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Policy Workshop

What's the value of real world evidence in the context of the Life Sciences Industrial Strategy?

A summary of the discussions held on 25 September 2019

By Alex Kell, CSaP Policy Intern

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A note on terminology

Participants discussed the unclear definitions of real world data and real world evidence. Participants noted the confusion around which types of data constitute real world data, and the sometimes blurry delineation between real world data and real world evidence. It was raised that the terms real world data (RWD) and real world evidence (RWE) were often used interchangeably and not used correctly, exacerbating the confusion. It was generally accepted that at present there is no single definitive guide to the terms. This report exists to broadly document this Policy Workshop, which was conducted under the Chatham House Rule. For the purposes of this report, we take real world data to refer to routinely collected medical data. For example, real world data can be medical information routinely collected by the health service. However, data collected in a biobank for research is not real world data as it was specifically collected for research. Participants generally praised the Academy of Medical Sciences 2018 report *Next steps for using real world evidence* (https://acmedsci.ac.uk/more/news/next-steps-for-using-real-world-evidence). This report also reflects the Academy's report's broad definitions of RWD and RWE: 'There was general agreement that RWD refers to observations from the real world whereas RWE is how these observations may be used to make relevant predictions. RWE might incorporate a range of data, including RWD, to make such predictions about an outcome in the real world (such as use of a medicine, incidence of a disease or behavioural patterns).'

Summary

At present, there is discussion around the potential value and impact of the insights we might gain through real world data and evidence. It was agreed that real world data, a large amount of which is digitised, has benefits for research such as complimenting data collected in clinical trials, reducing the cost and time burdens of conducting clinical research and evaluating the clinical effectiveness and safety of medicines. However, challenges to fully realising the potential of these data include privacy concerns, building public trust and the need for interoperable databases.

This discussion brought together senior policy makers, researchers, and experts from industry and practice in the field to discuss the opportunities and challenges of real world evidence in the context of the Life Sciences Industrial Strategy to support industrial growth. The workshop began with perspectives from invited speakers on current regulatory challenges, the benefits of using real world data to support clinical trials and the wider potential of real world data. The roundtable discussion that followed raised issues such as patient trust, ethics and the technical challenges of accessing and using real world data to generate robust evidence.

Summary of key points

- The NHS has collected real world data over a long time scale. This gives the UK the potential to be a world leader in the field of real world evidence.
- The use of real world data in observational drug safety studies is a well-established practice. Clinical trials, however, have the benefit of randomisation, which removes potential bias that can occur in observational real world studies.
- Real world data provides the opportunity to improve research into early diagnosis and for long term follow up of drugs in patients post-marketing which are frequently uneconomical for clinical trials.
- Real world data has the potential to reduce costs and development timelines of clinical trials. This data can be used to fill evidence gaps that cannot be addressed by clinical trials in certain circumstances, for example in including hard to reach groups and where trials would be unethical. For example, one participant gave the example of administering the whooping cough vaccine to pregnant women to demonstrate the protective benefits for newborns, which would not have been appropriate to conduct using a clinical trial.
- There remain challenges in analysing real world data due to the fragmentation of and the diverse methods of data capture.
- Accessing real world data can prove challenging for industry due to ethical and privacy concerns.
- To realise the potential of data sharing, public trust and consent should be sought. One participant suggested that citizens' juries and the development of infographics have shown promise in educating, as well as bringing onside, the public on the potential for using patient data to improve care.
- Maintaining high ethical standards is a priority when conducting real world studies.
- Access to data could support industrial growth in the UK for both start-ups and established companies. It was suggested that the UK could use capital to incentivise businesses to enter the real world evidence space. Allowing companies to have access to data in accordance with regulatory frameworks, would incentivise companies to develop and test their innovations in the UK.

Roundtable Discussion

The key themes of the roundtable discussion have been summarised below.

Scene setting: current problems and potential opportunities

The cost and complexity of running clinical research has significantly increased over the last 25 years. These high costs and long lead times have led some to explore the potential of using real world data to support clinical research and evidence generation. One participant noted that companies face different evidential requirements in different countries. The UK has access to world leading longitudinal real world data that has the potential to drive innovation and research in the life sciences sector.

It was suggested that real world data can augment clinical trials, reducing costs and lead times. This could allow for the development of novel medicines and early diagnostics which would otherwise be

uneconomical. It was also suggested that real world data could more easily be collected for a longer time than clinical trial data, helping to show longer-term effects. Real world data can also be used in cases where it is not feasible to collect evidence from clinical trials, for example in the recruitment of diverse patients and studies on pregnant women.

Clinical trials however involve randomisation which can present challenges when solely relying on real world data. Real world data may provide the wrong answers without careful randomisation, and observational data may not be helpful in detecting modest effects.

There are multiple challenges that must be overcome to fully capitalise on the UK's real world data. These challenges include data fragmentation, ethical use of data, privacy concerns and engendering public trust.

Routinely collected data is often not standardised in comparison to data collected in a clinical trial. There are, for example, multiple ways in which clinicians can record that a patient has diabetes in medical records. Several incentives for improving the quality of clinical record were explored. For example through reciprocal relationships, such as providing free reports on drug safety prescribing in return for sharing anonymised patient data. Another aspect to consider is the data structure. For example use of a common data model could help to standardise the data making it more widely usable across various settings.

