

# Human Papillomavirus – the New Challenge for Infection Prevention

## Commonly Used Disinfectants Do Not Kill High-Risk HPV

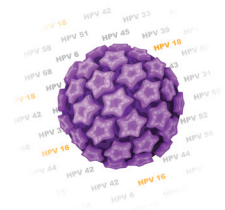
Multiple guidelines recommend high level disinfection (HLD) of ultrasound probes between patients to reduce the risk of cross contamination. However, recent research shows high level disinfectants commonly used on ultrasound probes do not kill high-risk, cancer-causing high-risk human papillomavirus (HPV).<sup>1</sup>

Both glutaraldehyde and *ortho*-phthalaldehyde (OPA) completely failed to inactivate natural, infectious high-risk HPV16 – even after 24 hours of contact time.<sup>1</sup>

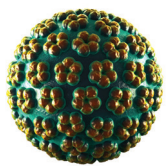
## Ultrasound Probes Are a Potential Source of HPV Infection

Clinical studies have shown that up to 7% of endocavity ultrasound probes remain contaminated with high-risk HPV DNA after ultrasound examinations and routine disinfection.<sup>3-5</sup>

HPV can be spread from one person to another via direct contact with skin or mucous membranes. We also know that HPV is a very stable virus and can remain infectious on objects and surfaces for days, even when treated with common disinfectants. Evidence shows that transmission may occur through non-sexual contact via medical devices and equipment.<sup>6</sup>

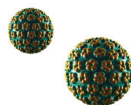


HPV is the most important infectious cause of cancer. It is associated with **99.7%** of cervical cancers and **5% of all cancers worldwide.**<sup>8,9</sup>



HPV is the most common sexually transmitted infection. **Around 79 million** Americans are currently infected.

There are **about 14 million** new genital HPV infections occur every year.<sup>7</sup>



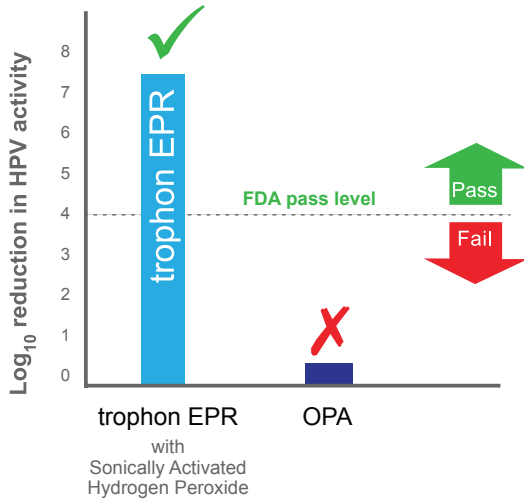
## Only trophon EPR is Proven To Kill High-Risk HPV

New research has demonstrated that the trophon EPR is the only high level disinfection system proven to kill high-risk HPV.<sup>2</sup> The study used “real” natural, infectious HPV16 and HPV18, which are the major cancer-causing types of HPV. A stringent test method, in line with FDA requirements for virucidal testing, and manufacturer’s recommendations for testing were followed.

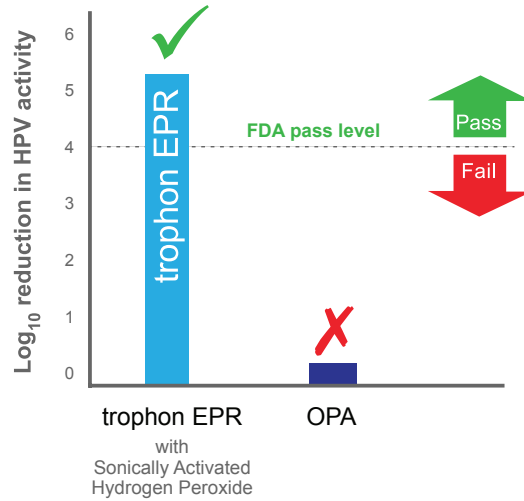
The same study also retested OPA and confirmed it to be completely ineffective against HPV. For more information visit [www.hpvdisinfection.com](http://www.hpvdisinfection.com)

# Only trophon EPR is Proven To Kill High-Risk HPV

Efficacy against HPV16



Efficacy against HPV18



Adapted from Ryndock E, Robison R, Meyers C. 2015. Susceptibility of HPV16 and 18 to high level disinfectants indicated for semi-critical ultrasound probes. J Med Virol. Published online 13 Nov 2015. DOI 10.1002/jmv.24421.

**Caution** These results do not apply to any other hydrogen peroxide based product.

## Why Has Testing Against HPV Not Been Done Before?

Due to the difficulties of producing natural, infectious HPV for research, disinfectant efficacy testing against HPV has not previously been possible. This changed recently when the world's first method to produce sufficient infectious HPV for research was developed and the first HPV disinfectant efficacy study was published in 2014.<sup>1</sup>

## Why Does trophon Work Whereas Other Disinfectants Do Not?

The patented trophon technology is unique in that it uses a proprietary disinfectant containing a high concentration of hydrogen peroxide that is sonically activated to form a sub-micron particle mist. This mist generates a high number of free radicals with superoxidative properties that destroy the virus.

<sup>1</sup> Meyers, J., et al., Susceptibility of high-risk human papillomavirus type 16 to clinical disinfectants. J Antimicrob Chemother, 2014.

<sup>2</sup> Ryndock E, Robison R, Meyers C. 2015. Susceptibility of HPV16 and 18 to high level disinfectants indicated for semi-critical ultrasound probes. J Med Virol. Published online 13 Nov 2015. DOI 10.1002/jmv.24421.

<sup>3</sup> Casalegno et. Al.: High Risk HPV Contamination of Endocavity Vaginal Ultrasound Probes: An Underestimated Route of Nosocomial Infection?, PLOS ONE, Oct 2012, Volume 7, Issue 10

<sup>4</sup> Ma et al.: Transvaginal ultrasound probe contamination by the human papillomavirus in the emergency department, Emerg Med J, 2012

<sup>5</sup> M'Zali et al. Persistence of microbial contamination on transvaginal ultrasound probes despite low-level disinfection procedure. PLoS One 2014;9:e93368.

<sup>6</sup> Ryndock EJ, Meyers C., A risk for non-sexual transmission of human papilloma virus? Expert Rev. Anti Infect. Ther. 12(10), 1165-1170 (2014).

<sup>7</sup> CDC: Centers for Disease Control and Prevention. Genital HPV Infection – Fact Sheet [ONLINE]. Accessed December 5, 2014

<sup>8</sup> Parkin DM (2006). "The global health burden of infection-associated cancers in the year 2002". Int. J. Cancer 118 (12): 3030–44.

<sup>9</sup> Walboomers JMM, Jacobs MV, Manos MM, et al. Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. J Pathol. 1999; 189: 12–19.



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