

Human Papillomavirus – The New Challenge For Infection Prevention

PREVENTING HPV TRANSMISSION IN THE HEALTHCARE SETTING

Appropriate reprocessing of ultrasound probes between patients is critical to reduce the risk of human papillomavirus (HPV) transmission. Recent research shows disinfectants commonly used on ultrasound probes do not kill natural, infectious high-risk HPV.¹

Given the prevalence of HPV, the potential for HPV transmission in the healthcare setting, and the virus' links to cancer, these latest research developments are a major concern.

The trophon EPR is the first high level disinfection system proven to kill natural, infectious, high-risk HPV in laboratory testing, using the manufacturer's FDA-cleared conditions.² For more information visit www.hpvdisinfection.com.

COMMONLY USED DISINFECTANTS DO NOT KILL HIGH-RISK HPV

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 2014.¹

The results showed that two disinfectants commonly used for high level disinfection (HLD) in medical and healthcare facilities, glutaraldehyde and *ortho*-phthalaldehyde (OPA), do not kill natural, infectious, high-risk HPV16 – even after 24 hours of contact time.¹

ULTRASOUND PROBES ARE A POTENTIAL SOURCE OF HPV INFECTION

Clinical studies have shown that 3 – 7% of endocavity ultrasound probes remain contaminated with high-risk HPV DNA after ultrasound examinations and routine disinfection.³⁻⁵

HPV can be spread from one person to another via direct contact with skin or mucous membranes.



We also know that HPV 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.⁶

ONE OF THE MOST COMMON SEXUALLY TRANSMITTED INFECTIONS

HPV is one of the most common sexually transmitted infections in **Australia**.^{7,8}

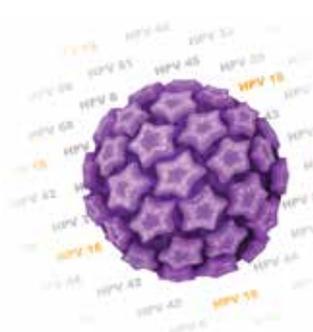
CERVICAL CANCER IN AUSTRALIA

 An estimated 303 women die from cervical cancer each year.⁹

An estimated 793 new cases of cervical cancer are diagnosed.⁹ 

THE MOST IMPORTANT INFECTIOUS CAUSE OF CANCER

Most sexually active men and women contract an HPV infection at some point in their lives. While most of these infections are with low-risk types of HPV, the high-risk types, in particular **HPV16** and **HPV18**, account for **5%** of all cancers worldwide.¹⁰



HPV is associated with

99.7%

of cervical cancers¹¹ as well as a number of other cancers including anal, vaginal, vulvar and penile cancers.

Endocavity ultrasound probes are classified as semi-critical as they come in contact with mucous membranes or non-intact skin.

HLD Multiple guidelines recommend **high level disinfection (HLD)** of probes between patients.

HLD is defined as *complete elimination of all microorganisms in or on an instrument, except for small numbers of bacterial spores, within the manufacturer's recommended contact time.*

FDA guidance requires disinfectants to achieve a $> 4 \log_{10}$ reduction for a virucidal claim.

SUSCEPTIBILITY OF NATIVE HPV16 TO DISINFECTANTS

DISINFECTANT	45 MINUTES	RESULT	24 HOURS	COMPLETE INACTIVATION	VIRUCIDAL
2.4% GTA*	✗	$<1 \log_{10}$	Not tested	✗	✗
3.4% GTA	✗	$<1 \log_{10}$	✗	✗	✗
0.55% OPA#	✗	$<1 \log_{10}$	✗	✗	✗
0.525% hypochlorite	✓	$4.862 \log_{10}$	Not tested	✗	✓

* Glutaraldehyde # *ortho*-phthalaldehyde

In a further clinical study, surface carrier tests against HPV16 and HPV18 were carried out using OPA, hypochlorite and trophon EPR. The testing was conducted according to manufacturers' instructions to simulate normal clinical use conditions (concentration, time, temperature) and met FDA requirements for virucidal testing.

OPA was shown to be ineffective against both HPV16 and HPV18. While hypochlorite was effective against both viruses, it is not a high level disinfectant and is not suitable for use with ultrasound probes. The trophon EPR achieved $> 4 \log_{10}$ reduction and complete inactivation of both HPV16 and HPV18, meeting FDA requirements.²

SUSCEPTIBILITY OF HPV16 AND HPV18 TO CLINICAL DISINFECTANTS USED ON ULTRASOUND PROBES

DISINFECTANT	HPV16	HPV18	COMPLETE INACTIVATION	VIRUCIDAL
0.55% OPA#	$<1 \log_{10}$	$<1 \log_{10}$	✗	✗
Hypochlorite (0.87%)	$4.95 \log_{10}$	$4.62 \log_{10}$	✗	✓
trophon EPR (35% H ₂ O ₂)	$>7.39 \log_{10}$	$>5.87 \log_{10}$	✓	✓

ortho-phthalaldehyde

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