Life Science and Advanced Analytics of Real-World Data: Opportunities in the United Kingdom

Real-World Data in Healthcare

Modern healthcare is undergoing massive changes in the way stakeholders are collecting and evaluating patient data. The growing importance of real-world data is a driving force for this shift, changing the ways the health industry is handling drug development, innovative solutions, and patient care delivery.

Real-world data is collected outside the constraints of conventional clinical trials and is increasingly informing decision-making in healthcare. It derives from multiple sources associated with a patient's health status in real-world setting, including data from their environment (work and home) and their social context. Real-world data can be collected from patient registries, electronic health databases, wearables, insurance, social media etc. By operating outside the boundaries of clinical trials continuously and in real time, real-world data can be used to monitor treatment effectiveness and drug safety to ultimately help us make faster and better informed decisions.

The United Kingdom plays an important role in unlocking the potential of real-world data. The UK is the leading nation for life science in Europe, together with Switzerland. In addition to a very high density of world leading life science companies and research institutions, the UK's unique characteristic is its National Health System (NHS)*. The imperative to modernise the NHS, as well as Her Majesty's government ambition for the UK to become the world leader for personalised medicine, generate a wealth of opportunities for business and R&D collaborations.

Real-World Evidence

Real-world evidence is the information derived from the analysis of real-world data. This evidence complements RCT data, and enables R&D organizations to understand causes for diseases and determine the value of treatment. Furthermore, RWE has the possibility to address previously unmet needs, for example by maximizing chances of drug development for small patient groups. Commercial organizations can use this data to demonstrate both the clinical and economic value of their product.

Challenges around real-world evidence include access, standardization of data, quality, data protection and governance. Current initiatives are concerned with how this data can best be collected, analyzed, and used for decision-making. However, additional tools are needed to develop both data infrastructure and analytical instruments. Partnership between stakeholders is thus essential for the full potential of RWE to be realized. Because of the capacity for real-world evidence to revolutionize healthcare, pharmaceutical companies are investing more and more into managing this 'big data', thus creating valuable opportunities for research and innovation.

Expected Impacts

In life science we are moving from a 'one size fits all' approach to a patient centric approach. Even more, with the evolution of technology, we now have access to uninterrupted real-world data. This has the potential to:

- Empower patients to take control of their health and monitor their progression
- Provide optimized and personalized treatment based on genomic profiling
- Detect diseases at an early stage
- Analyze the safety and efficacy of drugs and medical devices
- Change the way patients interact with the NHS
- Influence regulatory decisions

UK Initiatives

The newly appointed Secretary of State for Health and Social Care, Matthew Hancock, made technology one of his three early priorities for the NHS. Thus, government initiatives focus on unlocking the potential of new technologies to transform the delivery of healthcare services. The UK is leading the way in the use of RWE through a combination of innovative government projects aimed both at generating real-world data and granting access to existing data for analysis and research, without compromising patient confidentiality. If you are a life science company wishing to enter the UK market, make sure to read about the market entry opportunities below.

1. Modernization of the NHS

Innovations based on real-world data are crucial to address new patient needs but also modernise the way healthcare is delivered and enhance the efficiency of the healthcare system. Real-world data is the growth driver in the life science industry and the NHS is embracing it with a massive modernisation strategy aimed at harnessing technology and innovation. The imperative to modernise the NHS through innovation and digitisation translated into impressive funding announcements: £475 million granted for NHS digitisation in summer 2018, and an increase of £20.5bn of the NHS yearly budget, announced in October 2018.
There are two elements to this digital movement: one is the adoption of technologies by the NHS itself, and the other is putting digital technology in the hands of patients. Consequently, the following developments can be expected:

- Innovative solutions that could improve operational efficiency for the NHS (staff, internal management)
- Digital tools and automated solutions impacting the delivery of care with the aim of 'bringing the NHS to the patient'
- Next frontier treatments and personalised medicine (e.g. genomics)

As part of the industrial strategy* the UK has issued a Second Life Science Sector Deal with the aim to support the life sciences sector through collaboration and investment worth £1.3 billion. The deal includes a £1 billion investment into R&D, involving a program of research into the development of life-saving early disease detection technology that will be performed collaboratively by government and industry using artificial intelligence (AI). With the backing of a range of organizations in the life science sector the deal is aimed at safeguarding the UK's position at the forefront of disease treatment and future industries creation, such as genomics and AI-powered diagnostics. Recent developments include Kings College London opening a new center for medical imaging and AI in 2018, and genomics research being developed by the Catapult Cell and Gene Therapy Manufacturing Center in Stevenage, set up to help gene and cell therapy organizations translate their research into commercially viable therapies.

