

Prevalence and Co-infection Rates of Sexually Transmitted Infections from an Austrian Cohort

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Background:

Chlamydia trachomatis (CT) and *Neisseria gonorrhoeae* (NG) are the 2 most common notifiable infections. despite emerging interest in *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG). The recently launched Alinity m STI assay (Abbott, USA) is an in vitro reverse transcription-polymerase chain reaction (RT-PCR) assay for the specific detection and differentiation of genital pathogens using a single collection tube for the diagnostic procedure and has been introduced and established in the Outpatients Centre for Diagnosis of Infectious Venero-Dermatological Diseases (OCD).

Objectives:

Specimens were collected and tested with the Alinity m STI assay (Abbott Molecular Inc, Des Plaines, IL, USA) between 2021 and 2022 for CT, NG, MG, and TV. Positive results were confirmed by the Aptima Assays (Hologic, USA). In case of NG also gonococcal culture was performed. Overall positivity and co-infection rates were determined based on the number of positive results for each analyte and the total number of result.

Methods:

Around 50.000 persons (44.5% men, 55.5% women)

Examination of CT, NG, MG, TV, with the Alinity, m assay (Abbott) confirmed by the Aptima assays (Hologic)

Two samples from each patient (**Alinity m multi-collect Specimen Collection Kit, Aptima multi-collect sample tube**)

Specimen types: cervicovaginal, urethral, seminal fluid, oropharyngeal region, anorectal area

Results:

Positivity rates: decreased for CT (6.5 to 5.6%) NG (3.8 to 2.9%), TV (1.7 to 1.1%), increased for MG (3.9 to 4.1%) (Table1)

Co-infections: <1.0% of all CT positives, NG positives, TV positives and MG positives had a co-infection with one other pathogen.

This study demonstrates that the prevalence rates in this cohort decreased during the study period due to the covid pandemic. **Positive and reanalyzed results** were differentiated by the Cycle turn (Ct) value in 3 categories (**Fig 1&2**) and collection sites (**Tab 2**). For CT and for MG the Alinity assay showed a high agreement with the AC2 and a high reproducibility between first and second run (99.4% and 99.6%;) for samples with the Ct-value below 30.22 (limit of detection; LOD) (**Fig 1&2**) .

Table 1: Prevalence of STIs in 2021 and 2022 in an Austrian cohort

| Year | % CT Positivity | % NG Positivity | % TV Positivity | % MG Positivity |
|---------|--------------------|--------------------|------------------|---------------------|
| 2021 | 6.5 (1,712/24,557) | 3.8 (992/25,293) | 1.7 (438/25,821) | 3.9 (1,015/25,226) |
| 2022 | 5.6 (1,507/25,557) | 2.9 (779/26,289) | 1.1 (293/26,748) | 4.1 (1,105/25,926) |
| Overall | 6.0 (3,219/50,114) | 3.3 (1,771/51,582) | 1.4 (731/52,569) | 4.0 (2,2120/51,152) |

Table 2: Positive chlamydia results in different sample types sorted by cycle turn

| Ct <30.22 | | Alinity 1. | Alinity 2. | AC2 |
|----------------|---------------|------------|------------|-----|
| | urethra | 277 | 277 | 277 |
| | cervix/vagina | 180 | 179 | 178 |
| | seminal fluid | 11 | 11 | 11 |
| | anorectal | 4 | 4 | 4 |
| | oropharyngeal | 1 | 1 | 1 |
| Ct 30.22-37.00 | | Alinity 1. | Alinity 2. | AC2 |
| | urethra | 40 | 39 | 36 |
| | cervix/vagina | 40 | 38 | 34 |
| | seminal fluid | 6 | 6 | 6 |
| | anorectal | 7 | 7 | 6 |
| | oropharyngeal | 1 | 1 | 1 |
| Ct >37.00 | | Alinity 1. | Alinity 2. | AC2 |
| | urethra | 19 | 7 | 6 |
| | cervix/vagina | 20 | 4 | 5 |
| | seminal fluid | 0 | 0 | 0 |
| | anorectal | 0 | 0 | 0 |
| | oropharyngeal | 0 | 0 | 0 |

