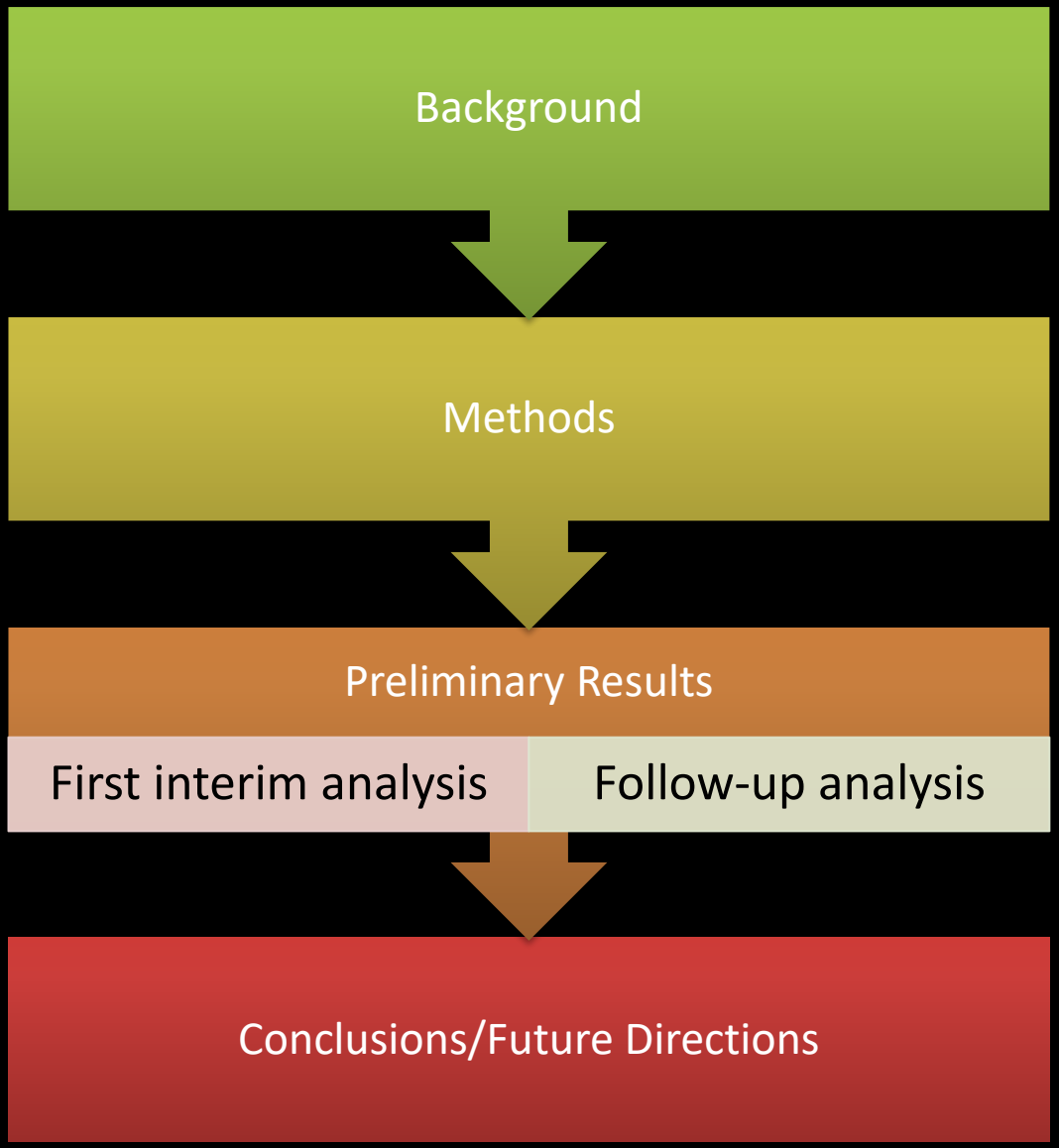
Evaluation of COVID-19 and influenza Vaccine Effectiveness among Healthcare Workers in Albania

R. Daja
Institute of Public Health
Albania

Outline


Background
Methods
Preliminary Results
First interim analysis
Follow-up analysis
Conclusions/Future Directions

Background

- Albania a high middle income country with 21.800 health care workers (HCWs)
- HCWs have had high rates of morbidity and mortality during the COVID-19 pandemic
- HCWs targeted for Influenza vaccination since 2014 and prioritized for early COVID-19 vaccination.

