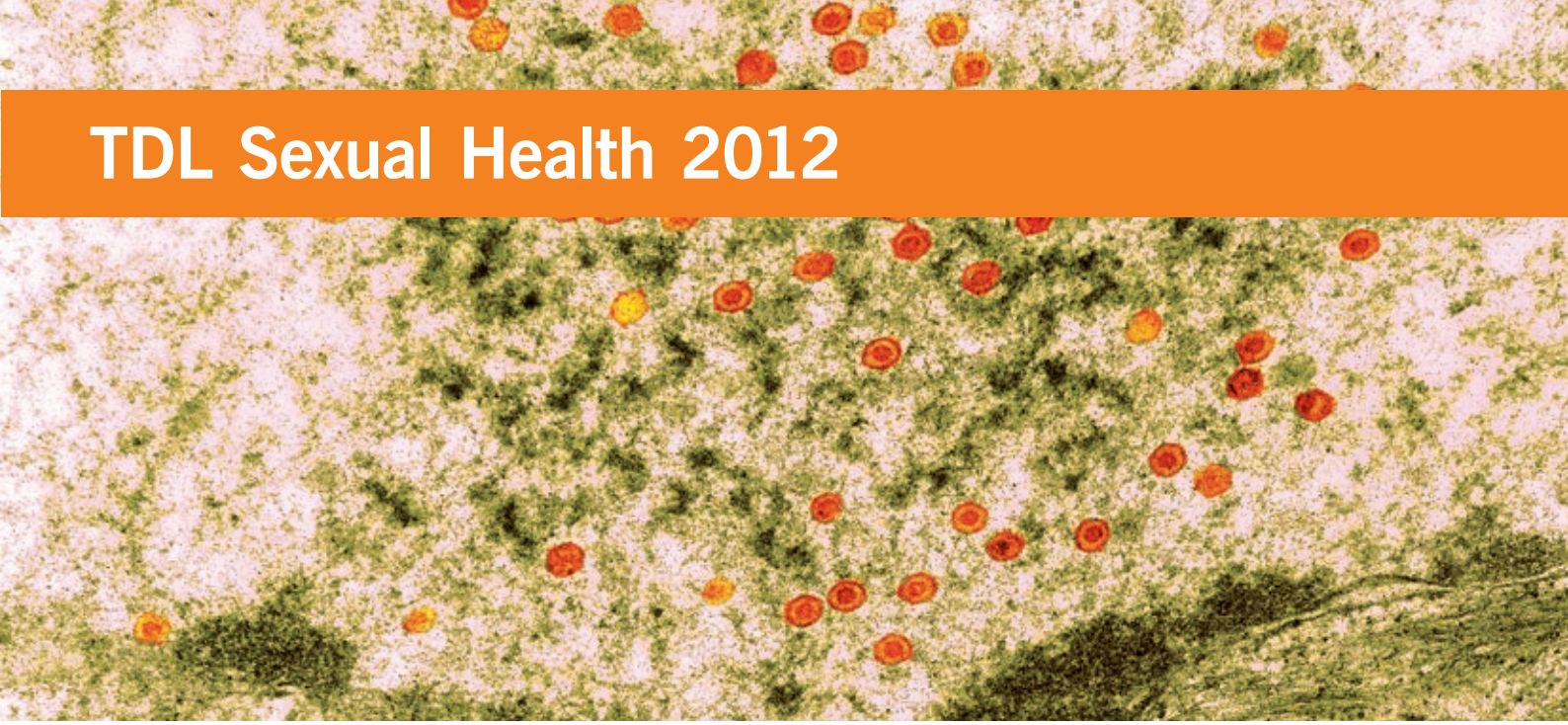
TDL Sexual Health 2012



Overall trends in diagnoses in England

Numbers of new diagnoses of sexually transmitted infections (STIs) in England fell by 1% in 2010, (424,782 to 418,598) with the greatest declines in young adults.

The total number of new cases of STIs diagnosed in GUM, GP and community based settings screening for chlamydia, fell by 1% last year (424,782 to 418,598), while other STI diagnoses were stable (219,906 to 220,049) over the same 12-month period.

The overall decline in total numbers of new STI diagnoses masks variations in the trends of specific STIs.

