impact the way care is delivered in tomorrow’s NHS. Technology can be used to improve population wellness and shift the front line of care into the home, reducing demand on traditional care settings such as GP practices and hospitals. Furthermore, home-based care will improve the patient experience and introduce environmental benefits as need for transport is reduced. Analytics and evidence-based medicine will improve outcomes and increase efficiency, making better use of the resources available. The technological innovations highlighted have the potential to create a personal and transparent NHS for each patient, providing guidance and informing decisions throughout the care continuum.

To highlight one pioneering example of technology-enabled transformation, we include case studies of Airedale NHS Foundation Trust, who are currently using technology and new ways of working to bring care to patients in their homes and who have developed Right Care, a vision for tomorrow. Right Care takes Airedale’s innovative service model a step further with technology-enabled, patient-orchestrated care at its centre.

Whilst innovative technology can offer an incredibly robust platform for managing individual and population health, technology alone does not drive transformational change. Therefore, this paper will highlight disruptors which can accelerate change, including budget and payment restructure, patient engagement and incentives, health system navigation, and an increased demand for treatment outside of traditional care settings.

Clinicians will need to adopt new ways of working, as patients are becoming more willing and ready to be an active part of the health dialogue. Furthermore, the NHS will need to invest in technology that will enable care for the right patients, in the right place, at the right time. To inform these decisions, we have suggested three design principles: technology should enable prevention, treatment of multi-chronics, and provision of care for the frail elderly.
Transformation Shaped by Innovative Technologies will Improve Wellness, Reduce Acuity of Care, and Increase Efficiency of the Whole-health Economy

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Disruptors: Accelerate Transformation

- Cross-continuum Budget and Payment Structure
- Patient Engagement and Incentives
- Health System Navigation
- Demand for Care in the Home

Continuum of Care
Section I
Ten Technology Trends in Health Care

App-Driven Wellness Culture | Self-Care and Proactive Health Management | Smart Homes for Independent Patients
Assisted-Living Technologies | Remote Consultations | Telemedicine | Case Managers and Patient Navigators
Predictive and Visual Analytics | Technology-Enabled New Work Models | Health and Social Care Provision
As the population becomes more tech-savvy and user-friendly technologies enter the market, app-driven wellness culture will become a growing force in health and social care. Many people will wear non-intrusive monitoring technologies, such as wrist bands, jewelry or clothing that will check vital statistics, sleep, exercise, nutrition, and even a personalized picture of our genetic footprint. Real time information will be analysed and stored via apps on mobile phones or computers. Health monitoring and feedback through applications will become a daily part of life for the healthy population. People will be increasingly engaged with their own health, and wellness applications will enable personalized medicine as people will be able to see how their own daily decisions may impact their health over their lifetime.

The NHS can leverage this trend by using apps to educate and inform the public on preventative and self-care and provide access to administrative resources such as appointment scheduling. Apps can also be used to provide remote access to medical records and as a source for patients to review transparent performance data for hospitals, specialty services and GPs.

### Solutions to Watch

#### Peek Vision

An app developed by the International Centre for Eye Health for emerging economies and any remote location, enables doctors to provide full eye examinations on their smartphones at an affordable price. Doctors using the app will be able to check patients’ abilities to see colour, test for long and short-sightedness, and also detect the presence of cataracts and other eye conditions. The app uses smartphones’ cameras, flashlights and display to check how the eyes react to stimuli. Doctors can also track the progress of separate patients and use the app to keep a record of their geo-location. Now being used on an Antarctic expedition to check eye health along the way!

#### MisFit Shine

Shine is an elegant activity monitor that you can wear anywhere, designed to inspire people to become more active, and set goals for how much they want to move in a day and complete them.

#### 23andme

23andme is a genetic testing company providing test tube kits with which customer provide a small saliva sample. This is analysed and results posted online allowing for assessment of inherited traits, genealogy and congenital risks. The founder’s husband, Sergey Brin, took the test. It revealed he possessed a genetic mutation called LRRK2, something that significantly increased his risk of developing Parkinson disease (something his mother was diagnosed with at 47). Armed with this information, Sergey Brin has made proactive lifestyle choices to reduce his risk e.g. drinking coffee and exercising.
2. Self-Care and Proactive Health Management

Potential Impact

For the healthy population, self-care will allow diagnosis and initial treatment to be conducted by a patient, and then confirmed by a health professional. For example, in the US Zipnosis allows patients to complete a smart, fully customized Q&A which guides the patient to a diagnosis, which is then reviewed, confirmed, and prescribed for by a doctor. Providing access to resources which enable an accurate and personalized approach to self-care will help to reduce visits to GPs and A&Es by enabling diagnosis and initial treatment to take place anywhere, any time.

Solutions to Watch

**Zipnosis**

For US$25 users can complete an online interview, receive a diagnosis by a local doctor and have prescriptions sent - all in under one hour.

**Basque Country: Multi-Channel Health Services**

A case study of profound transformation in public healthcare for chronic conditions with healthcare, education and training, self-management resources and medical advice available 24/7 via internet, email, text, and phone. Administrative access and general information also provided.

**VitruCare**

A personalized and internet delivered, supported self-care service which allows people to set an appropriate agenda and plan to help them meet their chosen life goals. Full connection is maintained with their care team, relevant information is made available from trusted sources and they are helped in achieving their goals by access to peer support.
Monitoring and providing care for the elderly population is a significant concern for the NHS, as the population is set to grow significantly. However, elderly and frail people want to remain independently in their homes for as long as possible. Smart homes can help manage the wellness of this critical population.

Sensor technology can make any home into a Smart Home and increase wellness in the elderly population by monitoring nutrition and vital signs. A fully integrated Smart Home can also reduce isolation by providing communication channels for contact with carers and loves ones and rapid response to health triggers such as a fall or a change in vital signs.

### Solutions to Watch

**Magic Carpet**

At Manchester University, scientists have developed a “magic carpet”, designed to detect and even predict, when old people fall at home. The carpet is fitted with plastic optical fibres. The fibres bend when anyone treads on it and can map, in real time, their walking pattern. Electronics at the edges of the carpet act as sensors and relay signals to a computer that can then be analysed to identify changes in walking behaviour or sudden falls.

**Abilia**

At the centre of the system is a wall-mounted iPad-like device. The screen has Skype, which allows carers to regularly check in with patients. It also has a planner for patients or carers to record up-coming events and provides spoken reminders about daily tasks, such as when they need to take medicine. Some 1,000 people now have the system installed in their homes, and 25 of them are testing the latest version, which combines the screen with wirelessly connected sensors. The motion sensors know if you are in the room or open a door, and send out alarms, for instance if the stove is left on for more than 15 minutes or a person opens a door in the middle of the night.

