



Uudet influenssarokotteet

Kirjallisuutta

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Terveyden ja hyvinvoinnin laitos

ECDC katsaus 1.10.2020: Systematic review of the efficacy, effectiveness and safety of newer and enhanced seasonal influenza vaccines for the prevention of laboratory-confirmed influenza in individuals aged 18 years and over

<https://www.ecdc.europa.eu/en/publications-data/seasonal-influenza-systematic-review-efficacy-vaccines>

Conclusion

- Overall, the evidence base for the efficacy and effectiveness of newer and enhanced influenza vaccines appears limited at present.
- It is likely that the use of such vaccines provides greater protection than no vaccination at all, when the usual considerations of circulating strain matching are applied.
- Evidence regarding the comparability of these vaccines to traditional seasonal influenza vaccines is uncertain.
- A large body of evidence was presented for the safety of these influenza vaccines, with the safety profiles found to be largely in keeping with that expected when considering their individual compositions

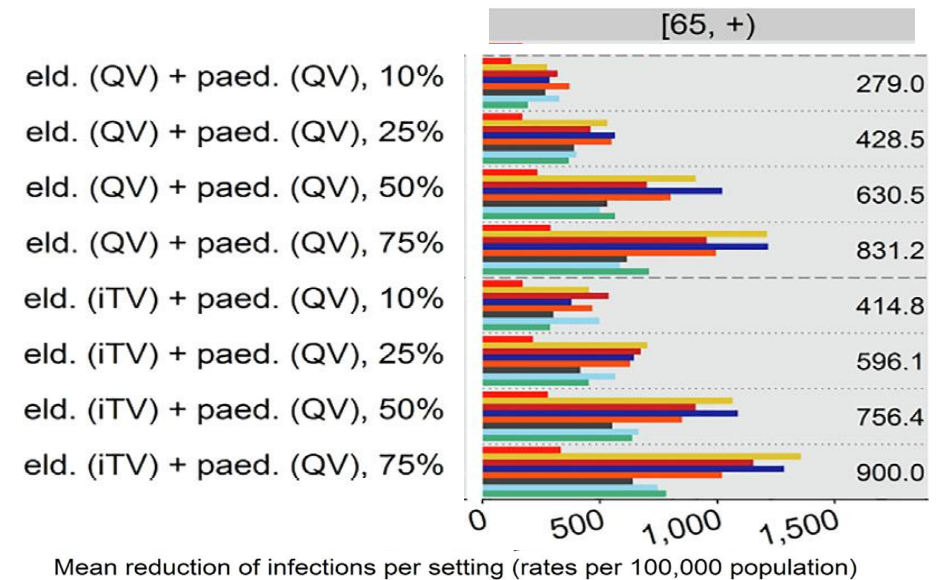
Sandmann et al. 2022: Health and economic impact of seasonal influenza mass vaccination strategies in European settings: A mathematical modelling and cost-effectiveness analysis (1/3)

- The base-case:
non-adjuvanted, non-high dose trivalent vaccines (TV) and no universal paediatric vaccination
- Compared to
 - i) moving the elderly (≥ 65 years) to improved (i.e., adjuvanted or high-dose) trivalent vaccines (iT_V) or non-adjuvanted non-high-dose quadrivalent vaccines (Q_V)
 - ii) adopting mass paediatric vaccination (4-16 years) with TV or Q_V
 - iii) combining the elderly and paediatric strategies

<https://doi.org/10.1016/j.vaccine.2022.01.015>

Sandmann et al. 2022 (2/3)

- In the elderly, the estimated numbers of infection per 100,000 population are reduced by a median of 261.5 (range across settings: 154.4, 475.7) when moving the elderly to iTV and by 150.8 (77.6, 262.3) when moving them to QV.
- Through indirect protection, adopting mass paediatric programmes with 25% uptake achieves similar reductions in the elderly of 233.6 using TV (range: 58.9, 425.6) or 266.5 using QV (65.7, 477.9), with substantial health gains from averted infections across ages.