The impact of poor sexual health remains greatest in

- young heterosexual adults;
- men who have sex with men.

TREND: UP	↑
• a rise in diagnoses of genital herpes	+8%
• a rise in gonorrhoea	+8%

TREND: DOWN	↓
• a decline in new diagnoses of infectious syphilis	-8%
• a decline in genital warts	-3%

TREND: SAME	~
• new diagnoses of genital chlamydia	same

IMPORTANT FACTORS

Two key factors have made a significant contribution to the rise in diagnoses:

- The rapid increase in sexual health screens and chlamydia tests performed;
- The increasing use of more sensitive molecular diagnostic tests for gonorrhoea and genital herpes diagnosis.

HIV in the UK

HIV testing is a priority if HIV prevention efforts are to be improved.

In September 2011 a House of Lords committee estimated that almost 100,000 people in the UK will have HIV by 2012. The actual numbers are likely to be far higher: some reports estimate that around a quarter of people with the virus are unaware they have it.

HIV REALTIME QUALITATIVE PCR		
HIV-1 Qualitative DNA/RNA by PCR (Abbot Real Time early detection assay using dried blood spot [DBS])	NEW 2012	TAT 2 DAYS
		DBSH

DBS

In 2009–2010, there were an estimated 90,000 people living with HIV (both diagnosed and undiagnosed) in the UK and a quarter of HIV-infected people were thought to be unaware of their infection.

Most Common STIs

- Anogenital warts
- Bacterial vaginosis
- Chancroid
- Chlamydia
- Gonorrhoea
- Hepatitis B
- Hepatitis C
- Herpes
- HIV
- Human papillomavirus
- Mycoplasma genitalium
- Syphilis
- Trichomoniasis

Risk factors

- Young age
- Failure to use barrier contraceptives
- Non-regular sexual relationships
- Homosexuality
- Intravenous drug use
- African origin (Sub-Saharan Africa)
- Social deprivation
- Prostitution/Promiscuity
- Poor access to advice and treatment of STDs

Image: Herpes simplex viruses in cell nucleus. © Rob Young/Wellcome Images.

TDL Sexual Health Profiles

7 STD PROFILE BY PCR (7 TESTS FROM 1 SAMPLE)

Chlamydia trachomatis
N. gonorrhoea
Mycoplasma genitalium
Ureaplasma
Trichomonas vaginalis
Gardnerella vaginalis
Herpes Simplex I/II

All tests can be requested individually.

TAT 5 DAYS

PP12

FCRU OR PCR Swab OR TPV OR Semen

EARLY DETECTION SCREEN (Simultaneous testing for HIV1/HIV2/HBV/HCV by PCR)

Positive findings will be reflexed for individual qualitative confirmatory testing using the Roche Cobas Ampliscreen

HIV 1&2
Hepatitis B Virus (HBV DNA)
Hepatitis C Virus (HCV RNA)

TAT 3 DAYS

STDX

A 10mls

HIV REALTIME QUALITATIVE PCR

HIV-1 Qualitative DNA/RNA by PCR (Abbot Real Time early detection assay using dried blood spot [DBS])

NEW 2012

TAT 2 DAYS

DBSH

DBS

STD QUAD

Syphilis IgG/IgM
HIV 1&2/p24 Antigen
Chlamydia (Urine)
Gonorrhoea (urine)

NEW 2012

TAT 2 DAYS

STDQ

B FCRU

STD1 MALE PROFILE

Urethral Micro Swab
Chlamydia/Gonorrhoea (Urine)
Syphilis IgG/IgM

TAT 2 DAYS

STD1

B STM FCRU

STD2 MALE PROFILE PLUS

HIV 1 & 2 Abs/p24 Antigen
Hep B surface Antigen
Hep C Abs
Hep C Ag (early detection)
Syphilis IgG/IgM
Chlamydia/Gonorrhoea (urine)
Herpes Simplex I/II by PCR
Urethral Swab for culture

CHANGE 2012

TAT 4 DAYS

STD2

B STM FCRU

STD3 FEMALE PROFILE

Syphilis IgG/IgM
Chlamydia/Gonorrhoea (PCR Swab)
High vaginal Swab (Culture swab)