**Biometric Health Sensor Tattoos**

Electronic company MC10 has designed a microchip that can be printed directly to the skin. Bound to the skin with spray, the epidermal electronics are able to detect a range of bodily symptoms from temperature to hydration. The sensor can withstands showering and swimming and is designed to last for 2 weeks, until it is naturally exfoliated.
4. Assisted-Living Technologies

Potential Impact

Assisted Living Technologies can be used in combination with Smart Homes to improve wellness by providing monitoring or stimulation in response to specific conditions such as dementia or sleep apnoea. Such technologies enable carers and social support to monitor and interact with patients and determine when additional intervention such as telemedicine or a visit to the GP may be necessary.

Assisted Living Technologies can also provide reminders to take medications, attend appointments; mental agility training technologies provide stimulus and challenging problem-solving and memory exercises in an interactive way.

Solutions to Watch

**Mind Dice**
Mind Dice can help people with dementia to communicate with their carers. Prompts added to a 12 sided dice, enable the person to tap into their remaining memories provoking stories and responses that can be enjoyed by family, carers and friends, and help people with dementia retain a sense of self.

**Watermark Medical**
Watermark Medical has developed an at-home device that helps doctors diagnose sleep apnoea remotely. The sensor-equipped headband is worn by a patient for a night or two during their normal sleep cycles, measuring various metrics including blood-oxygen saturation, air flow, pulse rate and snoring levels. The data is downloaded to a personal computer, and then sent to a network of sleep professionals, one of whom delivers a report to the physician within 48 hours, with a diagnosis and suggested treatment.

**MindMe**
The MindMe device can be worn around the neck or attached to a key ring and allows family and carers to keep track of relatives with dementia.

**Google Glass IntelliVue**
By combining transformative digital technologies and innovation in action, Accenture recently partnered with Philips to create the first proof-of-concept for a seamless transfer of patient vital signs into Google Glass. The demo was created by researchers in Philips’ Digital Accelerator Lab in India and the Netherlands, as well as by Accenture Technology Labs.
5. Remote Consultations

Potential Impact
Remote Consultations will revolutionise healthcare by shifting the first line of care, diagnosis and non-interventional treatments, from GP offices and A&Es to phones, apps, computers and TV screens. This enables existing resources to be used more efficiently, for example reducing the number of in-person follow-up visits that patients require. Remote consultations may also reduce the volume of A&E visits if patients feel that they can be accurately assessed by a doctor remotely and begin to present to A&E only when a true emergency has been verified.

Remote Consultations will also allow Centres of Excellence across the UK (and potentially beyond) to provide services to Trusts and regions, and virtual collaboration will help improve outcomes in specialist cases.

Solutions to Watch

eConsults
Mayo Clinic has launched eConsults, a text-based service that allows patients to connect with specialist consultants, in real time, using audio visual technology. This can be used when patients require more than just a phone call but not a face-to-face appointment.

Mayo Clinic have found that eConsults eliminates the need for second doctors’ visits in the majority of cases, creating greater convenience for the patient, but also freeing up time for Doctors (eConsults typically take a third of the time of face to face appointments).

uChek
Using a special illumination chamber and uChek app, the camera on smartphones can be used to automatically read urine dipsticks. Results are displayed on the phone and can be saved or emailed.

SMSlivraddare
SMSlivraddare (SMSLifesaver), a text message initiative to treat people experiencing cardiac arrests, has been introduced in Sweden. When a Stockholm resident dials for emergency services, a text message is sent to all volunteers trained in CPR within 500m of this incident. This alerts them to go to the location and perform CPR. In a city with stretched ambulance services and heavy traffic, the impact of this initiative has been significant. SMS volunteers reach victims faster than ambulances in 54% of cases, life saving time given the odds for surviving a cardiac arrest drop 10%, every minute. As a result, this initiative has contributed to survival rates after cardiac arrest rising from 3% to nearly 11%.

See also Trend 2: Self-Care and Proactive Health Management
Basque Country: Multi Channel Health Services
6. Telemedicine

Potential Impact

Telemedicine will be widely used for treating patients with chronic conditions in the comfort of their own homes, who would otherwise need to be seen in a doctor’s office on a weekly or monthly basis. Telemedicine enables early detection and treatment of secondary disease and worsening condition based on monitoring and self-reporting of signs and symptoms and real-time evaluation by clinicians. Perhaps most transformational, Telemedicine enables proactive engagement with targeted patients, ensuring that even patients who otherwise may not show up to appointments and fall through the cracks to be cared for consistently.

In insurance-based health systems such as the US, Telemedicine is already becoming more popular as a way to reduce costs across the care continuum. Telemedicine can take many forms, such as a call-centre and technology-based system to provide patient care and monitoring in the comfort of their own home.

Solutions to Watch

**Immedicare**

Immedicare is a joint-venture between Airedale NHS Foundation Trust and Involve-Visual, delivering an end-to-end technical and clinical teleconsultation service that operates 24/7 across a wide range of clinical settings. Need for hospital admission has been reduced by up to 45% and for Emergency Department attendance by up to 69%.

**Red Embedded**

Red Embedded worked in partnership with Airedale NHS Foundation Trust to develop a bespoke TV set top box to support long-term condition patients in their own homes, linking them to specialist care and advice remotely.

**Mayo Clinic Stroke Telemedicine**

Mayo Clinic launched a stroke telemedicine program which uses robots, remotely controlled by specialists, to view and interact with stroke patients via video conference. The programme, rolled out in Arizona, allows neurologists to use the robot’s two way video platform and a remotely controlled camera to conduct patient examinations and consultations with emergency department doctors at the patients hospital, removing the need for patient transferal. Since the programme’s implementation, only 30% of stroke patients now need to be transferred, down from nearly 100%.

**Teladoc**

Teladoc is a telehealth provider, where doctors provide advice and consultations via phone or online video 24/7, 365 days of the year. The average call-back time is 24 minutes. 90% of users have their medical issues resolved using the site.

See also Section II: Airedale’s Right Care Vision
7. Case Managers and Patient Navigators

Potential Impact

Case Managers and Patient Navigators will effectively guide patients throughout their care journey, from the time they are admitted to hospital to the time that they have recovered fully. For some patient populations, such as those with chronic conditions, Telemedicine (see Trend 6) will enable navigation and interaction with the health system at all times.

The purpose of Case Managers in hospital and Patient Navigators outside of hospital is to ensure that patients and their carers are informed and aware of what is happening in their care and why, helping them understand when decisions or actions are required and educating them about their condition. Case Managers serve as the interface between the patient and the many specialist teams that they may be treated by in hospital, not only working with the patient but also coordinating clinicians to ensure that the right care is provided at the right time. This capability allows clinicians to focus on using their specialist knowledge, whilst also ensuring that these lay-person navigators are supporting patients in adhering to their pathway, something that not only saves lives – but also saves money. Click here to read more about the practice that was founded by Dr. Freeman.

While this is not a technology trend in itself, technology is a key enabler to ensure that there is consistent information and communication to support the patient in adhering to their prescribed pathway. It will be integral to delivering a preventative care agenda and to connecting high-risk patients and technology effectively.

