

A Proposal to Create a “UK Vaccine Network”

September 2015

Summary

- This proposal examines how to build on lessons learned from Ebola to transform vaccines development in the UK, increasing national resilience to new and emerging global health threats and bolstering the UK's science base.
- The BSI proposes the creation of a network of integrative vaccine centres (a “UK Vaccines Network”) where academia, the NHS, and the private sector collaborate to build a pipeline of new vaccines under a common programme and following a nationally agreed framework.
- Doing so would enable the UK to capitalise on its strengths in immunological research and better harness world-class academic and industrial centres of excellence, positioning the UK as a global leader in vaccines research and development and bringing considerable economic and clinical benefits.

Background

By June 2015 the Ebola outbreak that had started in West Africa had killed over 11,000 in 10 countries, including the United Kingdom. ¹Globally there has been much mulling over an international response which has been characterised in some quarters as underwhelming. ²Public health interventions aside, the development of high-tech solutions such as new vaccines and other pharmaceuticals is not a quick process. Indeed, the long and complex process of conventional vaccines development does not fit easily within the stressed context of a rapidly changing global health emergency.

Thus the lessons learned from Ebola demand renewed action to enhance national and international resilience to possible infectious outbreaks. With vested interests in both regional and global health security, and considering the inevitability of future outbreaks of known or unknown pathogens, the UK must bolster national preparedness. A platform to enable the timely development of vaccines in response to new, emerging, or re-emerging infectious diseases is therefore a necessity.

The BSI proposes the creation of a network of vaccine research centres spread throughout the country. This network would bring together expertise from across academia, the NHS, and the private sector to co-ordinate and build a pipeline of new vaccines and medical treatments. The proposed coalition of centres would share data and resources and integrate multiple clinical trials units to follow a coordinated strategy according to nationally agreed priorities, with each centre working according to existing areas of expertise.

As a global leader in immunological research with world-class academic and industrial facilities, the UK is well placed to become an internationally leading centre for the design and development of new vaccines. The proposed framework would undoubtedly enhance national resilience to future health emergencies. However, transforming fundamental and translational research in this way would also provide a boost to the UK's overall science base, helping to secure high skilled jobs in immunology and other biomedical disciplines, and providing significant scope for generating economic growth.

Existing capacity and future scope

There are several internationally recognised centres of excellence spread across the UK undertaking vaccines research. Each centre will have different focuses and strengths, from fundamental research to better understand the basic immune response to advanced clinical trials in human volunteers. The work of major academic centres is further complemented by valuable collaboration with the private sector, including small and medium sized spin off companies as well as major pharmaceuticals. Government departments, including Public Health England (PHE), the Department of Health (DH), and the Department for International Development (DfID) also have major input into this work, as do funding bodies such as Wellcome and the Medical Research Council (MRC).

A “UK Vaccines Network” would consolidate this landscape under a co-ordinated national plan. Under the proposal individual centres would continue to work according to their specific skills and areas of interest but under an integrative framework that facilitates closer cooperation, clear funding models, and enhanced sharing of resources and expertise.

Such a network may be organised in different ways. One approach might include linking disease surveillance from agencies such as PHE and the World Health Organisation (WHO) to inform prioritisation of research and development. A co-ordinated effort by a network of academic centres, each focussing on its own individual aspect of analysis, would dedicate themselves to researching against the most suitable pathogens. Trials would be conducted through a coalition of trials centres, in conjunction with the unique resources and access to patient volunteers that are inherently available within the NHS. In future the care.data³ programme could also feed into the network, providing vital information to better understand trends and patterns of disease or the effects of a new drug. Finally, closer links with industry through enhanced data sharing and a new financial model that better promotes public/private partnership would provide valuable expertise at all stages and enhanced scope for the rapid up-scaling of manufacturing capability.

The above approach is especially applicable in instances where there is a critical need to develop new vaccines or treatments quickly, for example during an epidemic for a disease to which no effective vaccine currently exists. In such a case the network would greatly aid the speed of fast-tracked vaccine development. However, there are several regulatory, legal and financial issues that apply in these cases, and these would have to be overcome.

Regulatory, legal, and financial issues

The Ebola outbreak prompted unparalleled collaboration and fast-tracking of candidate treatments and vaccines. Yet the initial response to fast-tracking promising new pharmaceuticals was slow and has been described by the World Health Organisation as “largely ad hoc”. ⁴At a speech to the G7 in June this year, David Cameron said that the Ebola crisis had been a “wake-up call to the world” and urged better global preparedness for the next potential pandemic. ⁵During the speech the Prime Minister announced that the UK would be the first country in the world to require all clinical trials results and data to be made fully transparent.

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To enable a UK trials network to operate successfully it must be underpinned by the appropriate legal, regulatory, and funding models. Removing barriers to data sharing and promoting transparency in research data and outcomes, as the Prime Minister has announced, is an excellent first step in that direction, and the creation of network of centres would be a natural environment for improved data flow between partners.

However, further assurances are required, for example to clarify indemnification for manufacturers where vaccines are fast-tracked in emergency situations, as well as creating a financial model that supports partnership between academia and industry in cases where there is little financial incentive to invest in a particular vaccine or disease. Despite this, innovative funding mechanisms, such as the World Bank’s Pandemic Emergency Facility,⁶ could provide funding in the event of a major new pandemic. Financing from this instrument is linked to strong country level preparedness plans, and therefore the UK is more likely to benefit if it can demonstrate the resilience and infrastructure offered through a vaccines network.

Outside crisis situations, the economic case for investment in vaccines and biological therapies is sound. The UK has a strong science and university base which contributes much to the national economy.⁷ Furthermore, spreading the any new investment in research across a regionally diverse network would help ensure funding is distributed more evenly, rather than being largely centralised in specific areas.

Further benefits

The work of immunologists in both basic and translational research is critical to vaccine development. A network of research centres with a funded plan for investment would help the UK attract the best and brightest in immunology, ensuring we retain a highly skilled workforce. Scaling up vaccine research and development would exploit the myriad skills of the immunology workforce and the long-term commitment required to tackle a pipeline of vaccines would help secure more funded posts, therefore safeguarding a bright future for the next generation of immunologists.

Any investment in such a strategy would also require engagement with the public. The BSI is in a pivotal position to communicate the benefits of transforming vaccines research in this country, both in terms of the economic and health benefits such a system could bring. Public engagement in such initiatives – and especially in immunisation – is critical to dispel the myths and misunderstandings prevalent in some sections of society.

¹WHO (2015). [Ebola situation reports](#).

²MSF (2014). [International response to Ebola risks becoming a ‘double failure’](#)

³NHS England (2015). [The care.data programme – collecting information for the health of the nation](#).

⁴WHO (2015). [Report of the Ebola Interim Assessment Panel](#).

⁵Prime Minister’s Office, 10 Downing Street (2015). [Prime Minister calls for ‘wake-up to threat from disease outbreak’](#).

⁶World Bank (2015). [Pandemic Emergency Facility: Frequently Asked Questions](#)

⁷CaSE (2015). [Why champion science and engineering?](#)