

# Prevalence of syphilis in blood donors in northern and central Greece. A multi-center study

M. Pape<sup>1</sup>, D. Pisokas<sup>1</sup>, P. Lazaridou<sup>1</sup>, C. Pargiana<sup>2</sup>, I. Moschos<sup>2</sup>, G. Nikolaidis<sup>1</sup>, P. Poulioudi<sup>1</sup>, A. Boukouvala<sup>1</sup>, S. Nikolaidou<sup>1</sup>, C. Andrikopoulou<sup>1</sup>, V. Bakaloudi<sup>1</sup>

<sup>1</sup> Blood Center, AHEPA University Hospital of Thessaloniki

<sup>2</sup> Department of Microbiology, G.H.T. HIPPOCRATIO-Hospital of Skin and Venereal Diseases of Thessaloniki

## Background

Syphilis is a transfusion transmitted infection and still a public health problem worldwide. The aim of our study was to investigate the seroprevalence of syphilis in volunteer blood donors from various parts of Greece, and assessed its distribution in terms of the years and geographical location.

## Methods

The study conducted at the Serology Laboratory of **AHEPA Blood Center**, which is responsible for the serology screening of blood donations collected from **36 blood services**, located in 5 administrative-geographical regions of northern and central Greece:

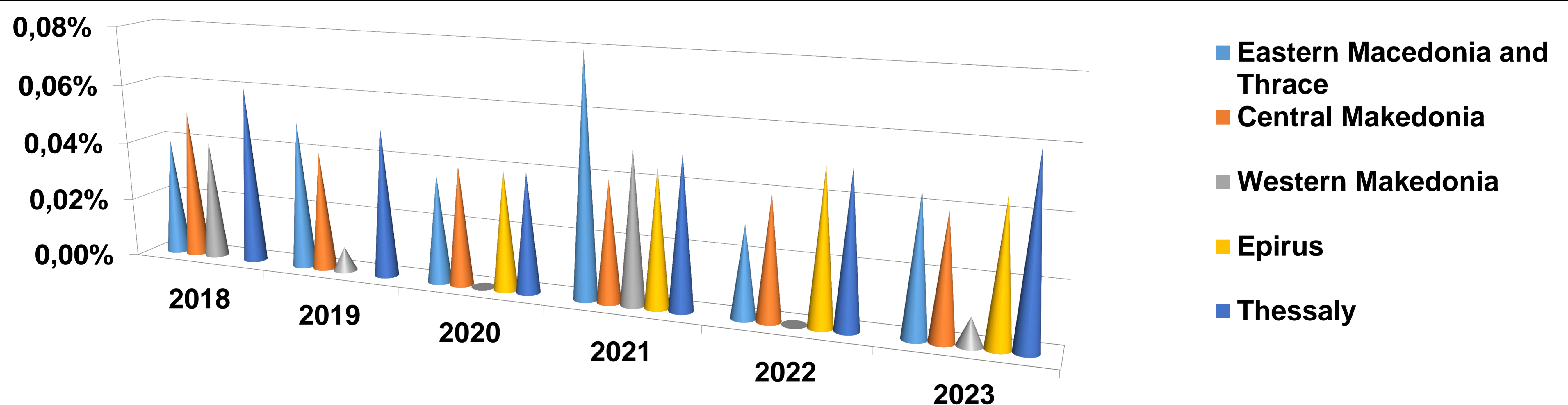
- Eastern Macedonia and Thrace,
- Central Makedonia
- Western Macedonia
- Epirus (joined the lab operation at 2020)
- Thessaly

Serological testing for syphilis was performed using the reverse algorithm, which initiates the screening with a highly sensitive treponemal test. Blood samples were tested using the LIAISON Treponema Screen (DiaSorin) for **qualitative detection of IgG/IgM** specific antibodies to *T. pallidum*. This method is a one-step sandwich CLIA. The results were evaluated using a **cutoff value** of an index of **1.0 with a gray zone of  $\pm 10\%$**  and interpreted as follows:

- Samples scored with an index of  **$< 0.9$**  were considered **negative**
- Samples with an index of  **$\geq 1.1$**  were considered as **initial reactive (IR)**
- Samples showing a value falling in the gray range ( **$0.9 > \text{index} < 1.1$** ) were boundary cases, and following the manufacturer's instructions, they were subjected to the **same protocol of IR** that includes repeatedly testing in duplicate.

If the **result** was **repeatedly reactive**, **→** RPR test in serial dilution and confirmatory tests (FTA-ABS and TPHA) were carried out in addition, to assess disease and treatment status and provide a supplementary marker of infection.

Non-positive confirmatory tests suggested false positivity.



## Conclusions

- Our data confirm the very low prevalence of syphilis infections (both recent and past infections) in Greek blood donors from various regions in northern and central Greece.
- The seropositivity rate did not show any changes over the years.
- Although, volunteer blood donors are considered a selective population, since they are prescreened for previous diseases and sexual behavior, both by the detailed questionnaire and during a personal interview, serological testing for syphilis provides an updated picture about incidence and prevalence in the population of a country.
- In this way, blood donation offers real-time monitoring and identification of high-risk groups and thereby assists a country's surveillance program.
- Additionally, it offers transfusion safety without significantly affecting the blood stocks, as the detection rate is particularly low.