Solutions to Watch

Cambridge University Hospital
Cambridge University Hospitals introduced Case Managers for patients across Medicine and Surgery in 2012. The new integrated methodology produced significant reductions in patients’ length of stay (ALOS), readmissions, while improving satisfaction of patients, their carers, families and staff. For more information please contact Accenture Health.

Cleveland Clinic
Patient Navigators coordinate healthcare services, ensure timely treatment and follow-ups, arrange for transportation to and from the center, help with complex financial and eligibility forms, and provide information about treatment options and preventive behaviors.
8. Predictive and Visual Analytics and Evidence-Based Medicine

Potential Impact

Analytics will harness the power of Big Data to improve patient outcomes by providing insights into how variable lifestyle and care decisions impact outcomes. Predictive Analytics allow commissioners to predict which individuals in a population are likely to become frequent users of the health system and manage this sub-population accordingly. Clinicians use analytics in combination with evidence-based medicine to understand which care pathways produce the best outcomes in patients, reducing length of stay in hospital and impacting the number of readmissions. Visual Analytics, a growing field in healthcare and in other industries such as retail and education, will enable users across the health economy to explore massive volumes of data with visual clarity, quickly understanding the complex relationships between patients, disease and therapies. A personalised experience for each patient is made possible by modeling scenarios and outcomes based on each individual's health history.

Importantly, using analytics will not just improve outcomes. Research has shown that standardisation of care also consistently reduces cost in acute care settings by reducing unnecessary tests, preventing hospital-acquired conditions such as sepsis, and helping the patient to get well and be discharged sooner. Commissioners can also use analytics to look across the community, predict future trends, and commission care appropriately.

Solutions to Watch

**Esri**

Esri has pioneered "geo-medicine" – the mapping of health risks by location. The world's largest mapping software company provides tools for "disease surveillance" to connect the dots between illness and geography. Such medical intelligence allows health professionals to identify patterns and design target care and, on an individual level, it redefines the notion of a medical history. In addition to genes and lifestyle, where you live and what you're exposed to in that environment can tell a doctor what to watch for.

**Eviti**

Eviti is transforming the cancer treatment decision process with its innovative oncology platform called eviti Suite. Developed through a unique collaboration of leading oncologists, actuaries, insurance professionals and software engineers, eviti is pioneering the way to bring positive solutions to the cancer crisis by empowering physicians with advanced oncology decision support and payers with real-time automated precertification, aligning quality care with the appropriate reimbursement.

**ResearchOne**

ResearchOne is a health and care research database developed by TPP in partnership with the University of Leeds and the UK Government’s Technology Strategy Board. The database consists of de-identified clinical and administrative data drawn from the electronic patient records currently held on TPP’s SystmOne. It has the potential to be one of the largest healthcare research databases in the world, containing up to 28 million records.
9. Technology-Enabled New Work Models

Potential Impact

One of the largest challenges in health today will be having sufficient skilled staff to deliver high-quality care to citizens. Technology-Enabled Work Models will improve clinician efficiency and improve retention in the global “war for talent”. As Telemedicine and Remote Consultation become more prevalent, doctors and nurses will have more flexibility of schedules and work locations, which may increase job satisfaction and improve retention.

Furthermore, emerging technologies will reduce the amount of time clinicians spend on administrative activities such as dictation and patient notes, leading to increased time available for delivering care, which will then improve overall system efficiency.

Bringing productivity measures such as labour scheduling and technology-enabled workflow from the private sector to public healthcare will ensure that hospitals run efficiently, making the best use of the resources available. Monitoring asset usage and location and using technology such as reverse auction purchasing will also help to optimise third-party spending.

Solutions to Watch

iRelaunch
For nearly 11,000 experienced professionals at more than 160 events since 2006, iRelaunch aims to create connections, empower action, and keep a finger on the pulse of cutting-edge career reentry resources. iRelaunch produces career reentry programs, events, and content for employers, universities, organisations and individuals. They support mid-career professionals and the companies who want to hire them.

Malinko
Malinko is web-based software that provides three essential elements to easily manage business resources. The combination of appointment scheduling and CRM system allows you to build a complex and detailed picture of your clients. As you are able to set thresholds for your resources (eg cleaners, engineers etc) you can quickly identify where you have got underutilised resources, and can be accessed and managed via mobile devices.

Corperformance
Corperformance specialises in behaviour and lifestyle change (particularly in relationship to food and drink) for a more fit workforce.
10. Seamless End-to-End Health and Social Care Provision

Potential Impact

From a technology perspective, this will be the litmus test for health providers succeeding in the 21st century. Interoperability and a single patient record are arguably the most critical foundation to seamless end-to-end care and the platform from which technology-enabled transformation will be possible. Interoperability will allow data from any source – mobile phone applications, Smart Homes, GP practices, care homes, Telemedicine centres or hospital medical records - to be captured, stored and interpreted in a uniform way.

At the centre, a single patient record will keep track of all interactions with the health and social care system, from remote consultations and GP visits, to hospital stays and pharmacy prescriptions. For example, when a patient presents at the A&E, the consultant on duty will have immediate access to the patient’s medical history, all prescriptions the patient is taking, any allergies and previous interventions. If the patient has been allocated a Patient Navigator or Case Manager, this information would also be available so that this person can be an active part of the dialogue.

Interoperability and a single patient record will do much more than just inform healthcare providers. This information will educate and inform both commissioners and patients, allowing transparent access to hospitals’ performance data and enabling informed decisions as to where best care can be delivered. Policy-makers will be able to understand public health dynamics with more depth, using macro trends to create insight from that analysis. Patients will become more engaged in their own health and wellness.

See also Section II: Airedale's Right Care Vision

Solutions to Watch

TPP SystmOne
SystmOne fully supports the NHS vision for a 'one patient, one record' model of healthcare. Professionals can access a single source of information, detailing a patient’s contact with the health service across their lifetime, being accessible whatever the care setting and available in such way that any authorised health or social care professional can enter information. It documents every appointment, every medication, every allergy and every contact the patient has ever had. Such a platform allows the integration of primary, secondary, community and social care records, transforming care delivery at scale. SystmOne has shown significant positive results demonstrating the vision of connected health today.

Orion Health
Software that supports clinicians, provider facilities and OEM partners and allows them to facilitate data exchange between hospitals, health systems, HIEs, and affiliated providers and medical devices, resulting in improved care coordination, increased cost savings and efficiencies, and enhanced quality of care.

Epic
Epic makes software for mid-size and large medical groups, hospitals and integrated healthcare organisations – working with customers that include community hospitals, academic facilities, children’s organisations, safety net providers and multi-hospital systems. Their integrated software spans clinical, access and revenue functions and extends into the home.

