Global Health Cast

Thanks for joining!

Every Tuesday, 12.00 noon, CET

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Prof. Dr. Joe Schmitt
What we talk about today:

- Corona Pandemic – where are we?
- Vaccines and Therapies against COVID19.
- Should vaccination be accomplished in the morning?
- Immunity is not equal to protection.
These trends should be interpreted with caution as several countries have been progressively changing COVID-19 testing strategies, resulting in lower overall numbers of tests performed and consequently lower numbers of cases detected.

Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 29 May 2022**

**See Annex 1: Data, table, and figure notes**
Morning versus afternoon vaccination – The impact

Morning vaccination
- BCG (8 a.m.)
  - Strong nonspecific trained immunity
  - High cytokine secretion
  - IFN-γ, TNF-α, IL-1β

Afternoon/evening vaccination
- BCG (6 p.m.)
  - No trained immunity
  - Lower cytokine secretion
  - IFN-γ, TNF-α, IL-1β

Influenza (9–11 a.m.)
- Higher antibody response

Influenza (3–5 p.m.)
- Lower antibody response

SARS-CoV-2 (9–11 a.m.)
- Higher neutralizing antibody levels
- Stronger B and T<sub>h</sub> cell response
- Higher percentage of monocytes and DCs
- Higher percentage of memory B cells

SARS-CoV-2 (3–5 p.m.)
- Lower neutralizing antibody levels
- Lower B and T<sub>h</sub> cell response
- Lower percentage of monocytes and DCs
- Lower percentage of memory B cells

Fig. 3. Benefits of morning vaccination compared with afternoon/evening vaccination in humans.
Immunity is not equal to protection - due to many diverse factors, including:

- **The Microorganism**
  - Virulence of the infecting microbial strain
  - Surface antigen mutation – “actual match” with vaccine antigen(s)
  - Incubation period of the respective disease (time to memory response)
  - Ability to colonize / carriage and spreading
  - Location / type of infection (mucosal, tissue or blood)*

- **Epidemiological factors**
  - Infectious pressure (infecting dose of organisms or toxin after exposure and duration and frequency of exposure);
  - Vaccine uptake on a population level - herd protection (reduces infectious pressure and increases vaccine impact)

- **Host / individual factors**
  - Genetic background of an individual’s immune system;
  - Functional status of an individual’s immune system (age; gender; immune-suppression; underlying diseases; medications; body mass; smoking; breastfeeding; gestational age; nutrition; etc.)
  - Predisposing disease factors (existing organ damage)

- **Vaccine characteristics**
  - Vaccine type and product characteristics (see Chapter 6):
    - antigen dose and vaccination schedule
    - live/inactivated vaccine
    - adjuvantage
    - conjugation (for polysaccharides)
    - duration of protection
    - route of application
    - ability to reduce carriage and acquisition
    - other factors

Taken from: VacciTUTOR, 2021
Press Conference: Launch of
THE TBE BOOK
5th Edition, June 4th, 2022

www.tbenews.com/tbe/
VIRTUAL Meeting: June 14th, 10.00 a.m. CET
Download of Press Materials and Clip
Journalists inquiries: daniela@globalhealthpress.org
Cartoon of the week

Vaccination: Unexpected adverse events