Sandmann et al. 2022 (3/3)

- At €35,000/QALY gained, moving the elderly to iTV plus adopting mass paediatric QV programmes provides the highest mean net benefits and probabilities of being cost-effective in all settings and paediatric coverage levels.
- These findings are subject to the assumptions made for the iTV prices; at a willingness-to-pay of €25,000/QALY gained the median threshold price (excluding administration costs) may range between €10 and €24 per dose for the iTV used as part of the optimal combination programme in most settings and paediatric uptake rates
- **CONCLUSION:** Given the direct and indirect protection, and depending on the vaccine prices, model results support a combination of having moved the elderly to an improved vaccine and adopting universal paediatric vaccination programmes

Comber et al. 2022: Systematic review of the efficacy, effectiveness and safety of **high-dose seasonal influenza vaccines** for the prevention of **laboratory-confirmed influenza** in individuals ≥ 18 years of age

- HD-IIV was shown to have higher relative vaccine efficacy in preventing **laboratory-confirmed influenza** compared with standard-dose influenza vaccines (SD-IIV3) in older adults (Vaccine effectiveness (VE) = 24%, 95% CI 10–37, one RCT)
- One NRSI demonstrated significant effect for HD-IIV3 against influenza B (VE = 89%, 95% CI 47–100), but not for influenza A(H3N2) (VE = 22%, 95% CI –82 to 66) when compared with no vaccination in older adults
- HD-IIV3 showed significant relative effect compared with SD-IIV3 for **influenza-related hospitalisation** (VE = 11.8%, 95% CI 6.4–17.0, two NRSIs), **influenza- or pneumonia-related hospitalisation** (VE = 13.7%, 95% CI 9.5–17.7, three NRSIs), **influenza-related hospital encounters** (VE = 13.1%, 95% CI 8.4–17.7, five NRSIs), and **influenza-related office visits** (VE = 3.5%, 95% CI 1.5–5.5, two NRSIs)
- HD-IIV were associated with significantly higher rates of local and systemic adverse events compared with SD-IIV
- **CONCLUSION:** The collective data for efficacy and effectiveness, albeit limited, appear to suggest that high-dose influenza vaccines provide greater protection than standard dose or no vaccination in older adults

<https://doi.org/10.1002/rmv.2330>

Lee et al. 2021: Efficacy and effectiveness of **high-dose influenza vaccine** in older adults by circulating strain and antigenic match: An updated systematic review and meta-analysis

- **High-dose inactivated trivalent** influenza vaccine (HD-IIV3) compared to standard dose influenza vaccines (SD-IIV) in adults aged ≥ 65 years
- HD-IIV3 demonstrated improved protection against **influenza-like illness (ILI)** compared to SD-IIV (rVE = 15.9%, 95% CI: 4.1–26.3%).
- HD-IIV3 was also more effective at preventing **hospital admissions from all-causes** (rVE = 8.4%, 95% CI: 5.7–11.0%), as well as **influenza** (rVE = 11.7%, 95% CI: 7.0–16.1%), **pneumonia** (rVE = 27.3%, 95% CI: 15.3–37.6%), **combined pneumonia/influenza** (rVE = 13.4%, 95% CI: 7.3–19.2%) and **cardiorespiratory events** (rVE = 17.9%, 95% CI: 15.0–20.8%).
- Reductions in **mortality due to pneumonia/influenza** (rVE = 39.9%, 95% CI: 18.6–55.6%) and **cardiorespiratory causes** (rVE = 27.7%, 95% CI: 13.2–32.0%) were also observed
- **CONCLUSIONS:** Evidence over 10 consecutive influenza seasons and in more than 34 million individuals aged ≥ 65 years suggests that HD-IIV3 is consistently more effective than SD-IIV at reducing influenza cases as well as influenza-associated clinical complications irrespective of circulating strain and antigenic match.

<https://doi.org/10.1016/j.vaccine.2020.09.004>

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Vardeny et al. 2020: Effect of **High-Dose Trivalent** vs Standard-Dose Quadrivalent Influenza Vaccine on Mortality or Cardiopulmonary Hospitalization in Patients With High-risk Cardiovascular Disease: A Randomized Clinical Trial

- In the high-dose trivalent vaccine group, there were 975 primary outcome events (883 hospitalizations for cardiovascular or pulmonary causes and 92 deaths from any cause) among 884 participants during 3577 participant-seasons (event rate, 45 per 100 patient-years), whereas in the standard-dose quadrivalent vaccine group, there were 924 primary outcome events (846 hospitalizations for cardiovascular or pulmonary causes and 78 deaths from any cause) among 837 participants during 3577 participant-seasons (event rate, 42 per 100 patient-years) (hazard ratio, 1.06 [95% CI, 0.97-1.17]; P = .21)
- **CONCLUSIONS:** In patients with high-risk cardiovascular disease, high-dose trivalent inactivated influenza vaccine, compared with standard-dose quadrivalent inactivated influenza vaccine, did not significantly reduce all-cause mortality or cardiopulmonary hospitalizations