Cerner
Cerner creates software that supports their mission to contribute to the systemic improvement of health care delivery and the health of communities. They work to eliminate error, variance and waste for health care providers and consumers around the world, by optimising processes for health care organizations ranging from single-doctor practices to entire countries, for the pharmaceutical and medical device industries, and for the field of health care as a whole.
Section II

A View From the Front Line: Airedale NHS Foundation Trust's Right Care Vision

By Bridget Fletcher, Chief Executive, Airedale NHS Foundation Trust
A View From the Front Line:
Airedale NHS Foundation Trust’s Right Care Vision

Introduction

At Airedale we have been working with our local health and social care partners to develop our Right Care vision. We accept we have to think differently and radically transform if we are going to meet the needs of the communities we serve. In future we have to enable patients to stay in their own home as long as possible – this is very different to what we have now.

In other parts of our lives, be it how we shop, how we use our bank, or how we choose a holiday, we want to ‘take control’ and are demanding more responsive services that are there for us when and where we need them. Similarly in health and social care, we want to bring our own effort and resources far more into play and are demanding services that help keep us well and are there for us when we are ill and at our most vulnerable.

The continuing decline in paternalism between clinicians and patients, and the increase in people wanting to take control with the best advice and care options to live healthy independent lives adds to the momentum for change.

At the same time, new technologies and new ways of working are opening up possibilities to offer services in different settings and in different ways that both meet these new needs and are sustainable financially.

In the section to follow, we review our experience to date in using innovative technologies to transform care through two carefully selected case studies. We also share our Right Care vision for the future and discuss how we will deliver Right Care.
Airedale's Case Study: Telemedicine

Airedale NHS Foundation Trust is successfully using video conferencing technology to connect patients with health care professionals so care can be provided directly in their own homes, nursing and/or residential care homes.

The Trust developed initial proof-of-concept for their telemedicine programme with the prison service eight years ago, utilising standard video conferencing equipment. Results were positive: the programme significantly reduced hospital admissions, A&E visits and outpatient attendances, while also significantly reducing expenditure on escort costs. The programme has grown significantly, and Airedale now provides remote acute and planned clinical opinion services from 21 specialties to 20 prisons located throughout England.

Building on this experience, four years ago, with the help of a grant from the Technology Strategy Board, Airedale worked with a technology partner and developed a bespoke TV set top box to pilot a teleconsultation service for diabetes patients. The pilot was successful in reducing urgent hospital admissions and received excellent patient feedback. The at home service has since been extended to other long term conditions including COPD, heart failure, Parkinson’s disease and patients approaching end of life.

The light bulb moment came in 2011 when, following an audit of acute admissions which demonstrated a high number of admissions from nursing and residential care homes, the Trust identified the opportunity to use video conferencing to better support patients from nursing and residential care homes. Today, the Trust supports over 2,000 nursing and residential care home residents from its 24/7 acute nurse staffed Telehealth Hub. Results from the first 12 months with an initial cohort of 17 nursing homes demonstrated a 45% reduction in urgent admissions and 69% reduction in A&E attendances. For those residents who did require admission, length of stay was reduced by 30% and bed days by 60% as hospitals were able to discharge patients earlier and with plans in place to provide continued support through a combination of telemedicine and community services.

Solutions Utilised

**Immedicare**
Immedicare is a joint venture between Airedale NHS Foundation Trust and Involve-Visual, delivering an end to end technical and clinical teleconsultation service offer that operates 24/7 across a wide range of clinical settings. Need for hospital admission is reduced by up to 45% and for Emergency Department attendance by up to 69%.

**Red Embedded**
Red Embedded worked in partnership with Airedale NHS Foundation Trust to develop the bespoke TV set top box to support long term conditions in their own homes, linking them to specialist care and advice remotely.
Airedale's Case Study: Seamless End-to-End Health and Social Care Provision

In partnership with TPP, Airedale has co-created the hospital module of SystmOne to replace its outdated PAS. Phase 1 is complete, including PAS, Bed Management and Emergency Department modules and phase 2 has begun, bringing more clinical functionality. The Trust selected SystmOne as the majority of GPs use their GP clinical system. Patient benefits are already being realized as clinicians in secondary and primary care can view shared data such as medication and clinical notes. Organisational boundaries begin to blur as tasking functionality allows community actions to be initiated from secondary care, and vice versa, streamlining patient experience and improving overall service efficiency.

Solutions Utilised

TPP SystmOne
SystmOne fully supports the NHS vision for a ‘one patient, one record’ model of healthcare. Professionals can access a single source of information, detailing a patient’s contact with the health service across their lifetime, being accessible whatever the care setting and available in such way that any authorised health or social care professional can enter information. It documents every appointment, every medication, every allergy and every contact the patient has ever had. Such a platform allows the integration of primary, secondary, community and social care records, transforming care delivery at scale. SystmOne has shown significant positive results demonstrating the vision of connected health today.
Our Right Care Vision
by Airedale NHS Foundation Trust

*Right Care* has the individual patient at the centre, with combined health and social care integrated around their needs. She/he accesses help and support in a way that is right for them that makes them feel empowered, active and safe. Care and support is provided compassionately and protects their dignity always. Care is provided by a range of care providers – dependent upon the needs of the individual – utilising community assets and enabled by technology to both improve the patient experience through a more integrated, right first time offer and make the best use of tax payer resources.

The characteristics of *Right Care* which patients and their families tell us are most important to them and make the biggest difference are:

- To be listened to, treated with dignity and respect and have control of my own care
- More options to keep my independence and to keep well
- Care in my home, closer to my home
- Care Options that suit my personal circumstance
- Immediate, high quality, safe care whenever I have a need
- Better integration of health and social care is essential in improving my care experience
- Responsive care at all times – and especially when my needs change.

*Right Care* puts these needs centrally to the design of services. It focuses on better outcomes for individuals. Driven by the needs of each person, not those of professionals or organisations, *Right Care* wraps itself around the individual. It will make it much simpler to navigate the different services available.

For those people who want to use their personal care budgets to explore options of care that suit them including self-help, or to compare the services on offer, that information will be far more readily available and transparent.

A personal case manager will ensure that those who need help to navigate their way to the best care for them get it. Patients and their families share frustrations about falling between the gap between different services/organisations. *Right Care* aims to close the gap between primary and secondary care and transform how clinicians work and behave. Patients should experience seamless care with a named clinician clearly responsible and accountable for their full episode of care.

When expert advice or diagnosis is needed it will be far more accessible in the home and close to home, enabled by technologies such as mobile applications and telemedicine.

When serious illness can be avoided, information and services will focus on helping each person keep as well as they can using monitoring devices in the home. When we do need hospital based care, it will be high quality, safe and only when it adds clinical value.

