SARS-COV-2 INFECTION INCIDENCE AND SEVERITY IN IMMUNOCOMPROMISED CHILDREN: A POPULATION-BASED STUDY IN ITALY AND NORWAY

Costanza Di Chiara[1,2], Nhung Trinh,[3] Angela Lupattelli[3], Marthe Le Prevost[4], Riccardo Boracchini[5], Arianna Giugni[5], Elisa Barbieri[1], Carlo Giaquinto[1,2], Daniele Donà[1,2#], Anna Cantarutti[5#]

#contributed equally as co-last authors

[1]Department for Women's and Children's Health, University of Padua, Padua, Italy; [2]Penta – Child Health Research, Padua, Italy; [3]Pharmacoepidemiology and Drug Safety Research Group, Department of Pharmacy, and PharmaTox Strategic Research Initiative, University of Oslo, Oslo, Norway; [4]MRC Clinical Trials Unit at University College London, London, UK; [5]Department of Statistics and Quantitative Methods, Division of Biostatistics, Epidemiology and Public Health, University of Milano-Bicocca, Milan, Italy

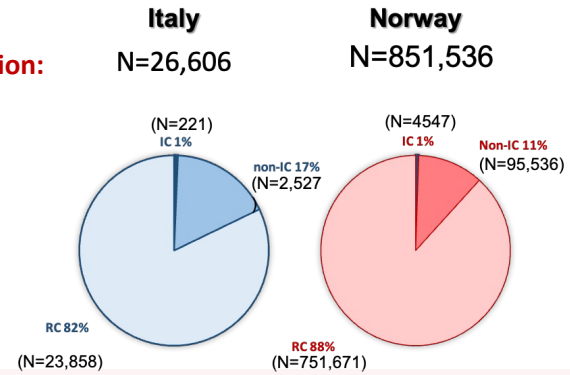
Background: The burden of SARS-COV-2 infection in immunocompromised children remains unclear due to limited population-based studies.

Objectives: To assess the risk of **primary SARS-CoV-2 infection**, **hospitalization**, and **severe COVID-19** outcomes in children **with and without immunocompromising** conditions.

Methods:

- Population-based cohort study on **children** (0-14 years) in **Italy** and **Norway**, from February 2020 to February 2022
- Severe COVID-19 was defined as intensive care unit (ICU) admission, and/or ventilation or hemodynamic support need, and/or death
- Participants were classified into **three groups**:
  - 1) **immunocompromised** children (IC),
  - 2) children with specific **non-immunocompromising underlying conditions** (non-IC)
  - 3) **immunocompetent** children **without risk factors** (RC)
- Cox proportional hazard models estimated adjusted hazard ratios (aHR) with 95% confidence intervals (95% CI) for SARS-CoV-2 infection risk among IC, non-IC, and RC, considering COVID-19 vaccination as a competing event
- Distribution of COVID-19-related hospitalizations and severe cases was analyzed among IC, non-IC, and RC with SARS-CoV-2 infection.

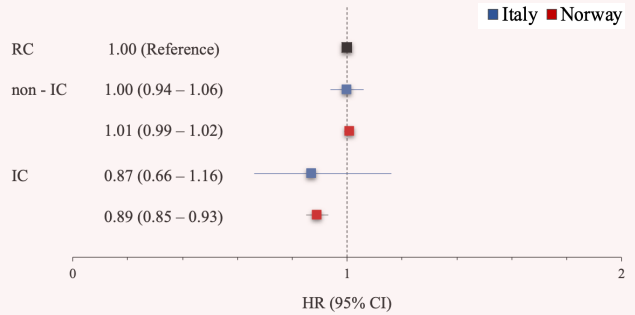
Study population:



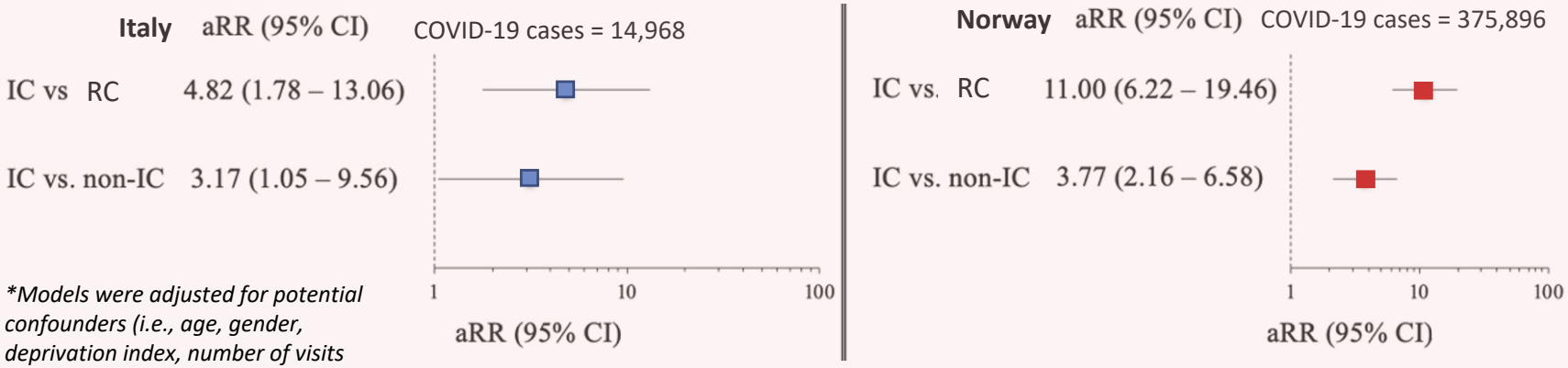
Results

IC children showed comparable or lower risk of SARS-CoV-2 infection to immunocompetent children.

Risk of SARS-CoV-2 primary infection*



Risk for COVID-19-related hospitalization among IC, non-IC, and RC*



**Models were adjusted for potential confounders (i.e., age, gender, deprivation index, number of visits and antibiotic prescriptions).*

Zero and five cases developed **severe COVID-19** in Italy and Norway, respectively.

Conclusions:

- **IC children** had a **similar or lower risk of SARS-CoV-2 primary infection** but a **higher risk** of **hospitalization** compared to non-IC and RC
- **Severe COVID-19** cases were **uncommon** in both datasets
- **The higher hospitalization rate in IC** children **did not result** in a **higher** rate of COVID-19 **severity**
- Higher hospitalization rate in IC **may be due to lower admission thresholds**.

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