Agreement of Alinity 1. with

Alinity 2. 472/473 99.8%
AC2 471/473 99.6%

Agreement of Alinity 1. with

Alinity 2. 91/94 96.8%
AC2 83/94 88.3%

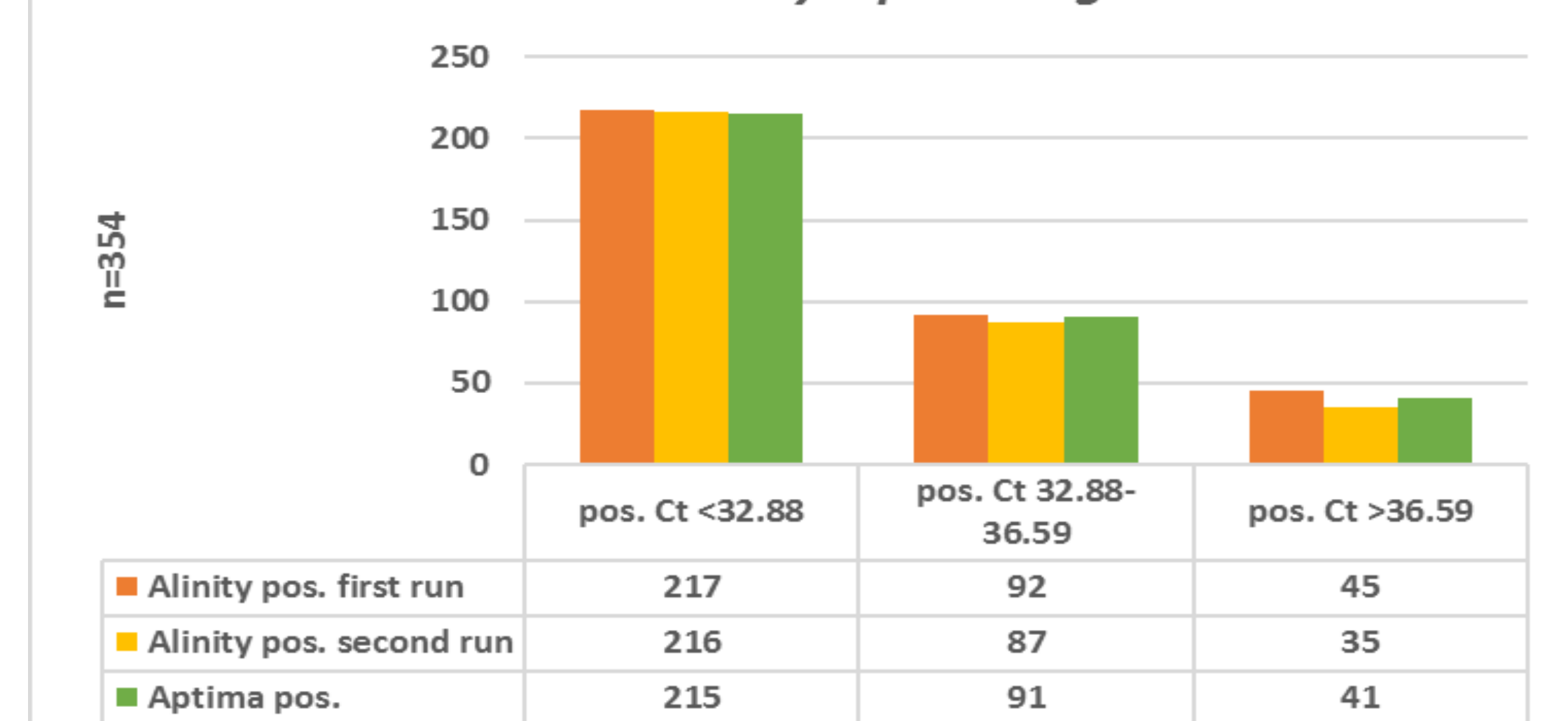
Agreement of Alinity 1. with

Alinity 2. 11/39 28.2%
AC2 11/39 28.2%

Figure 1 Positive results for *Chlamydia trachomatis*



Figure 2 Positive results for *Mycoplasma genitalium*



Conclusions: This study demonstrates low prevalence rates and co-infection rates in this cohort. Furthermore, the total agreement between the Alinity m STI assay and the AC2 was high for negative and positive results in the evaluation of the 655 samples. Reproducibility problems with the Alinity occurred for the high Ct-values beyond the LOD for all four microorganisms.