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Commentary

Coordinated Influenza Vaccination Efforts in Southern and Northern Hemispheres

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DESCRIPTION

The Single Radial Immunodiffusion (SRID) assay is frequently used to evaluate an inactivated influenza vaccine's efficacy. Recent years have seen the development and evaluation of a number of alternative potency assays. With the hemagglutinin antigen of the A (H1N1) pdm09 component of an inactivated influenza vaccine being stressed by high temperature, low pH, and freezing, the objective of this study was to compare a surface Plasmon resonance-based assay and two different enzyme linked immunoassays with the current potency assay, SRID, and against mouse immunogenicity. The ability of a vaccine to produce an *in vivo* biological activity, such as a predetermined degree of antibody response to antigen or protection from infection, is referred to as potency. However, it is often assessed against a suitable reference standard and determined using a surrogate measure, such as antigenicity.

In low-income nations, influenza vaccines the best method of preventing influenza are not generally accessible. The pandemic of 2009 brought to light the necessity of non-pharmaceutical interventions throughout the drawn-out process of producing vaccines for emerging influenza strains. The best way to avoid influenza is to get vaccinated, although this is not widely available in low-income countries. The 2009 pandemic made clear the need for non-pharmaceutical interventions during the protracted process of developing vaccinations for new influenza strains.

The ability to show that an alternate potency assay can demonstrate antigen stability is a crucial step in its validation. Therefore, the immunologically potent pre-fusion form of the Hem Agglutinin (HA) antigen should be distinguished from post-fusion and denatured forms of HA since they do not cause the development of Hem Agglutination Inhibitory (HI) antibodies. A potency assay like the SRID can do this. A regulatory requirement is the proof of vaccine stability, which is defined as the preservation of potency during the course of the vaccine's shelf life, from manufacture to consumer use.

A major advance in public health would be the creation of long-lasting, all-encompassing vaccines that are appropriate for use in protect against all influenza strains present and emerging in the future, and are durable. This development would also have a significant impact on the entire influenza vaccination enterprise by increasing vaccine efficacy, removing the need for and cost associated with creating annual reformulations and annual vaccination campaigns, and streamlining the entire vaccine delivery system to enable more widespread global implementation and access.

Furthermore, even in the wake of the SARS-CoV-2 outbreak, the possibility of a severe influenza pandemic is still widely acknowledged as a major biological danger. Our existing approach, which mostly uses dependable but time-consuming egg-based production methods, is antiquated. It involves waiting until the next pandemic is discovered before developing a strain-specific vaccine. Despite the significant contribution of influenza B, the majority of the published scientific literature on the epidemiology of influenza has concentrated on influenza A, and our knowledge of the global epidemiology and disease burden of influenza B, particularly outside of Europe and the United States, remains limited. Since 40% of the world's population lives in the tropics, where influenza activity is quite different from that in other world regions and epidemics are not as intense and brief as those in the Northern and Southern hemispheres, it is crucial to assess the epidemiology of influenza in the tropics. Effective and evidence-based decisions about the mix and timing of influenza vaccine delivery may be significantly impacted by these discrepancies

Influenza vaccination decreased hospitalization risk among recipients by 1/3 during the 2022 flu season. In accordance with national recommendations, health professionals should promote influenza vaccine. The influenza vaccine formulation for the Northern Hemisphere in 2022–2023 kept the same antigen and appears to generate effective protective immunity against circulating sub clades of the currently predominate influenza

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A(H3N2). In order to decrease the spread of influenza, health officials should encourage communities to get vaccinated against it in accordance with national recommendations and implement other preventive measures.