

# Scientists to prevent the global spread of new diseases

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A ground-breaking new research hub has been set up to help halt future outbreaks of killer diseases like Ebola and Zika.

The landmark project will help to increase vaccine coverage across the globe and improve the response to deadly outbreaks through the rapid deployment of life-saving vaccines.

Currently, nearly one in five infants across the world - 19.5 million children - do not have access to basic vaccines, and almost one third of deaths among children under five could be prevented through the use of vaccines.

The effective distribution of vaccines is hampered in rural areas of low and middle income nations by the costs associated with their production and purification, and the need for them to be stored at temperatures of between two and eight degrees Celsius.

An additional challenge is the need to respond rapidly to emerging threats such as the Ebola and Zika viruses.

The new Hub will look to address two major challenges facing attempts to create future vaccine manufacturing systems:

- How to design a production system that can produce tens of thousands of new doses within weeks of a new threat being identified

- How to improve current manufacturing processes and change the way vaccines are manufactured, stabilised and stored so that existing and new diseases can be prevented effectively, and costs reduced

Public Health Minister, Steve Brine said: "It is a tragedy that so many people across the world die because they do not have access to basic vaccines. Diseases do not respect borders and we have a responsibility to fight them both at home and abroad.

"Our scientists and laboratories are world-leading and can hold the key to making and deploying more life-saving vaccines - including when emerging threats arise like Zika or Ebola. This hub has the immense potential to save and improve the lives of millions."

Project lead investigator, Professor Robin Shattock, Chair in Mucosal Infection and Immunity at Imperial College London, said: "Through the establishment of the Future Vaccine Manufacturing Hub we are looking to exploit the next wave of biotechnology innovation to rapidly respond to emerging outbreaks and empower countries most at risk to infections to meet their local [vaccine](#) needs."

EPSRC's Chief Executive, Professor Philip Nelson, said: "Vaccines and their availability can mean the difference between life and death for millions of people across the globe. Many of these deaths, whether they are a result of polio, diphtheria or measles, could be prevented through immunisation, and research at the Hub will look to overcome barriers currently blocking progress in this field.

"At the same time, this investment will also support the researchers as they strive to develop ways to respond rapidly and efficiently to threats such as Ebola and Zika and save many lives in the future."

The new Future Vaccine Manufacturing Hub is led by Imperial College London and features four other UK universities and three UK institutes. It has been established with almost £10 million of funding by the Department for Health and will be managed by the Engineering and Physical Sciences Research Council (EPSRC).

The hub will collaborate with the Developing Countries Vaccine Manufacturers' Network (DCVMN) on manufacturing projects, initially in India, Vietnam, Bangladesh, Uganda and China and expanding to other countries in the future.

It will adopt an integrated approach that will build on new developments in life sciences, immunology and process systems to address these two challenges.

Approaches that will be explored by researchers at the Hub include the development of synthetic RNA vaccines which can be rapidly manufactured; the rapid production of yeast and bacterially-expressed particles that mimic components of pathogenic viruses and bacteria; and protein stabilisation to preserve vaccines at temperatures of up to 100 degrees Celsius, avoiding the need for refrigerated distribution and storage.

Provided by Engineering and Physical Sciences Research Council

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