A Proposal to Create a “UK Vaccine Network”

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.

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 data 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 work closely 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.

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”. “At 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.”

*During 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.*
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, "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. 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.

5Prime Minister’s Office, 10 Downing Street (2015). Prime Minister calls for ‘wake-up to threat from disease outbreak’.  
7CaSE (2015). Why champion science and engineering?