Returning to independence from hospital will be the goal wherever possible. For those who cannot recover, care at the end of life will respect each person's individual wishes.
Our Right Care Vision
by Airedale NHS Foundation Trust

OUR VISION: CARE IN PEOPLE’S HOMES THROUGH DATA DRIVEN, INTEGRATED SERVICES

'RIGHT CARE'

MYSELF MENU
- ENROL
- GOALS
- PLAN
- TRACKING
- EXPERT OPINION
- PEER SUPPORT

Airedale NHS
NHS Foundation Trust
Delivering Right Care

To move these improvements from vision to reality will require efforts behind the scenes.

Different organisations will need to integrate how they work around an individual’s needs.

Clinicians will need to explore how closing the gap between primary and secondary care could be best achieved.

Staff will need retraining as we move to more generic roles which focus more on individuals whole needs, working collegiately with other professions to as they organise their services in a different way - with care at home being the preferred option where it is safe to do so, rather than hospital being the default option.

*Right Care* will maximise technology investments to support people to self-care and improve individual patient and carer experience. For example *Right Care* will

- capitalise on the investment in our shared electronic patient records – this will give patients, their carers and health and social care professionals access to the information they need to deliver effective support. This shared information platform will provide real time data combined with self-care intelligence to create a rich patient record which will enable a tailored, more personalised service which is safer, more responsive and reduces duplication

- build on our teleconsultation experience – this clearly demonstrates we can reduce travel times for patients, their carers, and health and social care professionals; avoid urgent hospital admissions; reduce A&E attendances and significantly cut length of stay and bed days which frees up resource for reinvestment in more home based care, as well as creating resource for new innovations. We will roll out this proven solution on a wider scale.

New technologies and different ways of working will be adopted to improve access to real time information and bring services closer to home. These could include:

- helping patients develop their knowledge about their particular long term conditions and encourage lifestyle changes; monitor their health ups and downs, so they can track changes and prevent or delay the onset of more serious deterioration; and provide immediate access to expert opinion or voluntary sector support when required to relieve anxiety and agree next steps

- enabling GP practices to enroll patients with chronic conditions using a supported self-care tool to agree Life (and Health) goals; patient led interventions; clinically led interventions; and patient led monitoring of biomedical and personal condition and lifestyle markers (BP, weight, diet, exercise level, etc.)

- using predictive analytics to manage by exception, using the integration of the care record to identify those patients whose behavioural and biomedical outcome markers are deteriorating rapidly

- having case manager led telecoaching to support individuals to deliver on their health plan which they have agreed with the GP

- using social media to better engage with patients, our local communities and staff

Together with our local Health and social care partners, Airedale NHS Foundation Trust is determined to be at the leading edge of taking every opportunity to improve the lives of local people. Whilst commissioners and providers are responsible for whole populations, it will be our shared focus on meeting individual need that will define us. This individual focus lies at the very heart of *Right Care*. 
Additional Reading

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ResearchOne http://www.tpp-uk.com
European Innovation Partnership on Active & Healthy Ageing https://webgate.ec.europa.eu/eipaha/index/site
About the Author

Ms. Bridget Fletcher
Chief Executive
Airedale NHS Foundation Trust

Bridget was appointed Chief Executive of Airedale NHS Foundation Trust in July 2010. She had previously been Chief Operating Officer/Chief Nurse. She joined the Trust as Director of Nursing in 2005. Prior to this she held senior management roles in other NHS Trusts and was responsible for acute health services and professional nursing services. As Chief Operating Officer/Chief Nurse, Ms. Fletcher’s main focus was on embedding patient quality and safety systems across the organisation.

As Chief Executive she is now concentrating on leading whole system redesign to help create a sustainable local health and social care economy. This means leading a radical change from a mainly traditional medical hospital dominated delivery model to one based on diversified services, designed in partnership with commissioners, providers, commercial partners and the community, delivered at the most appropriate point for patients. Patient orchestrated care, at home/closer to home enabled by technology is at the heart of Ms. Fletcher’s strategy to deliver the organisation’s Right Care vision.

About Airedale NHS Foundation Trust

Airedale is an integrated provider of personalised community, acute, elective and specialised care for a local population of over 220,000 people from a widespread and diverse area covering 700 square miles with Yorkshire and Lancashire.

They are also the market leaders in prison teleconsultation, providing specialist opinion and support to 20 prisons throughout England and have an expanding teleconsultation service supporting patients with long term conditions in their own homes, nursing and residential care homes, hospices and GP practices.

Earlier this year, together with partners from Hull and Barnsley, Airedale's innovative work in teleconsultation was recognised in Europe when the Yorkshire and Humber Telehealth Hub was awarded first round Reference Site status by the European Innovation Partnership Active and Healthy Ageing programme (one of only 2 English projects to achieve reference site status and the only project in England to achieve 3 stars). Following a rigorous peer review process Reference Site status was awarded only to those organisations and projects able to demonstrate impact and show particular innovative practices which could be transferred to other European contexts.

Email
Section III
Disruptors to Kick Start Acceleration

Navigation | Restructure Budgets and Payments | Engagement & Diagnosis | Treatment
Disruptors to Kick Start Acceleration

Even in a free at the point of need system, payments and payment structures are critical to accelerating change. Outcome based medicine, where providers are paid based on the results of the care delivered, rather than the condition or treatments provided, will become more prevalent. “One system – one budget” approach will need to be explored across the health and social care eco-system.

- **Centres of Excellence**: Investing in establishing virtual Centres of Excellence will enable patients across geographies and care settings to access specialty care resources, such as specialist doctors and treatment regimens. By its virtual nature, Centres of Excellence can serve the entire NHS, (and potentially beyond) through a homogeneous approach and enable powerful stepstones in the transformation journey:
  - Centralised data collection will enable higher level of analytics.
  - Quality of care will improve as data-driven best-practices are continuously revised and shared in near real time among virtual centres.
  - Flexibility of resources easily scaled up or down according to demand, as virtual centres will share a similar work-force which can be assigned from one centre to another, independently of their physical location. Centres of Excellence will also function as centres of collaboration, and data-driven outcomes will speed implementation of necessary changes across the NHS.
  - Centres of Excellence can utilise existing structure (hospitals, GPs, social care) and resources in the NHS, such as experienced healthcare professionals working on a project-by-project basis to provide training, supervision and management skills according to the needs of each individual centre.

- **Transparent Performance Data**: Provide access to transparent performance data to allow patients and commissioners to understand the outcomes and performance across the health economy and make informed decisions.

Restructure Budgets and Payments

- **Wellness Budget**: Merge health and social care budgets into a personal “wellness budget”, which can be spent among education and wellness programmes, preventative medicine and care tailored to the needs of the individual.

- **Insurance-Based Model**: Fund it sustainably via an insurance-based model, where citizens contribute during their working life a % of their income and then take out of the system in a needs based approach (e.g. Germany and Spain)

- **Outcomes**: Pay providers on citizen outcomes where metrics are based on prevention and evidence-driven proactive avoidance.

