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## Real World Evidence for COVID-19 Vaccines

### CLINICAL QUESTION

**What is the real-world effectiveness for currently available COVID-19 vaccines?**

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### BOTTOM LINE

**Similar to clinical trials, real world cohort and case-control studies find COVID-19 infections are reduced by >90% with two doses of mRNA vaccines. Single doses of either mRNA or AstraZeneca vaccine decreases infections by ~60% and hospitalizations by 70-80%. Vaccine effectiveness appears similar for variants of concern and are safe for pregnant women.**

### EVIDENCE

- From relatively short cohort/case-control studies or registries. Fully vaccinated defined as 7- or 14-days post-second dose.
- Israel national vaccination (Pfizer) program of 6.5 million adults  $\geq 16$  years old.<sup>1</sup> New COVID-19 cases in the program's initial 10 weeks was compared to vaccine status. Full vaccination decreased risk of:
  - All COVID-19 infections: By 97%.
  - Hospitalizations and deaths: By 98% and 99% respectively.
  - Limitations: The same individuals contributed time to unvaccinated, partially vaccinated and fully vaccinated calculations.
- United Kingdom case-control study, persons  $\geq 70$  years with COVID-19 (n=44,590) linked to vaccine status.<sup>2</sup> Single dose of either Pfizer or AstraZeneca reduced:

- Symptomatic infections: ~60% (~1 month after either vaccine).
- Hospitalizations: 80% (either vaccine).
- Death: ~85% [Pfizer (AstraZeneca death rates not reported)].
- Ontario four-month case-control study, adults ≥16 years:<sup>3</sup>
  - Single-dose (Pfizer or Moderna) reduced:
    - Symptomatic infection: 60%.
    - Hospitalization or death: 70%.
  - Two-doses reduced:
    - Symptomatic infection: 91%.
    - Hospitalization or death: 98%.

## CONTEXT

- Findings similar to clinical trials.<sup>4</sup>
- Variants of Concern (VOC):
  - Two doses of Pfizer or AstraZeneca reduces symptomatic delta variant infections or hospitalizations similar to non-VOC infections.<sup>5</sup>
  - Pfizer or Moderna vaccination reduces symptomatic infection or hospitalizations in four current VOC (alpha, beta/gamma, delta) similar to non-VOC.<sup>6</sup>
    - Two doses are better than one.<sup>6</sup>
- Safety in Pregnancy:
  - 35,691 pregnant women received Pfizer or Moderna vaccine (29% 1st trimester, 43% second trimester, 26% third trimester):<sup>7</sup>
    - Adverse pregnancy outcomes with vaccine same as baseline risk.<sup>7</sup>
  - Babies born to pregnant women with COVID-19 are twice as likely to develop severe perinatal morbidity and mortality.<sup>8</sup>
  - Pregnant women with COVID-19 have 50% greater risk of maternal morbidity or mortality.<sup>8</sup>
- Pregnant women should be offered COVID-19 vaccine.<sup>9</sup>
- Recommendations for vaccinated individuals available: [Canada](#) or [United States](#)<sup>10,11</sup>

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