Human trials of universal flu vaccine begin

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Clinical trials of a new vaccine that could protect against multiple types of flu are beginning at Oxford University. If successful, the 'universal' flu injection would transform the way we vaccinate against influenza and could offer immunity to a bird flu pandemic.

Current vaccines are only effective against certain strains of flu. New formulations have to be developed every year according to which types of flu are thought likely to be circulating that winter.

‘This approach to influenza vaccination is unsatisfactory for use against seasonal influenza, and of little use when new types of flu begin to infect humans from birds,’ says Dr Sarah Gilbert of the Jenner Institute, University of Oxford.

‘It leaves manufacturers with a few months to produce the necessary stocks, the vaccine has to be administered to at-risk populations within a short time window, and those receiving the injection will all have to be vaccinated again the following year.

’Existing flu vaccines work by inducing protective antibodies to proteins on the outer surface of the influenza virus. These proteins differ between strains and change over time, so each vaccine only works against a specific strain.

The Oxford scientists led by Dr Gilbert are taking a new approach. They have developed a novel vaccine that targets internal proteins essential to the flu virus that change very little over time or between strains.

‘By targeting the internal proteins of the virus, we can come up with a universal flu jab,’ explains Dr Gilbert. ‘The same vaccine would work against all seasonal flu and protect against bird flu.’

Such a universal vaccine would not change from year to year, removing the need for annual immunisations. All ages could receive the injection at any time of year, and manufacturers would be able to produce supplies continuously at a sufficient level.

‘Children would be protected, we’d see economic benefits through reduced sickness in people of working age, and the elderly, who respond less well to vaccination, would be better off through lack of exposure to flu,’ explains Dr Gilbert.

In the Phase I clinical trial, 12 healthy volunteers are receiving the single injection of the new vaccine. Their immune response will then be monitored over time. Should this trial be successful, further clinical trials will be necessary before the vaccine can be approved. The research is funded by the Wellcome Trust.

The vaccine developed by Dr Gilbert and colleagues induces T cells, part of the body's immune system, to kill any cells infected by the flu virus, so controlling the infection. The body maintains a low-level T cell response to flu from previous flu infections which the vaccine should boost to levels high enough to protect against subsequent infection.

Provided by Oxford University