



Medical value of WASPLab™ automation solution in a 24/7 clinical microbiology laboratory: some preliminary results



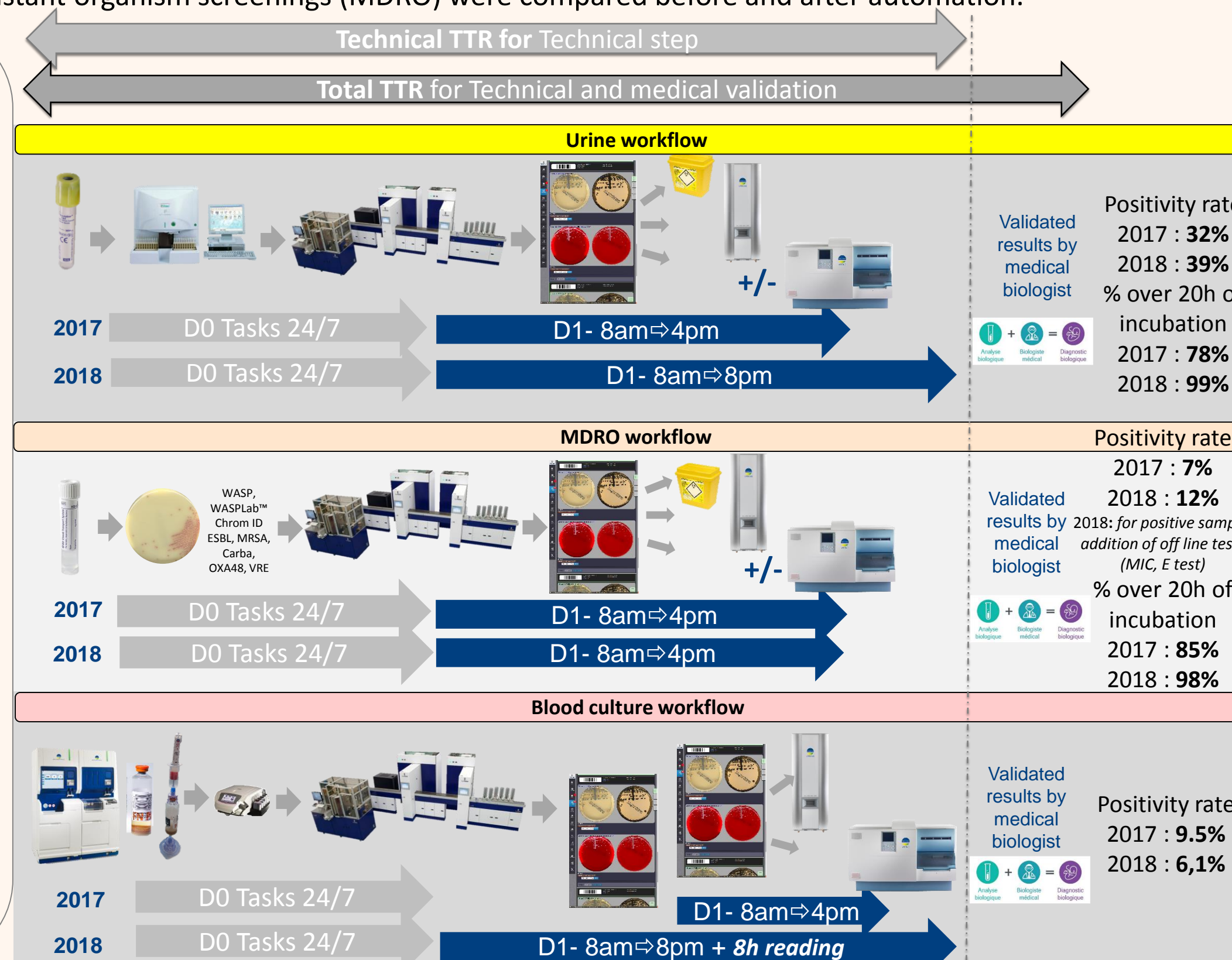
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Background: According to lab automation manufacturers, their solutions improve standardization, decrease time to obtain results (TTR) and reduce lab workforces. A WASPLab™ solution was introduced in the 24/7 Lyon Hospitals lab early November 2017 ensuring automatization of approximately 88% of the samples in September 2018. To assess the medical value of lab automation solution at this stage, TTR of urine, blood cultures (BC) and multi drug resistant organism screenings (MDRO) were compared before and after automation.

To assess the medical value of WASPLab™ lab automation solution, TTR of urine, blood cultures (BC) and multi drug resistant organism screenings (MDRO) were compared before and after automation.

Materials/methods: Based on laboratory information system data (GLIMS, MIPS), the time between sample streaking to final confirmation by lab technicians (LT): TTR “final confirmation” and validation by medical microbiologists: TTR “final validation” were measured on three types of samples: urine, MDRO and BC. Data from matched periods of 2017 without automation versus 2018 with WASPLab™ (Copan/bioMérieux) were compared whilst the other instruments remained unchanged. Whereas the LT number and MDRO workflow was unaffected between 2017 and 2018, the implementation of WASPLab™ allowed a new lab organization with an extended D1 lab technicians activities from 8am-4pm to 8am-8pm for urine and BC samples. For positive MDRO, off line tests (Etest, MIC) were added in 2018. For BC, an additional visual reading of pictures after 8h of incubation was also introduced.



| Sample type and results per sample | Number of samples 2017 vs 2018 | Technical TTR by LT Δ[2018 – 2017 in minutes] | Total TTR for Technical and medical validation Δ [2018 – 2017 in minutes] |
|---|--------------------------------|---|---|
| Urine sample | | | |
| Global | 2015 vs 2093 | -142 | -110 |
| Negative & non-significant | 842 vs 785 | -7 | -23 |
| Contamination | 466 vs 484 | -332 | -254 |
| Positive | 707 vs 827 | -337 | -339 |
| Multi resistant bacteria screening | | | |
| Global | 1089 vs 921 | +39 | +14 |
| Negative | 1008 vs 816 | -33 | -62 |
| Positive | 81 vs 105 | +460 | +377 |
| Blood culture | | | |
| Global | 3821 vs 8293 | -218 | -259 |
| Negative | 3438 vs 7788 | Automatic validation | Automatic validation |
| Positive | 363 vs 504 | -242 | -504 |

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Conclusions: These preliminary results reveal that automation improve **standardization of incubation/reading steps**. Without workflow change, the TTR of MDRO was slightly lengthened (due to increase of positive rate and addition of off line tests). In contrast, the association of WASPLab™, extension of reading time to 8pm by LT, and for BC an **additional reading time point**, induced a TTR shortening : **until 5 hours (≈339min) for urine**, and **3 to 8 hours (≈504min) for BC samples**. These promising results need to be confirmed on larger sample flow.