  →Opportunity to study both vaccines in a high-priority population
- To date, in the European region most COVID -19 and influenza VE studies have been from high-income countries

Methods (1)

- A prospective cohort study to evaluate VE against SARS-CoV-2 infection among hospital-based HCWs
  - Year 1: focus was Covid-19
  - Year 2: COVID -19 and influenza
- 3 hospitals representing more then one third of country HCWs
- all HCWs invited to participate in the study regardless of their hospital role, prior infection status, or intention to receive COVID -19 vaccine

Methods (2)

At enrolment

- Questionnaire: demographics, comorbidities, influenza and COVID -19 vaccine history, previous covid infection, influenza vaccination etc.
  - Vaccine history and previous infections verified through national registries databases
- Blood sample for serological testing for prior SARS-CoV-2 infection
- Respiratory sample for SARS-CoV-2 testing by PCR

Weekly symptom questionnaires

Symptomatic patients

- Respiratory swab collected, tested for SARS-CoV-2 by RT-PCR
  - (Year 2 – expanded to include influenza testing)
- PCR-positive swabs tested for whole genome sequencing (Charité Institute of Virology laboratory (Berlin, Germany) and other following)

Quarterly serology testing

- Anti-nucleocapsid antibody
- Anti-spike antibody

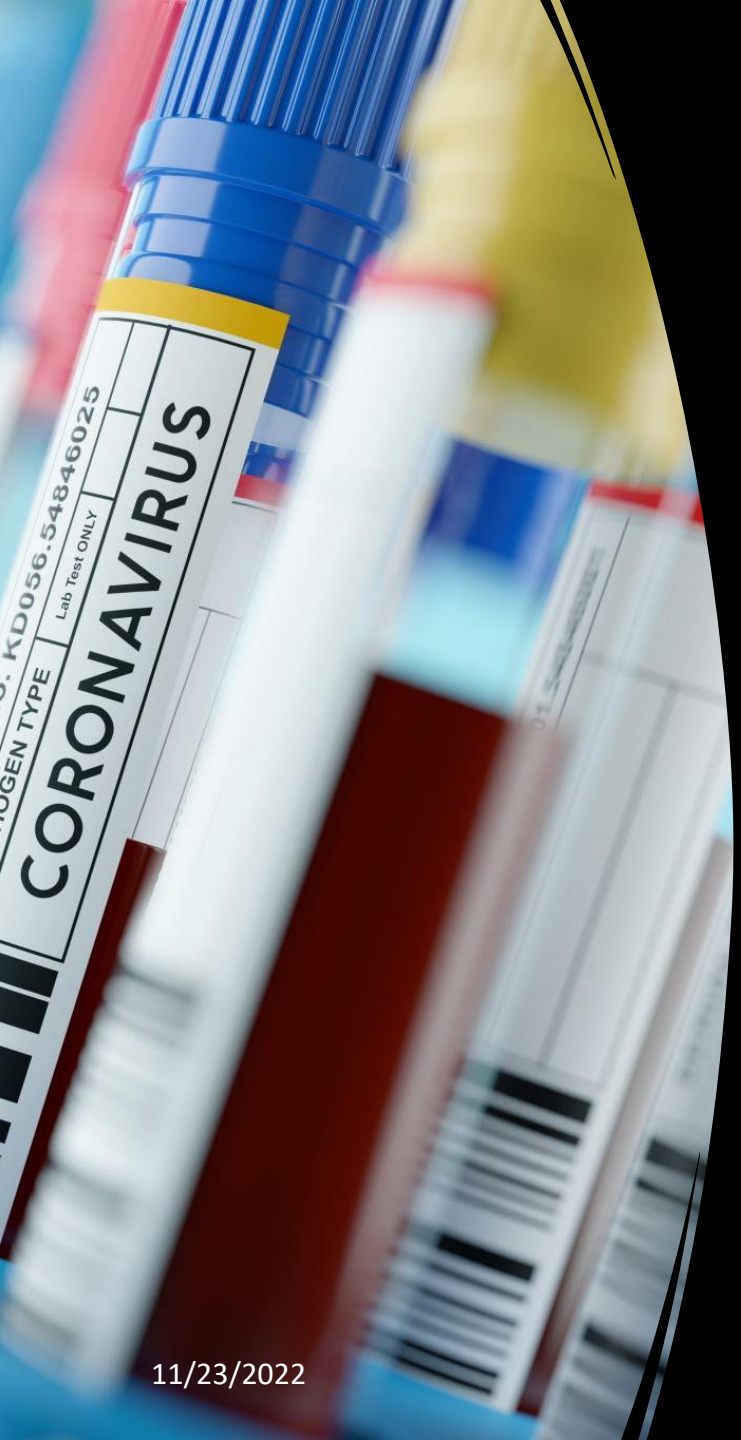
Methods (3) - Analysis

- Primary analyses and outcome:
  - Vaccine Effectiveness against symptomatic PCR-confirmed SARS-CoV-2 infection.
- Secondary analysis
  - Vaccine effectiveness against a combined outcome
    - PCR-confirmed SARS-CoV-2 infection *or*
    - Seroconversion

- VE estimated as (1 – hazard ratio)*100
- Hazard ratios comparing vaccinated and unvaccinated estimated using Cox proportional hazards models with vaccination as a time-varying exposure
- We calculated unadjusted and adjusted VE estimates.