TAT 2 DAYS

STD3

B STM PCR

STD4 FEMALE PROFILE PLUS

HIV 1 & 2 Abs/p24 Antigen
Hep B surface Antigen
Hep C Abs
Hep C Ag (early detection)
Syphilis IgG/IgM
Chlamydia/Gonorrhoea
Herpes Simplex I/II by PCR
High Vaginal Swab for culture

CHANGE 2012

TAT 4 DAYS

STD4

B STM PCR

STD5 BLOODS ONLY

Syphilis IgG/IgM
HIV 1&2/p24 Antigen
Hepatitis B Surface Antigen
Hep C Abs
Hep C Ag (early detection)

CHANGE 2012

TAT 4 HOURS

STD5

B

STD6 BLOODS ONLY

Syphilis IgG/IgM
Hepatitis B Surface Antigen
Hep C Abs
Hep C Ag (early detection)

CHANGE 2012

TAT 4 HOURS

STD6

B

STD8 BV PROFILE

Gardnerella by PCR
Atopobium vaginae by PCR
Vaginal Swab

TAT 4 DAYS

STD8

STM PCR

STD9 SYMPTOMATIC LESION SAMPLE USING PCR SWAB

Syphilis
Herpes Simplex I/II by PCR

TAT 4 DAYS

STD9

PCR

7 STDs – Sexual Health Profile by PCR

- Chlamydia
- Gonorrhoea
- Mycoplasma genitalium
- Ureaplasma urealyticum
- Trichomonas vaginalis
- Gardnerella vaginalis
- Herpes Simplex I/II

Tests can be requested individually or as a profile of 7 tests from one sample

7 PCR Tests from one sample

Test	Code	Sample type	Turnaround Time
DL12	DL12	1 x First Catch Urine Sample or 1 x PCR Swab or 1 x Thin Prep Vial or 1 x Semen Sample	4 working days

Choice of Sample types

Urine	✓
PCR Swab	✓
Cytyc Thin Prep Vial	✓
Semen	✓

Sexual Health – Testing for Infection and Infertility by PCR

Being able to test for 7 tests from 1 sample type of choice (First Catch RANDOM urine sample, PCR swab, Thin Prep Vial or semen) provides several advantages, and is more cost effective. Tests can also be requested as single assays, or in combination:

Chlamydia

Chlamydia is the most common curable STD. It infects the cervix in women, and the urethra in men. Its most frequent symptoms are pain during sex, and discharge from the penis or vagina. However, the reason chlamydia is so common is that most people who get chlamydia don't have symptoms for weeks, months, or even years. Despite the lack of symptoms, all sexually active individuals, adolescents and pregnant women are considered at increased risk of chlamydia infection and it is considered important for individuals to be screened and treated.

Gonorrhoea

Gonorrhoea is another common bacterial STD. In general it infects the same organs as chlamydia, and has similar long-term effects. Symptoms of gonorrhea include burning when urinating and, in men, white, yellow, or green discharge from the penis. Just as with chlamydia, however, many people with gonorrhoea don't have symptoms. Gonorrhoea can also infect the throat and rectum – individual PCR swabs for each site should be used to screen for gonorrhoea.

Mycoplasma Genitalium

Before wide testing by PCR was available, it was not possible to culture *M. Genitalium* satisfactorily. It is well recognised now that infection with *M. Genitalium* has surpassed gonorrhoea in prevalence, but most cases of *M. Genitalium* don't cause symptoms. It is thought that *M. Genitalium* is associated with serious long-term consequences, including infertility from pelvic inflammatory disease. *M. Genitalium*, like gonorrhea and chlamydia, may emerge as a recognised cause of cervicitis in women, and non-chlamydia, non-gonococcal persistent urethritis in men.

Ureaplasma

U. Urealyticum is part of the normal genital flora of both men and women. It is found in about 70% of sexually active humans, usually without symptoms. It has been well documented however, to be associated with non-specific urethritis, infertility, and associated discharge, burning, urinary frequency, urinary urgency, and pain.