- **Financial Incentive**: Create a financial incentive where citizens contribute a higher % of their salaries if they engage in high-risk or destructive activities (e.g. smoking, poor nutrition, lack of exercise etc.).
Disruptors to Kick Start Acceleration

Engagement & Diagnosis

This will lead to an increased use of devices by both doctors and patients, such as self-service collection and provision of data (and live analytical review of this real-time insight) for personalised/customised diagnostics. Patients will demand that the right infrastructure is in place to share information about them in a safe and secure way – and also value the analytics that can be performed to better serve them and their families.

- **Patient as a ‘Business Partner’**: By treating the patient as a ‘business partner’ in their health management, health professionals will incentivise patients to become more proactive and accountable for their health. The NHS can support the behavioural change with specific technologies, such as using CRM principles for patient interaction to trace and capture preferences and needs of patients and their carers. Health conditions and treatment outcomes will be measured also by the level of patient engagement.

- **Personalisation**: Medicine and treatments will become more personalised. Whether it is using genomics or personal pathways and digital habits, we will see areas where personalisation is expected in treatment. We are seeing advances today with 3D printing – in potentially growing organs, or revolutionising joint replacements. 4D printing, where materials can self-assemble and change over time may also revolutionise biomedical products.

Treatment

Prevention and treatment in the home will reign supreme, personalised to the individual and their needs.

- **Care in the Home**: Reverse-engineer treatment around the patient and deliver treatment in the comfort of their home (especially useful for long-term disease management and frail elderly patients).

- **Prevention, not fire-fighting**: Patients to be offered regular check-ups that act as early warning beacons.

- **Patient-Driven Wellness and Patient Responsibility**: Every patient to be offered a tailored wellness plan, provided with coaching apps and monitoring devices for nutrition, exercise, sleep, and smoking cessation.
Section IV
So What is ‘Right Technology’: Design Principles for Future-Proof Health Technology?
So What is ‘Right Technology’: Design Principles for Future-Proof Health Technology?

To enable the vision of Personalised and Preventative Care, the NHS will need to invest in technology that will enable care for the right patients, in the right place, at the right time. To inform these decisions, we have suggested three design principles: technology should enable prevention, treatment of multi-chronics, and provision of care for the frail elderly.

**Prevention**

Proactive disease management only works with the right technology infrastructure – invest in analytics, telehealth, monitoring devices and a single patient record.

**Multi-Chronic & Long-Term Conditions**

70 – 80% of health spending currently support patients with multiple chronic long term disease – trend rising. Choose technology that supports long-term condition management as it will improve the patient experience and optimise the use of resources.

**Independence**

The number of 80+ year olds will double in the next decade. The majority of people want to remain living independently at home, while at the same time having the right safe-guards in place to ensure this can be done safely. Invest in assisted living technologies that link up citizens, their loved ones, carers, health and social care providers. Interoperability is key as is user-centric design.

All these things are possible – but changing behaviour will require new ways of working, different incentives. Technology advances far outpace today’s ability of health systems to adopt – so cultural, behavioural, governance, employee and management relations, CapEx funding models and other barriers need to be addressed to allow systems to embrace, not fear, such development.

We will see great advances both in the UK and in Europe, but it is very likely that emerging markets will continue to make some of the biggest leaps (see recent Harvard Business Review article on healthcare in India – *Delivering World-Class Healthcare – Affordably*) in how they deliver health. Learning from these advances, and applying them to other populations may be one of the key ways to realise advances whilst also dealing with the economic pressure that we will continue to face.
Section V

A Vision for the NHS in 10 Years' Time

A Day's Journey in the NHS of the Future | Final Considerations
A Day's Journey in the NHS of the Future

Charlotte
A Healthy 25-year Old

Charlotte’s alarm clock sounds at 7am on a Tuesday. Before she gets out of bed, Charlotte checks her mobile phone: today’s weather, stock market performance, and her wellness signs, including sleep hours calculated via an app and exercise data collected via an armband. She notices that her physical activity has been low recently, and decides to start her day off with a jog. She laces up her trainers, straps on her armband and heads out the door.

One mile in, Charlotte steps off a kerb and lands on her ankle – ouch! Limping home, Charlotte begins a self-diagnosis questionnaire, which recommends that she visit a doctor to examine the injured ankle. She logs into her NHS app – can a doctor see her today about her ankle? She notices an option to see an A&E doctor for a remote consult, which is perfect for her busy schedule, and she selects an appointment time that is convenient to her that morning.

Right on time, Charlotte receives a video call from her A&E consultant on her iPad. She shows the consultant her ankle, which has now swollen significantly. The doctor diagnoses it as a bad sprain, and shows Charlotte how to wrap the ankle. She also prescribes medicine to help with the pain. Thanking the consultant, Charlotte signs off the videoconference, rates the experience and comments on how convenient the appointment was and on her laptop accesses her single medical record online. She notices that her prescription has indeed been called in to her preferred pharmacy.

Later that day, after a stop at the pharmacy to pick up the recommended ankle wrap and her prescription, Charlotte is feeling much better. She refers back to the video of the consultation to ensure she has applied the ankle wrap correctly. She is thankful for the flexibility of the NHS and realises that technology allows her to access all of the services she needs from home. She knows that she is responsible for her own health, and is happy that the NHS is so efficient. She thinks about her career – perhaps joining the NHS as a doctor, nurse or even a patient navigator might suit her!
A Day's Journey in the NHS of the Future

Charlotte
A Healthy 25-year Old

Transformative Technologies
- Healthy Population
- Multi-Chronics and Elderly

Foundation Technology
- Cross-continuum Budget and Payment Structure
- Patient Engagement and Incentives
- Health System Navigation
- Demand for Care in the Home

1. App-Driven Wellness
2. Self Care
3. Smart Homes
4. Assisted Living Technologies
5. Remote Consultations
6. Telemedicine
7. Case Mgmt and Patient Navigators
8. Visual, Predicitive Analytics
9. Tech-Enabled Work Models
10. Single Patient Record and Interoperability

Disruptors: Accelerate Transformation

Improve Wellness and Reduce Acuity of Care

Improve Outcomes and Increase Efficiency of Care Delivery

Continuum of Care
A Day's Journey in the NHS of the Future

Michael
An 80 Year Old Pensioner with Diabetes

At 7am on Tuesday, Michael is reminded by a wall-mounted tablet in his Smart Home to test his blood glucose. Michael has had diabetes for 10 years, but he is not feeling great today as he woke up with a fever and trouble breathing. Luckily, Michael is a part of a telemedicine programme for patients with diabetes. He rings the 24x7 call centre to report his symptoms to a nurse and ask for advice. His nurse suspects that Michael may be coming down with pneumonia, and arranges transport for Michael to head into his closest care centre. The nurse also sees on Michael’s medical record that he has been assigned a Patient Navigator, and alerts this person. The Patient Navigator notifies Michael’s son that he is being admitted to hospital and makes sure that Michael knows that he is being picked up to come to the hospital.

