PUBLICATION CARD

Comparative effectiveness of high-dose versus standard-dose influenza vaccination on numbers of US nursing home residents admitted to hospital: A cluster-randomised trial

SEPT 2017

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Journal: The Lancet Respiratory Medicine

INTRODUCTION

- Influenza can lead to hospital admissions and death, especially in the most elderly and frail adults, such as those ≥65 years and too frail to live independently, in whom the standard-dose influenza vaccine has been reported to be least effective
- High-dose vaccines were developed to offer better protection than standard-dose vaccine in this high-risk population

OBJECTIVE

To compare the effectiveness of the high-dose trivalent influenza vaccine with a standard-dose influenza vaccine in reducing respiratory-related hospital admissions in older adults, long-stay nursing home residents in the US

STUDY CONDUCT

DESIGN

A single-blind, pragmatic, comparative effectiveness, cluster-randomised study (NCT01815268)

VACCINES

High-dose influenza vaccine i.e. 60 µg antigen/virus strain (n=26,639 residents)

Standard-dose influenza vaccine i.e. 15 µg antigen/virus strain (n=26,369 residents)

PARTICIPANTS

53,008 nursing home residents aged ≥65 years residing in the facility

Facilities adhered with their **usual standard-of-care** (i.e. one vaccine type per nursing home)

LOCATION AND SEASON

823 Medicare-certified nursing homes across 38 states in the US in 2013-14, a season that was predominated by A (H1N1) strain

OUTCOMES

PRIMARY OUTCOME

- Hospital admissions related to pulmonary and influenza-like illness (ICD-9 codes)

SECONDARY OUTCOMES

- All-cause hospital admissions, all-cause mortality, and functional decline

RESULTS

- When compared with nursing home residents who received standard-dose influenza vaccine, those given high-dose vaccine had
  - 12.7% reduced risk of respiratory-related hospitalisation (ARR [95% CI] 0.873 [0.776–0.982], p=0.023)
  - 20.9% reduced risk of hospitalisation due to pneumonia (ARR [95% CI] 0.791 [0.267–0.953], p=0.013)
  - 7.7% reduced risk of all-cause hospital admissions (ARR [95% CI] 0.933 [0.884–0.985], p=0.012)
- The NNT for all-cause hospital admission was 83.7 in all residents
- No statistically significant difference was observed in the secondary outcome of all-cause mortality and functional decline

STUDY LIMITATIONS

- Laboratory data were not available from the study population to confirm influenza activity; however, the outcome measure was clinically diagnosed and restricted to the influenza season
- The benefit of high-dose over standard-dose vaccine might have been underestimated, given that the less virulent A (H1N1) strain was predominant during the study period compared with other more virulent A (H3N2)

KEY MESSAGES

1. The high-dose influenza vaccine was more effective in reducing risk of respiratory-related and all-cause hospital admissions in nursing home residents aged ≥65 years when compared with standard-dose vaccine

2. Improved vaccine effectiveness in a nursing home population is noteworthy, considering this population has a reduced vaccine response because of immunosenescence and multiple morbidities, and are at a high risk for being admitted to hospital for multiple reasons

Access the article

Reference: Gravenstein S, Davidson HE, Taljaard M, et al. Comparative effectiveness of high-dose versus standard-dose influenza vaccination on numbers of US nursing home residents admitted to hospital: A cluster-randomised trial. *Lancet Respir Med.* 2017;5(9):738-746.

Glossary: ARR, adjusted relative risk; **CI**, confidence interval; **ICD-9**, International Classification of Diseases, ninth revision; **NNT**, number needed to treat; **SD**, standard deviation; **US**, United States.

Declaration: This study was funded by an investigator-initiated grant (GRC75EXT) from Sanofi Pasteur, Swiftwater, PA, USA.