Effectiveness of the MF59-adjuvanted trivalent or quadrivalent seasonal influenza vaccine among adults 65 years of age or older, a systematic review and meta-analysis

Brenda Coleman[1], Ruth Sanderson[1], Mendel Haag[2], and Ian McGovern[3]

[1]Sinai Health System
[2]Seqirus Netherlands B.V.
[3]Seqirus USA Inc Cambridge

April 25, 2021

Abstract

Background: Standard dose seasonal influenza vaccines often produce modest immunogenic responses in adults [?]65 years old. MF59 is intended to elicit a greater magnitude and increased breadth of immune response. Objective: To determine the effectiveness of seasonal MF59-adjuvanted trivalent/quadrivalent influenza vaccine (aTIV/aQIV) relative to no vaccination or vaccination with standard or high dose egg-based influenza vaccines among people [?]65 years old. Methods: Cochrane methodological standards and PRISMA-P guidelines were followed. Real-world evidence from non-interventional studies published in peer reviewed journals and grey literature from 1997 through to July 15, 2020, including cluster-randomized trials, were eligible. Two reviewers independently extracted data and risk of bias was assessed using the ROBINS-I tool. Results: Twenty-one studies conducted during the 2006/07-2019/20 influenza seasons were included in the qualitative review; 16 in the meta-analyses. Meta-analysis of test-negative studies found that aTIV reduced medical encounters due to lab-confirmed influenza with pooled estimates of 40.7% (95% CI: 21.9, 54.9; I2=0%) for general practitioner visits and 58.5% (40.7, 70.9; I2=52.9%) for hospitalized patients. The pooled estimate of VE from case-control studies was 51.3% (39.1, 61.1; I2=0%) against influenza- or pneumonia-related hospitalization. The pooled estimates for the relative VE of aTIV for the prevention of influenza related medical encounters were 13.9% (4.2, 23.5; I2=95.9%) compared with TIV, 13.7% (3.1, 24.2; I2=98.8%) compared with QIV, and 2.8% (-2.9, 8.5; I2=94.5%) compared with HD TIV. Conclusions: Among adults [?]65 years aTIV demonstrated significant absolute VE, improved relative VE compared to non-adjuvanted standard-dose TIV/QIV, and comparable relative VE to high-dose TIV.

Hosted file

`Coleman, SLR adjuvanted influenza vax MAIN TEXT_2021Mar05.pdf` available at https://authorea.com/users/409902/articles/519443-effectiveness-of-the-mf59-adjuvanted-trivalent-or-quadrivalent-seasonal-influenza-vaccine-among-adults-65-years-of-age-or-older-a-systematic-review-and-meta-analysis

Hosted file

`Coleman, SLR adjuvanted influenza vax FIGURE 1_2021Mar05.pdf` available at https://authorea.com/users/409902/articles/519443-effectiveness-of-the-mf59-adjuvanted-trivalent-or-quadrivalent-seasonal-influenza-vaccine-among-adults-65-years-of-age-or-older-a-systematic-review-and-meta-analysis

Hosted file

Coleman, SLR adjuvanted influenza vax FIGURE 2_2021Mar05.pdf available at https://authorea.com/users/409902/articles/519443-effectiveness-of-the-mf59-adjuvanted-trivalent-or-quadrivalent-seasonal-influenza-vaccine-among-adults-65-years-of-age-or-older-a-systematic-review-and-meta-analysis

Hosted file

Coleman, SLR adjuvanted influenza vax FIGURE 3_2021Mar05.pdf available at https://authorea.com/users/409902/articles/519443-effectiveness-of-the-mf59-adjuvanted-trivalent-or-quadrivalent-seasonal-influenza-vaccine-among-adults-65-years-of-age-or-older-a-systematic-review-and-meta-analysis

Hosted file

Coleman, SLR adjuvanted influenza vax FIGURE 4_2021Mar05.pdf available at https://authorea.com/users/409902/articles/519443-effectiveness-of-the-mf59-adjuvanted-trivalent-or-quadrivalent-seasonal-influenza-vaccine-among-adults-65-years-of-age-or-older-a-systematic-review-and-meta-analysis