Privacy and public trust are aspects to consider when using real world data. Without public consent, the sharing of medical data becomes challenging. It is therefore essential when handling patient data that researchers strictly adhere to regulatory, legal and ethical requirements to build public confidence in the value of securely sharing medical data.. Ethics committees and regulators must take a leading role in protecting privacy so the public can be reassured that their data is being used for ethical purposes following the highest standards. Synthetic data which mirrors the overall fidelity of information in the original dataset, can be used to test machine learning and artificial intelligence techniques without compromising privacy.

It was suggested that public engagement is a potential way to increase the trust of the general public with regards to the use of real world data. Participants highlighted potential tools such as the use of infographics and citizens' juries to help educate the public on real world data and evidence.

Areas of debate

- Randomised control trials require large investments which can make them difficult to perform. This can lead to difficult decisions about which trials to pursue.
- Real world data provides a way of assessing health outcomes when clinical trials are not ethically possible, for example with pregnant women.
- Real world data provides a cost-effective method of longer-term follow up, for example to assess long term outcomes from gene therapies, which might be more onerous under a RCT.
- Research into early diagnostics is challenging to do in a randomised control trial. This is due to the requirement of longitudinal monitoring of fundamentally healthy people and the multi-parametric nature of the modelling. Use of real world data for long term monitoring can be beneficial under these circumstances.

- Recruiting patients for trials can be simplified using hospital discharge data to identify difficult to reach groups.
- Real world data can be used in randomised clinical effectiveness trials such as the pragmatic type 2 diabetes trial DECIDE, where the clinical data for the trial is captured directly from primary care records.
- The clinical information in the DECIDE trial is based entirely on real world data.
- Routinely collected data is currently not standardised. Translating this data into a common data model form such as SENTINEL or OMOP increases its use and value across different systems.
- Having a reciprocal arrangement with clinicians and involving them in the outcomes from analyses using patient records can increase the quality of the data collected.
- Monetary incentives can attract foreign direct investment in the UK life sciences sector.
- The linking of primary, secondary and tertiary data can highlight the economic impact of interventions and lead to further investment in preventative healthcare.
- Accelerators can be used to provide data to ethically appropriate businesses for innovation.
- Using identifiers such as manufacturer and device type for tracking medical devices will expand the use of real world data to assess the safety and effectiveness of medical devices as well as medicines.

Ethics

- There are ethical implications in the blending of clinical treatment with research. An example is in the treatment of cancers which are not responding to traditional treatments, and a clinical trial becomes the treatment pathway.
- There are different regulations for clinical trials and for observational studies using real world data, such as drug safety studies.

Public trust

- Public consent must be sought to effectively use real world data. It was suggested that infographics as well as a citizens' juries could increase trust.
- The public are generally willing to provide access to their data for research but not for marketing and insurance processes.
- Synthetic data is a way of providing wider access to the patterns of information in health records whilst maintaining privacy. Synthetic data can mirror information in actual datasets and can be scaled.
- The inclusion of citizens in the data collection process can lead to active involvement and a collection of higher value data.
- Companies face difficulties in accessing health records due to privacy and ethical concerns.
- It remains important to use data appropriately and avoid mistakes to maintain public trust. Without public trust data will not be shared and cannot be utilised for research.

Participants

- **Dr Helen Munn (Chair)**, Acting CEO, MQ
- **Tamsin Berry**, Deputy Director, Life Sciences Industrial Strategy and Sector Policy, Department for Business, Energy & Industrial Strategy
- **Dr Laura Blackburn**, Head of Science, PHG Foundation
- **Sarion Bowers**, Head of Policy, Wellcome Sanger Institute
- **Professor Louise Bowman**, Professor of Medicine & Clinical Trials, Nuffield Department of Population Health, University of Oxford
- **Mitchell Harris**, Global Head, Emerging Business Lines, Abcam
- **Dr Adam Heathfield**, Senior Director, Pipeline Methods and Capabilities, Pfizer Inc
- **Dr Stuart Hogarth**, Lecturer in Sociology of Science and Technology, Department of Sociology, University of Cambridge
- **Dr Charlotte Housden**, SVP of Product, Ieso Digital Health
- **Dr Mary Kasanicki**, Solicitor Consultant, Cambridge University Hospitals NHS Foundation Trust
- **Dr Kathy Liddell**, Herchel Smith Lecturer in Intellectual Property Law, Faculty of Law, University of Cambridge
- **Emma Lowe**, Research Policy Senior Manager, Industry Relations & Growth, Department of Health and Social Care
- **Tasha Niesen**, Senior Policy Manager, Office for Life Sciences
- **Dr Andy Richards**, Chairman of Arecor, Congenica, Abcodia, and Babraham Bioscience Technologies Ltd (BBT), Babraham Research Campus
- **Piers Ricketts**, Chief Executive, Eastern Academic Health Sciences Network
- **Dr Janet Valentine**, Director, Clinical Practice Research Datalink, Medicines and Healthcare Products Regulatory Agency
- **Dr Louise Wood**, Director of Science, Research & Evidence, Department of Health and Social Care
- **Dr Hakim Yadi**, Chief Executive Officer & Co-Founder**,** Closed Loop Medicine Ltd

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- **Rob Doubleday**, Executive Director
- **Lauren Milden**, Policy Adviser
- **Alex Kell**, Policy Intern (Note taker)