Research Brief

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Trivalent and Quadrivalent Seasonal Influenza Vaccine in Adults Aged 60 and Older: A Systematic Review and Network Meta-Analysis

Summary

We conducted a systematic review and network meta-analysis to compare the efficacy of influenza vaccines in adults 60 years of age and older. Randomized controlled trials (RCTs) including older adults receiving an influenza vaccine licensed in Canada or the United States were examined. We included 41 RCTs and 15 companion reports comprising eight vaccine types. High efficacy was associated with high-dose trivalent (IIV3-HD) and recombinant influenza (RIV) vaccines in protecting elderly against laboratory-confirmed influenza (LCI), and RIV vaccine minimizing all-cause mortality when compared with other vaccines.

Implications

The results of this review contribute valuable insights to inform evidence-based public health decisions and immunization guidelines. Policymakers and healthcare providers may use these findings when formulating immunization strategies to protect older adults from seasonal influenza and its complications. Our review points to a potential safety concern regarding increased odds of all-cause mortality associated with older adults receiving adjuvanted influenza vaccines (IIV3-adj and IIV4-adj).

Reference: Veroniki AA, Thirugnanasampanthar SS, Konstantinidis M, et al. Trivalent and quadrivalent seasonal influenza vaccine in adults aged 60 and older: a systematic review and network meta-analysis. BMJ Evid Based Med. 2024:bmjebm-2023-112767.

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For more information, please contact Dr. Areti-Angeliki Veroniki: areti-angeliki.veroniki@unityhealth.to

What is the current situation?

- Older adults bear a disproportionate burden of influenza and its complications.
- Although there are various influenza vaccines available for older adults, all current vaccines contain two influenza A virus strains and either one (trivalent) or two (quadrivalent) influenza B virus strains. Existing randomized controlled trials (RCTs) focus on the safety and efficacy of individual vaccines.
- The lack of direct comparative vaccine efficacy evidence poses challenges to public health clinicians and policymakers to make evidence-based decisions regarding the preferential use of one influenza vaccine over another in older adults.

What is the objective?

- To compare the efficacy of influenza vaccines of any valency for adults 60 years and older.

How was the review conducted?

- Systematic review with network meta-analysis (NMA) of randomized controlled trials (RCTs).
- We searched MEDLINE, EMBASE, JBI Evidence-Based Practice (EBP) Database, PsycINFO, and Cochrane Evidence-Based Medicine from inception to June 2022.
- Included studies reporting (P) adults 60 years of age and older (I) receiving an influenza vaccine licensed in Canada or the United States. Eligible comparators (C) included another influenza vaccine, placebo or any other licensed vaccine. Primary outcome measures (O) were laboratory-confirmed influenza (LCI) and influenza-like illness (ILI).
- We included (S) RCTs regardless of publication status, publication date, duration of follow-up, language of publication, geographic region or setting.

What did the review find?

- 41 RCT studies and 15 companion reports were included which comprised of 8 vaccine types and 206,032 participants.
- Vaccines prevented LCI compared with placebo, with high-dose trivalent (IIV3-HD) and RIV among the most efficacious vaccines.
- Standard dose trivalent inactivated influenza vaccine (IIV3-SD) prevented ILI compared with placebo, but imprecisely. Any high dose (HD) prevented ILI compared with placebo.
- High efficacy was associated with RIV vaccine minimizing all-cause mortality when compared with other vaccines.
- Differences in efficacy between these vaccines remain uncertain with very low -to-moderate certainty of evidence.

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