

Speaker Abstracts

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RSV challenge model Case study: Evaluating the efficacy of Janssen's AD26.RSV.PreF vaccine

Background

RSV infection is an increasingly recognized illness in high-risk adults, particularly those aged ≥ 60 years, with a disease burden similar to that of non-pandemic influenza. There is currently no approved vaccine, and development of an effective RSV vaccine may offer benefits for high-risk adults. RSV vaccine candidates targeting the RSV non-stabilized F protein have proven unsuccessful so far, eliciting poor neutralizing antibody titers, and have failed to protect against LRTI-associated disease. Epitopes specific to the pre-F protein appear to be more potent inducers of neutralizing antibodies than those present on the post-F protein. Ad26.RSV.preF is a recombinant adenovirus serotype 26 vector that encodes and expresses for a full-length RSV-F protein stabilized in the pre-F protein conformation and has demonstrated immunogenicity in older adults aged ≥ 60 years in stable health, with no significant safety concerns to date and an acceptable tolerability profile.

Method

Janssen Pharmaceutical Companies of Johnson & Johnson contracted hVIVO to conduct a randomized, double-blind, placebo-controlled study to evaluate the efficacy of a single immunization of Ad26.RSV.preF against RSV infection in a viral challenge model in healthy adults. Subjects were immunized 28 days prior to inoculation with hVIVO RSV A Memphis 37b challenge virus. Following viral-inoculation subjects were then quarantined in individual en-suite rooms in hVIVO's London-based clinical unit and monitored for 12 further days for RSV infection. Follow up visits were conducted to continue to monitor safety and the immunological response to vaccination.

Results

The Ad26.RSV.preF vaccine met its' primary end point showing a significant reduction in viral load as measured by quantitative PCR. Furthermore, the vaccine showed clear efficacy against a range of secondary endpoints including time to infection, reduction in symptoms, reduction in mucus discharge. RSV disease severity following challenge with RSV-A Memphis 37b were consistently lower in volunteers receiving immunization with Ad26.RSV.preF versus placebo.

In addition, Ad26.RSV.preF demonstrated immunogenicity and was well tolerated.

Conclusions

The human viral challenge model successfully evaluated the efficacy of the Ad26.RSV.preF vaccine. Ad26.RSV.preF is the first adult RSV vaccine candidate to show functional protection against RSV infection and upper respiratory tract disease. Ad26.RSV.preF may provide promising protection from RSV infection, RSV transmission and RSV disease. Ad26.RSV.preF warrants further evaluation in field trials for efficacy.