<https://doi.org/10.1001/jama.2020.23649>

Murchu et al. 2022: Systematic review of the efficacy, effectiveness and safety of **recombinant haemagglutinin seasonal influenza vaccines** for the prevention of laboratory-confirmed influenza in individuals ≥ 18 years of age

- One study found that the quadrivalent recombinant HA influenza vaccine had higher relative vaccine efficacy (rVE) in preventing laboratory-confirmed influenza during the 2014–15 season compared with traditional quadrivalent vaccination in adults aged ≥ 50 years (rVE = 30%, 95% CI 10%–47%, moderate-certainty evidence)
 - higher rVE was reported for influenza A (rVE = 36%, 95% CI 14% to 53%), but not for B (non-significant)
 - Additional analysis by age presents a significant effect for those aged 50-64 years (rVE=42%, 95% CI 15% to 61%), but not in those ≥ 64 years (non-significant).
- Another study reported higher efficacy for the trivalent recombinant HA vaccine compared with placebo (VE = 45%, 95% CI 19–63, 1 RCT, low-certainty evidence) in adults aged 18–55 years
 - 54.4% (95% CI 26.1% to 72.5%) for influenza A, but not for influenza B (VE = 23.1%, 95% CI –49.0% to 60.9%)
- **CONCLUSION:** The evidence base for the efficacy and effectiveness of recombinant HA influenza vaccines is limited at present

<https://doi.org/10.1002/rmv.2331>

Murchu et al. 2022: Systematic review of the efficacy, effectiveness and safety of MF59[®] adjuvanted seasonal influenza vaccines for the prevention of laboratory-confirmed influenza in individuals ≥18 years of age

- MF59[®] adjuvanted trivalent influenza vaccines were effective in preventing laboratory-confirmed influenza in older adults (aged ≥65 years) compared with no vaccination (VE = 45%, 95% confidence interval (CI) 23%–61%, 5 NRSIs across 3 influenza seasons)
 - Significant effect was found for influenza A(H1N1) (VE = 61%, 95% CI 44%–73%) and B (VE = 29%, 95% CI 5%–46%), but not for A(H3N2)
- In terms of relative VE, there was no significant difference comparing MF59[®] adjuvanted trivalent with non-adjuvanted trivalent or quadrivalent influenza vaccines in adult or older adult populations
- Based on limited data, there was **no significant difference comparing MF59[®] adjuvanted trivalent vaccines with either non-adjuvanted trivalent or quadrivalent vaccines.**
- The included studies demonstrated that MF59[®] adjuvanted influenza vaccines were associated with a higher frequency of solicited local and systemic reactions (mild to moderate, and transient)

<https://doi.org/10.1002/rmv.2329>

Puig-Barberà et al. 2022: Relative Effectiveness of **Cell-Cultured** versus Egg-Based Seasonal Influenza Vaccines in Preventing Influenza-Related Outcomes in Subjects 18 Years Old or Older: A Systematic Review and Meta-Analysis

- a systematic literature review on the adjusted relative vaccine effectiveness (arVE) of cell-cultured influenza vaccines (ccIV), compared to egg-based influenza vaccines (eIV) in preventing A(H3N2) related influenza-related outcomes (IRO) in subjects 18 years old or older
- A significant 11% (8 to 14%) adjusted arVE favoring ccIV in preventing any IRO in the 2017–2018 influenza season.
 - By age, the aRR was 0.89 (0.86–0.92) in the ≥ 65 age group
- The arVE was 3% (–2% to 7%) favoring ccIV in preventing any IRO in the 2018–2019 influenza season
 - By age group, the aRR was 1.00 (0.96–1.05) in those aged 65 and over
- **CONCLUSION:** low to moderate evidence of a significant advantage of the ccIV in preventing IRO, compared to eIV, in a well-matched A(H3N2) predominant season

<https://doi.org/10.3390/ijerph19020818>