To address challenges regarding governance and regulation, in September 2018 the UK government launched a new code of conduct for data-driven health technology, hoping the NHS can benefit from the opportunities created, while ensuring responsible data management.

2. Innovation adoption programs

NHS Innovation Accelerator (NIA): The NHS' accelerator program supports the uptake and spread of high-impact innovation across the NHS. The new round of applications will open in summer 2019. For more details on how to apply click here.

NICE Office for Market Access: Helps life science and technology companies understand the healthcare landscape and provides a pre-evaluation service to assess the chances of success and adoption of products. To start a conversation or notify a medical technology click here.

The National Institute for Health Research have launched a campaign called 'Bringing Innovation to the NHS' to support companies successfully translate ideas into medical technologies for use in the NHS. They also provide funding support for SMEs. For more information click here.

AHSN: In 2013 the NHS set up 15 Academic Health Science Networks across the UK to act as catalysts to facilitate the development and adoption of innovation. AHSNs connect the NHS with academic institutions, local authorities, charities and industry. Find out more here.

DigitalHealth.London is a program supporting the adoption of digital innovations by the NHS. Their accelerator program works with 20-30 SMEs or start-ups every year, supporting them to develop solutions to the major challenges facing the NHS. For more information on this program, and to apply click here.

The Health Foundry is the UK's only co-working space dedicated to digital health. This incubator is powered by Guy's and St Thomas' Charity and works in partnership with the DigitalHealth.London Accelerator. The Foundry also helps with processes of NHS purchasing and regularly organizes pitching events. For more information click here.

3. Non-profit organizations and patient groups

The Wellcome Trust is a biomedical research charity. They currently have an award scheme called 'Innovator Awards' that is open for applications. The level of funding is between £500,000 and £750,000 for a duration of up to 24 months. For more information and to submit an application click here.

The Alzheimer's Society runs an accelerator program that looks to fund innovations and inventions that could help people with dementia. Opportunities to join the program will be published here.

One Nucleus is a non-profit membership organization headquartered in Cambridge providing local and international connectivity for life science professionals. They organize a variety of networking activities providing a helpful platform for B2B collaborations. To see all upcoming events click here.

OBN is a non-profit membership organization located in Oxford that brings together UK life science companies, investors and corporate stakeholders. They host a variety of activities such as workshops, trainings and networking events to develop an environment which supports the emergence and growth of innovative products.

The above mentioned programs and institutions are examples. Please note that there are many more across the UK. For a detailed list of all UK life sciences trade organizations, membership associations, clusters, and research and innovation networks click here

Business Opportunities in the UK

The imperative to modernise the NHS through innovation and digitisation translated into impressive funding announcements: £475 million granted for the NHS digitisation in the summer 2018, increase of £20.5bn of the NHS yearly budget announced in October 2018 to only name the latest.
The appetite for innovation has the potential to make the UK become the most competitive location for life science research in the world. With both countries' outstanding innovative capabilities and expertise in life science and ICT, the potential for R&D and business collaboration between the UK and Switzerland is immense.

However, navigating through the numerous initiatives and entry points can be treacherous. To address this, the Swiss representation in the UK is providing support. The Embassy of Switzerland in the United Kingdom has identified 'Advanced Analytics of Real-world Data in Life Science' as a key topic of interest for 2019. For this reason the Swiss Business Hub UK is organizing a fact-finding-mission which will bring together a delegation of Swiss companies working at the interface of life science and advanced analytics of real-world data. The project will take place in London in June 2019 and will aim to generate business and R&D collaborations. For more information and to register click here.

**NHS: National Health Service*
The National Health Service (NHS) is the name of the public health services of England, Scotland, Wales and Northern Ireland. The NHS employs 1.6 million people (doctors, nurses, social workers and administrative staff) with a combined budget of approximately £140 bn (£22 bn in procurement). UK residents are entitled to free medical treatment through the NHS.
The NHS accounts for 83% of national healthcare spending. This dominant nature within the UK healthcare landscape means that there is a large data pool collected and managed by the NHS. To harness the power of information and technology, the NHS has set up a technology partner called NHS Digital. Launched in 2013 this is now the national provider for data, information and IT systems for healthcare services.

Industrial Strategy
"The Industrial Strategy Challenge Fund aims to bring together the UK's world-leading research with business to meet the major industrial and societal challenges of our time. This is part of government's £4.7 billion investment in R&D over 4 years" GOV.CO.UK