Michael’s son, Henry, is worried about his father, but is relieved to know that his health is being looked after proactively. As he heads to the hospital care centre to meet his father, Henry reviews the hospital’s performance data and is happy to find that outcomes are above average. While the hospital is not one of the leading respiratory specialty centres in the country, it works closely with the virtual Respiratory Centre of Excellence to ensure that top-notch care is provided to all patients.

Henry meets Michael in the hospital, where the hospital’s Case Manager explains that Michael has indeed been diagnosed with pneumonia. She also assures Michael and Henry that, thanks to the single patient record, Michael’s treatment regime for his diabetes has already been reviewed and is being followed. She also says that the acuity of the condition is relatively low because Michael reported his symptoms and diagnosis early.

Four days later, Michael has recovered enough to be discharged from the care centre. Michael and Henry are thankful for such a quick recovery, and also for the Patient Navigator, who has been working with them throughout the admission, and explained all care decisions and helped coordinate the many clinicians who have treated Michael. He has even called and video conferenced regularly just to check in on Michael’s progress, monitored him through the diagnostics in Michael’s home – and ensured that Michael is following the care pathway that the doctors set out in hospital. Michael is relieved to be back in his Smart Home, and Henry is comforted to know that his father’s health is being monitored so closely thanks to advances in technology. A month down the line – Michael avoided any readmissions, and had several video checkpoints with his medical team to ensure that he was feeling better. Both Michael and Henry are thankful that the NHS has enabled a seamless, personalised end-to-end health and social care experience.
## A Day's Journey in the NHS of the Future

### Michael
An 80 Year Old Pensioner with Diabetes

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### Disruptors: Accelerate Transformation
- Cross-continuum Budget and Payment Structure
- Patient Engagement and Incentives
- Health System Navigation
- Demand for Care in the Home

Continuum of Care
A Day's Journey in the NHS of the Future

John
A 50 Year-Old on Holiday Away From Home

John is on holiday and is not feeling well as he finishes a casual football game with his family on Tuesday morning. He begins to worry that something is wrong, and asks his friend Henry, with whom he is staying, for the telephone number of a local doctor.

He calls Dr Smith and describes his symptoms – he has intermittently been feeling weak and light headed, particularly after he plays football. Dr Smith asks John to apply a diagnostic plaster, which begins transmitting in real time a range of biomedical measures through to the doctor. Dr Smith says that it looks like John is having significantly low blood glucose levels at times when he feels unwell. However, his heart’s electrical activity, which is also transmitted through the diagnostic plaster, appears normal to the doctor. Dr Smith says that he will confer with an endocrinologist to help with diagnosing John’s condition.

When Dr Smith rings back, he says he has spoken with an endocrinologist and agreed a plan to investigate John’s symptoms; the next step is for John to come to the diagnostic centre on the local high-street for a CT scan, which Dr Smith has arranged for the following afternoon. Dr Smith advises John on how to stay safe until the tests are all complete and has John connect his personal monitoring devices that John regularly wears to collect general information about his health. With one click he extends access to Dr Smith so he has permission to collect and analyse his personal information alongside the extra diagnostics from the plaster. All the details are updated in John’s electronic medical record application - and he and the doctors taking care of him can see the information in real-time.

With the scan completed, John visits the hospital clinic for a formal examination by Dr Smith, who, following the examination, diagnoses John with a rare condition which causes his pancreas to produce too much insulin. John is scheduled for an urgent operation for the following day to remove part of his pancreas.

As John is prepared for surgery on Thursday morning, his family is amazed to hear that he specialist who performs his operation is based in America: the specialist will support the local surgical team using a surgical robot! The surgery goes well, and John is able to go home the same day. As he recovers, he will be monitored using the diagnostic plaster to ensure that the problem has been resolved and that there are no signs of post-operative complications.

As John goes to sleep that night, he thinks about how thankful he is for today’s NHS. Throughout his care journey, he has been cared for, away from home, by Dr Smith, been assessed by an endocrinologist, had a diagnostic CT scan, and been operated on by a doctor in America via a robot. He has been actively engaged in the dialogue with these specialists and has a transparent view of his progress. He has even been assigned a Health Coach who will work both with the doctors and John, and will be in regular contact with him throughout his recovery and ensure that he understands all the steps he needs to take to return to full-health. Technology has transformed the NHS into a sustainable and innovative health service.
A Day's Journey in the NHS of the Future

John
A 50 Year-Old on Holiday Away From Home

Transformation Component

Improve Wellness and Reduce Acuity of Care

1. App-Driven Wellness
2. Self Care
5. Remote Consultations
6. Telemedicine
7. Case Mgmt and Patient Navigators

Improve Outcomes and Increase Efficiency of Care Delivery

10. Single Patient Record and Interoperability

Foundation Technology

Disruptors: Accelerate Transformation

Cross-continuum Budget and Payment Structure
Patient Engagement and Incentives
Health System Navigation
Demand for Care in the Home

Continuum of Care
A Day's Journey in the NHS of the Future

It's Tuesday, Dr Smith thinks as he wakes up, which means that he'll start his morning working virtually, and then head to the hospital to work in A&E. He is thankful for the flexibility in his work schedule, which allows him to have a successful career and manage his responsibilities at home.

One of his morning remote consultations is a 25-year-old woman who has injured her ankle on a run. Dr Smith reviews Charlotte’s single medical record and adds notes and a prescription for pain medicine. He shows Charlotte how to wrap her ankle and advises her to set up another appointment if the ankle seems to be getting any worse.

Afterwards, Dr Smith receives a phone call from John, who he can tell from his medical record is from outside of the area. Dr Smith reviews his biomedical measures, which are reported real-time from a diagnostic bandage and his personal devices. He is initially not sure of his diagnosis. He tells John he will ring him back shortly and hangs up. He then has an immediate video conference with the endocrinologist on call at the hospital, who recommends that John have a CT scan the next day. Dr Smith works regularly with the diagnostic centres that are located on the high-streets of the UK and electronically schedules him in for the appointment. He is pleased that it will be so convenient for John.

When Dr Smith goes into the hospital in the afternoon, he meets Michael, who has been diagnosed with pneumonia. He reviews Michael’s medical records, and notices that Michael was identified through population segmentation two years ago as a patient who would increasingly utilise the healthcare system, and was at that time enrolled in a Telemedicine and Patient Navigator programme. In order to live independently in his own home, several Smart Home technologies, including a blood glucose test reminder tool were implemented in his home.

As Dr Smith begins to write a treatment regimen for Michael, he reviews the protocol for pneumonia, which has been informed by extensive analytics on patient outcomes to identify which treatments produce the best outcomes. He is thankful that the hospital’s EMR system will prompt him with reminders based on this protocol and will also ensure that there are no drug interactions between Michael’s diabetes treatment and pneumonia treatment. Dr Smith accesses the virtual Respiratory Centre of Excellence and speaks with a specialist, who helps by reviewing the treatment plan. When the plan is finalised, Dr Smith reviews it with the Patient Navigator, who will ensure that it is followed by clinicians and explained to the patient and his family. Dr Smith is hopeful that Michael will be discharged in 3-5 days.