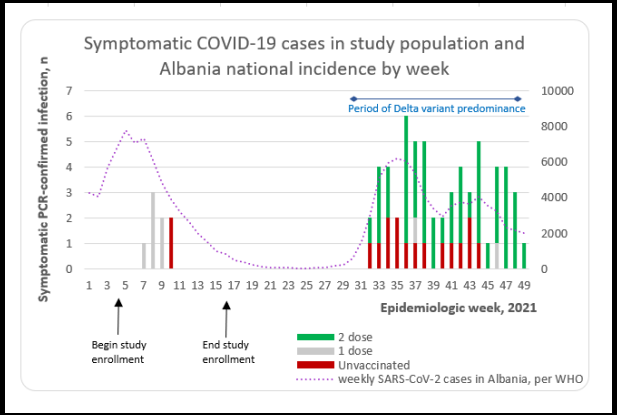
Results

- 19 February – 7 May 2021- Phase 1: 1504 participants from 3 hospitals enrolled
- Median age: 44 years (IQR 33-53)
- 79% female
- 47% nurses or midwives; 20% physicians
- At enrolment, 1054 (70%) HCWs had evidence of prior or current SARS-CoV-2 infection through PCR and/or serological assays
- 76% of 1,470 HCWs had received a primary series, 10% had received a booster dose and 9% were unvaccinated
- Overall, 86% of primary series vaccines and 98% of booster doses received were Pfizer-BioNTech
- The median time since receiving the second dose was 289 days (IQR:210-292)
- The median time since receiving the booster to study start was 30 days (IQR:22-45)



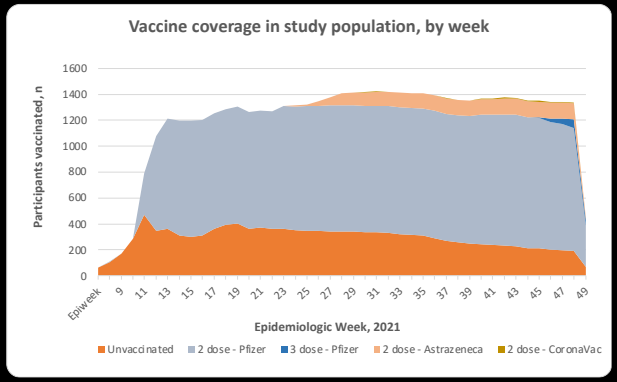
First Interim Analysis – Results of VE of primary vaccine series
Analysis Period:
19 February – 14 December 2021

1. **Symptomatic COVID-19 cases in study population during analysis period**



2. Vaccine coverage in study population

- At the end of the analysis period, 1220 (82%) participants had completed a primary vaccine series, of which 1076 (88%) and 98% of booster doses received BNT162b2 (Comirnaty, Pfizer–BioNTech)



First interim analyses was focused on VE for:

- Primary series Covid-19 VE against PCR-confirmed SARS-CoV-2 illness for full cohort and stratified by previous infection status.

- Combined and separate protective effects of previous COVID-19 infection and primary series COVID-19 vaccination against PCR-confirmed SARS-CoV-2 illness.

- Primary series vaccine effectiveness against COVID-19 infection, documented by PCR or seroconversion, for full cohort, and stratified by previous infection status.

Second Interim Analysis - Primary series and booster vaccine effectiveness against the SARS-CoV-2 Omicron variant illness in HCWs in Albania, January – May 2022

Primary series and booster vaccine effectiveness against the SARS-CoV-2-confirmed cases in HCWs in Albania, January – May 2022

Unvaccinated individuals were compared with the vaccinated one through the following analyses:

- Adjusted VE for the primary series

- Adjusted VE for the booster

Further analyses is ongoing

Omicron VE analysis, Albania – Preliminary conclusions

- Among Albanian HCWs, most of whom had been previously infected, COVID-19 booster dose offered improved VE.
- The modest non-significant primary series VE during Omicron wave estimate may reflect
  - waning immunity among vaccinated participants, as most HCWs completed their primary series >7 months previously
  - Possibly extensive previous infection in the cohort before the study
- Findings support promoting booster dose uptake among Albanian HCWs, which is currently < 20%
- Further analysis in progress

General Conclusions/Future Directions

- Prospective cohort study among HCWs in Albania allows to:
- **Estimate VE against mainly symptomatic infection for primary series, boosters and the role of previous SARS-CoV-2 infection during periods of different variant circulation in a middle-income country with high primary series coverage but low booster coverage among HCWs**
- **Having local VE data will help promote primary and booster COVID-19 vaccination among HCWs and wide population**
- **The study is not designed to measure severe outcomes**
- Cohorts now in second year focusing on both COVID -19 and Influenza vaccine effectiveness

Acknowledgements