

## Peer Review Report

# Review Report on Prevalence of circulating antibodies against hemagglutinin of influenza viruses in epidemic season 2021/2022 in Poland

Original Research, Acta Biochim. Pol.

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### EVALUATION

#### **Q 1** Please summarize the main findings of the study.

"Prevalence of circulating antibodies against hemagglutinin of influenza viruses in epidemic season 2021/2022 in Poland"

Main findings of the study:

1. The study results confirmed the circulation in the population of 4 antigens of influenza virus strains included in the influenza vaccine for the 2021/2022 epidemic season (recommended by World Health Organization (WHO) for the 2021/2022 epidemic season):

- I) A/Victoria/2570/2019 (H1N1)pdm09-like virus,
- II) A/Cambodia/e0826360/2020 (H3N2)-like virus,
- III) B/Washington/02/2019 (B/Victoria376 lineage)-like virus
- IV) B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.

2. Demonstrated differences in the levels of individual anti-hemagglutinin antibodies in the considered 7 age groups.

- I) 0–4 years of age,
- II) 5–9 years of age,
- III) 10–14 years of age,
- IV) 15–25 years of age,
- V) 26–44 years of age .,
- VI) 45–64 years old
- VII)  $\geq 65$  years of age,

– Adult patients (of over 14 years of age) had antibodies against hemagglutinin of influenza viruses more often than children (of under 14 years of age) (with the exception of antibodies against A/Victoria/2570/2019 (H1N1)pdm09 – here, the level of antibodies in patients from the two above groups was at a similar level).

– Among the tested subjects with antibodies, their titer is, on average, higher in children under 14 years of age (the exception being antibodies against B/Washington/02/2019 (B/Victoria lineage) – here, the level of antibodies in both adult patients over 14 years of age and in children was at a similar level).

– Tested children aged 0–14 years more often achieved a protective level (anti386 hemagglutinin antibody titer  $\geq 40$ ) in case of antibodies against A/Victoria/2570/2019 (H1N1)pdm09, A/Cambodia/e0826360/2020 (H3N2) and B/Phuket /3073/2013 (B/Yamagata lineage); the protective level against B/Washington/02/2019 (B/Victoria lineage) was more often achieved by adults over 14 years of age (while as many as 87% of children under 14 years of age did not have anti-hemagglutinin antibodies at all).

– The low percentage of vaccinated persons in particular age groups may indicate that the level of protection obtained may have been the result of a past infection caused by influenza viruses.

Given the very low percentage of the vaccinated population in Poland, which was 6.90% in the 2021/2022 epidemic season, the results obtained in the study would have to be interpreted as the immune system response in patients after a previous influenza virus infection.

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**Q 2** Please highlight the limitations and strengths.

Strengths:

The study used 700 sera from 16 voivodships (that is, from all over Poland), which were differentiated into age groups (after 100 trials in the group), which is the great advantage of this study and gives a complete picture of circulation in the population of four influenza virus antigens included in the influenza vaccine for the 2021/2022 epidemic.

Limitations: lack

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**Q 3** Please comment on the methods, results and data interpretation. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

1. Material and Methods – poorly described.

a) Please specify whether the number of samples from each voivodeship was the same. (line 111).

b) Please provide references to the sentence "...in accordance with the World Health Organization (WHO) Recommendations (line 113).

c) The sentence "They were multiplied on chicken embryos and then properly prepared for analysis at the Influenza Virus Research Department, National Influenza Center at the National Institute of Public Health PZH National Research Institute (NIZP PZH-PIB), in accordance with WHO recommendations" looks out of context. Please correct and provide references to the literature for this entire sentence. Describe the study methodology in detail and, if necessary, provide appropriate references to WHO recommendations.

2. Results presented correctly.

3. Substantive discussion

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**Check List**

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**Q 4** Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List)

(1) page 1–delete from Keywords word–financial support.

(2) The English language requires a check.

(3) All comments and recommendations are presented in the review report (in individual sections).

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**Q 5** Is the English language of sufficient quality?

Yes.

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**Q 6** Is the quality of the figures and tables satisfactory?

Yes.

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**Q 7** Does the reference list cover the relevant literature adequately and in an unbiased manner?

Yes.

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**Q 8** Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)

Yes.

**Q 9** Are the methods sufficiently documented to allow replication studies?

No.

**Q 10** Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication)

Yes.

**Q 11** Does the study adhere to ethical standards including ethics committee approval and consent procedure?

Not Applicable.

**Q 12** Have standard biosecurity and institutional safety procedures been adhered to?

Yes.

#### QUALITY ASSESSMENT

**Q 13** Originality

☐ ☐ ☐ ☐ ☐

**Q 14** Rigor

☐ ☐ ☐ ☐ ☐

**Q 15** Significance to the field

☐ ☐ ☐ ☐ ☐

**Q 16** Interest to general audience

☐ ☐ ☐ ☐ ☐

**Q 17** Quality of the writing

☐ ☐ ☐ ☐ ☐

**Q 18** Overall quality of the study

☐ ☐ ☐ ☐ ☐