As Dr Smith wraps up his day, he thinks about how technology has revolutionised care in the past decade. His colleagues agree that the interoperability of systems and the use of analytics to commission care, identify patients who would frequently use the healthcare system, and increase prevalence of evidence-based medicine have increased the efficiency of the NHS, and he is proud to work for a health system that is globally recognised as a leader in technology-driven innovation.
A Day's Journey in the NHS of the Future

Dr. Smith
Charlotte, Michael, and John's doctor

Transformation Component
Healthy Population
- 1. App-Driven Wellness
- 2. Self Care

Multi-Chronics and Elderly
- 3. Smart Homes
- 4. Assisted Living Technologies

Foundation Technology
10. Single Patient Record and Interoperability

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- 5. Remote Consultations
- 6. Telemedicine

Improve Outcomes and Increase Efficiency of Care Delivery
- 7. Case Mgmt and Patient Navigators
- 8. Visual, Predictive Analytics

Demand for Care in the Home
Continuum of Care
A Vision for the NHS in 10 Years' Time

Final Considerations

In ten years’ time, technology will enable a sustainable health economy by improving wellness, allowing more care to be delivered in the home and improving efficiency and outcomes of care. Preventative and personalised care, enabled by technology, will reshape the relationship between patients and their health and social care providers. In the future, individuals and care providers will share the responsibility for wellness and preventative care.

To accelerate change, barriers in the current system must be overcome. This can be achieved by introducing disruptors such as payment and budget restructuring, incentives or penalties to increase patient engagement, the ability to navigate care channels in a personalised way, and support for treatment in the home setting.

In the key aspects of technology, workforce and patient population:

• The main technology barrier is the legacy of siloed solutions across the system and consequent challenges for integration. However, as the NHS set its strategic priorities for transformation, these principles will dictate which technologies will function as enablers, and subsequent investments can receive appropriate planning to converge requirements and resources towards same future goals.

• For the vast majority of the NHS workforce who are dedicated and passionate in providing quality of care, the vision herein mentioned will bring easier, safer and more effective ways to deliver care. However, it is critical that the NHS develops a robust communication and engagement programme to provide a clear vision of the path ahead, which is less about technology but a redefinition of the relationship between patient and the NHS. The NHS should offer its workforce flexible levels of engagement so both clinical and non-clinical staff can choose active roles in the transformational journey, supported by new models of incentive.

• Patients are concerned with two main aspects in healthcare: the availability and the quality of care they receive. Personalised and preventative care will dramatically improve the dynamics of how patients experience both aspects, therefore effective sharing and communicating positive outcomes will serve as a powerful tool for patient engagement.

The NHS structure can support personalised and preventative care by providing and supporting solutions that allow commissioners and care providers to better understand the current population, the location and use of resources, and predict which subset of patients are likely to require proactive care so that we can target interventions for this population.

Technology must also enable doctors and nurses to diagnose and treat patients virtually, whether this is through a self-care tool, remote consultations or telemedicine. A single patient record and accessible, intuitive analytics tools must be available in both new and traditional care settings to support personalised diagnosis and treatment. Finally, tech-enabled work models will increase retention in the global “war for talent” and improve operational efficiency of hospitals.
A Vision for the NHS in 10 Years’ Time

Final Considerations (cont.)

Smart investments in virtual Centres of Excellence can be established for specialty conditions. This will provide any patient with access to specialists across the country through telemedicine or remote consultation. Such approach will enhance quality of care and outcomes in a personalised and technology-enabled NHS of tomorrow by providing access to resources already available in today’s NHS.

Technology will improve patient satisfaction, as patients feel empowered by options of care settings; transparent performance data will help patients make decisions that directly impact when, where, and how they are treated. A more engaged and educated patient - whether healthy, chronic or elderly - will increasingly receive first-line and follow-up services virtually in the comfort of their own homes.

Sustainability in the NHS can be achieved by changing the nature of the relationship between patients and the NHS. The right technologies will both reduce demand for care in traditional settings and increase the efficiency and ROI of resources available. New funding models, such as combined health and social care budgets cross the care continuum with payments based on prevention and outcomes, will support sustainability in the long term.
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Note: Accenture does not endorse, approve or certify the products or services presented in this paper, nor does it guarantee the accuracy, completeness, or efficacy of such products or services. Reference herein to any specific commercial product, process or service by trade name, trademark, service mark, manufacturer or otherwise does not constitute or imply endorsement, recommendation or favouring by Accenture.
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Revolutionising Joint Replacements
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## Keywords

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*Please note this index selection is not intended as a comprehensive list, but rather a general overview of key concepts and ideas mentioned in this paper.*
About The Author

Aimie Chapple
Managing Director, Accenture Health & Client Innovation Lead UK

Aimie Chapple has been with Accenture since 1992, serving in several leadership roles across international markets. Aimie currently holds the positions of Managing Director, Accenture Health and Client Innovation Lead for UKI, also being recently appointed as Relationship Lead for Accenture-BUPA globally.

In her role as Client Innovation Lead, Aimie sponsors and runs the 'Innovation Centre' in the UK, where Accenture runs breakthrough sessions with Executive Boards, helping clients from many industries shape and deliver their Transformational Business Agendas, including organisations such as Sainsbury's, Walt Disney, Centrica, Prudential, Delta Airlines, Bell South and the Home Office. Aimie is also the Accenture Way Lead for the UK and Ireland.

Aimie previously served as the head of Accenture Management Consulting UKI, having led the Talent & Organisation Performance service line. In addition to her client work, Aimie has served as the global sponsor for Accenture’s Change Enablement offerings, led the Organisation Change Management practice across EALA (Europe, Africa and Latin America) and served as Executive Director for Accenture’s Human Capital Strategy advising on a number of Accenture’s own global strategic initiatives. She sits on the Board of Accenture UK, is the serving President of the Management Consulting Association and the 2012 winner of the First Women Awards for Business Services.

Aimie grew up mostly in Colorado and Pennsylvania, with a stop in Tokyo; graduated from Smith College with a BA in Social Psychology and studied at the University of Sussex. She has been living with her husband and two daughters in the UK since 1997.

Email
About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with approximately 275,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world’s most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$28.6 billion for the fiscal year ended Aug. 31, 2013. Its home page is www.accenture.com.

Accenture Insight Driven Health

Insight driven health is the foundation of more effective, efficient and affordable healthcare. That’s why the world’s leading healthcare providers and health plans choose Accenture for a wide range of services based on insight driven health methodology that help them use knowledge in new ways—from the back office to the doctor’s office. Our committed professionals combine real-world experience, business and clinical insights and innovative technologies with a view to delivering the power of insight driven health.