

# Detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) in male urethral swabs after gamma-irradiation

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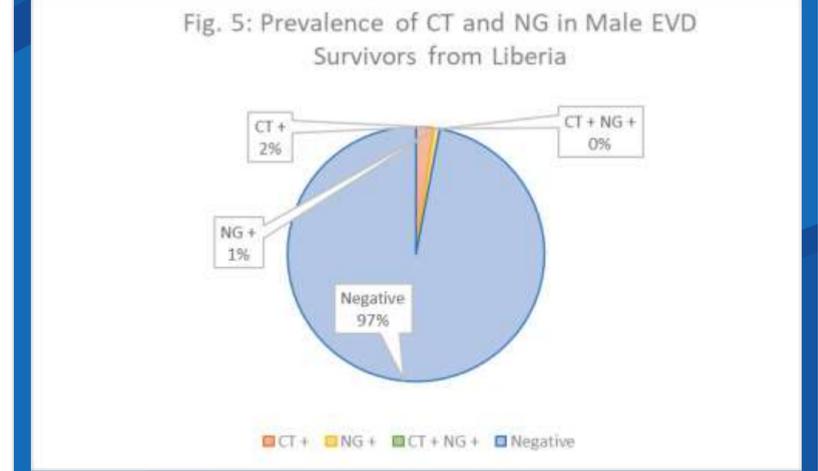
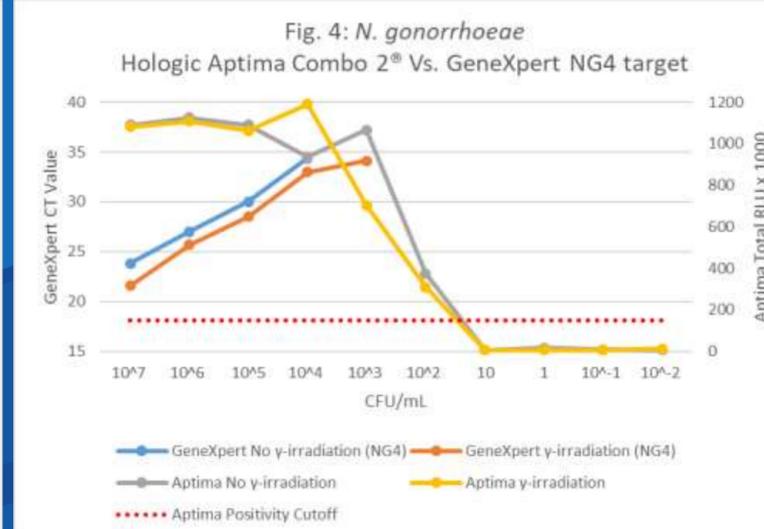
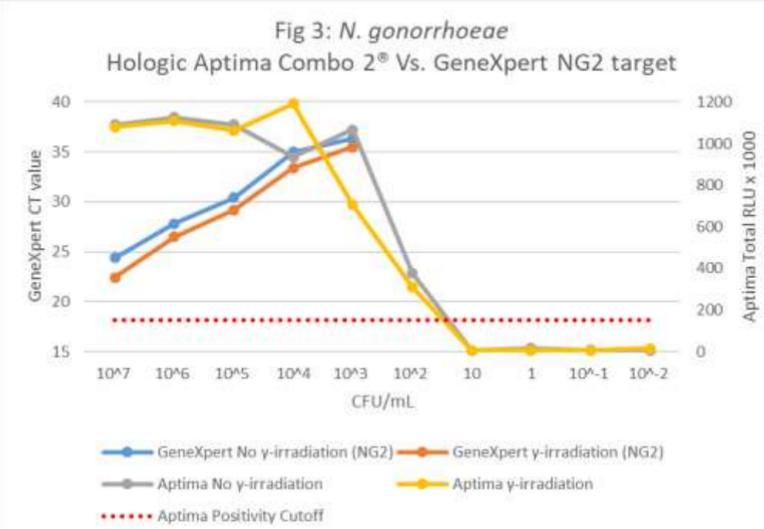
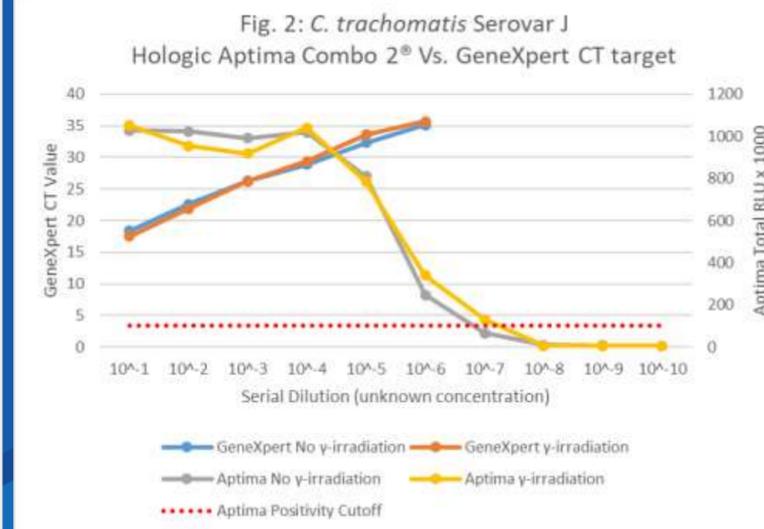
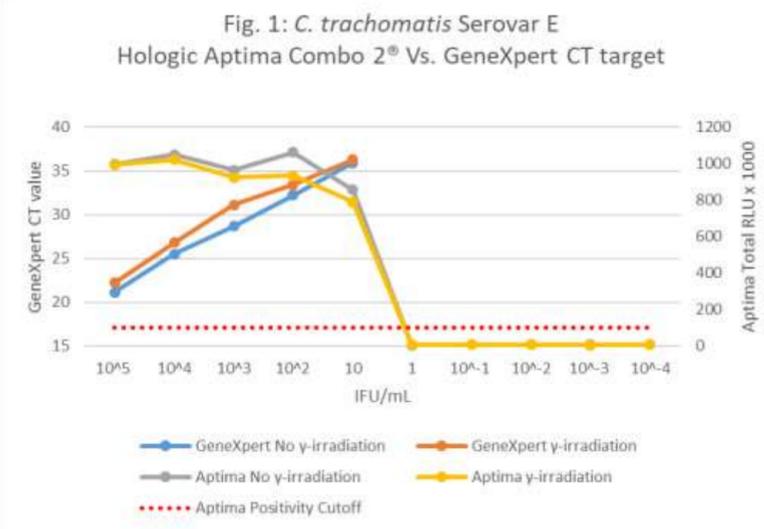
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## Introduction

