

# Enhancing microbiology laboratory organisation: first WASPLab installation in Romania

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## Background

Rapid and accurate processing of microbiological specimens is essential for ensuring timely and effective patient care. In this regard, clinical microbiology is adopting automation, reaping and promising numerous benefits with technology advances.

Oradea County Hospital laboratory implemented WASPLab (Copan) in 2022 for the automatization of urines, respiratory samples, pus, vaginal swabs and other body fluids as peritoneal, amniotic, articular, pleural and syncytial liquids. The automatization includes specimen inoculation and streaking (WASP), incubation and digitization of the culture plate (WASPLab).

## Materials

Plate preparation accuracy was assessed with 50 urine samples, seeded in parallel by WASP and by the microbiologist (manual), comparing the bacterial growth on the plates. Automated plates were inoculated by using 10uL loop and Single Streaking pattern type 2.

Manual and automated workflows were analysed to compare laboratory processes, efficiency, expectations and staff experiences. Efficiency metrics included processing time reduction and sample throughput increase.

## Results

- There was 100% agreement between the manual and WASP processing, with identical interpretation of cultures (number of isolates, enumeration and clinical outcome).
- WASP streaking pattern was evaluated better in terms of colony isolation and readability.
- The number of samples requiring subculture for inadequate colony isolation was inferior to the manual plate streaked.

- Optimized plate incubation reduced the incubation time from 24h to 16h. This contributes to faster and more reliable diagnoses.

- Plate digitization and WASPLab comprehensive interface enabled the reading step completion in 45 minutes/day, resulting in 80% reduction compared to manual reading, which previously took about 4-5 hours/day.

- Full sample traceability was guaranteed throughout the entire workflow and no more errors were found.

- The system efficiently managed the vast amount of data generated in microbiology labs, making it easier to access and analyse. This improved data organization and reporting.

Sample	Manual	WASP	Agreement
<b>Negative</b>	31/50	31/50	100%
<b>Mixed flora</b>	2/50	2/50	100%
<b>Positive</b>	17/50	17/50	100%

Table 1: agreement between Manual and WASP streaked plate

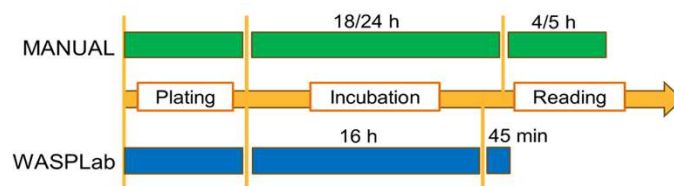


Figure 1: Scheme of time distribution of manual and automated workflow

- The WASPLab implementation allowed efficient time management and personnel organization. The laboratory restructured the staff working schedule from a single morning shift to 2 shifts, which, combined with delegating repetitive and time-consuming tasks to WASPLab, enabled the acceptance of specimens from a second hospital, resulting in 100% throughput increase.

- The automated system led to labour costs reduction, as fewer staff hours were required for manual tasks. Resource allocation was optimized, enhancing overall cost-effectiveness.

## Conclusion

Oradea County Hospital laboratory implemented WASPLab in 2022 finding improvements in turnaround time, personnel safety, standardisation and traceability. They automatized the processing of 1461 samples/week, including urines, respiratory samples, pus, vaginal swabs and other body fluids, achieving notable improvements in laboratory efficiency, standardization, accuracy, data management, and overall quality of microbiological processes. These enhancements positively impact the patient care and contribute to the overall effectiveness of clinical microbiology laboratories.