Men who survive and recover from Ebola virus disease (EVD) can shed Ebola virus RNA in the semen for up to a year or longer after Ebola treatment unit discharge, requiring unique specimen handling and laboratory containment when testing for other sexually-transmitted diseases. Gamma-irradiation is the standard method for inactivation of Ebola virus specimens and has been shown to have little to no effect on amplification of nucleic acids from *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Escherichia coli*. There is no data on the prevalence of CT and NG in male EVD survivors or the impact gamma-irradiation has on CT and NG nucleic acids. This study sets out to validate gamma-irradiation inactivation on CT and NG swabs using two FDA-approved CT/NG diagnostic platforms and to determine prevalence of CT and NG in male EVD survivors from Liberia. Data in this study support that gamma-irradiation did not affect sensitivity of either CT/NG assay.

## Methods

- Serial dilutions for swab collection of CT serovar E (clinical isolate UWR109), CT serovar J (clinical isolate UW-J), and NG (ATCC 49226) were prepared in 1X PBS for testing on the Hologic Aptima Combo 2® and Cepheid Xpert® CT/NG platforms.
- One set of swabs for each assay and strain was subjected to gamma-irradiation ( $5 \times 10^6$  rads) in the CDC Viral Special Pathogens Branch laboratory according to a standard inactivation procedure and results were compared to non-gamma-irradiated swabs.
- To determine prevalence of CT and NG in male EVD survivors aged 18-69 years, 134 archived, gamma-irradiated urethral swabs from male EVD survivors were tested on the Hologic Aptima Combo 2® platform. All swabs tested maintained the same freeze/thaw workflow.



## Results

- There was 98.8% (158/160) agreement between gamma-irradiated and non-irradiated mock specimen swabs.
- Gamma-irradiation had no impact on sensitivity for detection of CT serovar E on either platform (Fig. 1), NG using the NG2 target on the GeneXpert® CT/NG platform (Fig. 3), or NG on the Hologic Aptima Combo 2® platform (Fig. 3 and 4).
- Gamma-irradiation improved the sensitivity by one log for detection of both CT serovar J on the Hologic Aptima Combo 2® platform (Fig. 2) and NG using the NG4 target on the GeneXpert® CT/NG platform (Fig. 4).
- The prevalence of CT and NG in the sample population was 2.2% (3/134) and 0.7% (1/134), respectively (Fig. 5). No CT/NG co-infections were detected.

## Conclusions

- The impact of gamma-irradiation on the sensitivity of CT and NG detection is strain, target and assay dependent.
- The Hologic Aptima Combo 2® assay is more sensitive than the GeneXpert assay for detection of NG.
- Gamma-irradiation does not negatively impact the sensitivity of the Hologic Aptima Combo 2® Assay and Cepheid GeneXpert® CT/NG Assay for the detection of CT and NG in swab specimens.
- Determination of a low prevalence of CT and NG in male EVD survivors in Liberia was successful.

## References

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