Trichomoniasis

Trichomonas vaginalis is the most common STD in sexually active young women. Some women may mistake this infection for a yeast infection or bacterial vaginosis since the symptoms are similar: frothy discharge, strong vaginal odour, pain on intercourse, irritation and itching. Men can get trichomoniasis too, but they don't tend to have symptoms. Partners (male or female) need to be treated to avoid ongoing re-infection.

Gardnerella vaginalis

Gardnerella vaginalis is a bacterium. It is one of a number of bacteria and other anaerobic organisms known to cause BV. It is characterized by a fishy smelling and white vaginal discharge and in women of child bearing age it will most commonly cause vaginal infection.

Herpes/Herpes Simplex Virus I/II

Herpes is another viral STD. HSV1 is most often associated with cold sores, and HSV2 is most often associated with genital sores. However, it is possible to transmit herpes from the mouth to the genitals and vice versa. Herpes symptoms can be treated with anti-viral drugs, but the virus cannot be cured. People with the herpes virus need to know that they can transmit the virus even when they do not have any sores or other symptoms. Although using a condom can reduce the risk of herpes transmission, condoms are not 100% effective since herpes can be spread from skin-to-skin.

7 STD PROFILE BY PCR (7 TESTS FROM 1 SAMPLE)

Chlamydia trachomatis
N. gonorrhoea
Mycoplasma genitalium
Ureaplasma
Trichomonas vaginalis
Gardnerella vaginalis
Herpes Simplex I/II

All tests can also be requested indivdually

TAT 5 DAYS

PP12

FCRU OR PCR Swab OR TPV OR Semen

Single tests	Code	Urine*	PCR Swab	Cytyc Vial	Semen
Chlamydia trachomatis	CPCR	✓	✓	✓	✓
N.gonorrohea	CGON	✓	✓	✓	✓
Mycoplasma genitalium**	MGEN	✓	✓	✓	✓
Ureaplasma urealyticum	UGEN	✓	✓	✓	✓
Mycoplasma/Ureaplasma	MUPC	✓	✓	✓	✓
Trichomonas vaginalis	TVPC	✓	✓	✓	✓
Gardnerella vaginalis	GVPC	✓	✓	✓	✓
Herpes Simplex I/II	HERD	✓	✓	✓	✓

* first catch random urine

BLOOD		INCUBATION PERIOD	SAMPLE SITE	TEST	TEST CODE	SAMPLE TYPE	TAT
Genital warts	Viral	Weeks/months after exposure	GU Warts	**HPV Typed DNA** **HPV Typed DNA** **HPV Typed DNA**	HPVT HP20 HP20	Thin Prep Vial PCR Swab Cells/Papilloma	5 days 5 days 5 days
Syphilis/Herpes	Bacterial/ Viral	Whenever active lesions are present	Symptomatic Lesion	**Syphilis/Herpes Lesion Profile**	STD9	PCR Swab	4 days
Syphilis	Bacterial	9–21 days, but up to 90 days	Blood	**Syphilis IgG/IgM**	SERJ	B	4 hours
Herpes Simplex Virus I/II	Viral	IgG 4–6 weeks after exposure IgM 5–35 days after exposure, after which test IgG	Blood Blood	**Herpes IgG (past infection)** **Herpes IgM (current/recent)**	HERP HERM	B B	2 days 2 days
HIV	Viral	Usually 10–90 days, but up to 180 days	Blood Blood	**HIV I&II/p24 antigen**	HDUO	B	4 hours
Hep B	Viral	Usually 45–180 days, average of 60–90 days	Blood Blood	**Hep B surface antigen**	AUAG	B	4 hours
Hep C Ab	Viral	Usually 9–180 days, average of 45–65 days	Blood Blood	**Hep C Antibodies**	HEPC	B	4 hours
NEW **Hep C Ag**	Viral	Usually 9–180 days, average of 45–65 days	Blood Blood	**Hep C Antigen** Early detection at 10 days	HCAG	B	4 hours

EARLY DETECTION PROFILES BY PCR	INCUBATION PERIOD	SAMPLE SITE	TEST	TEST CODE	SAMPLE TYPE	TAT
7 STDs by PCR	One sample for 7 STD Tests	Urine Cervix Vagina	**Chlamydia** **Gonorrhoea** **Mycoplasma genitalium** **Ureaplasma genitalium** **Trichomonas vaginalis** **Gardnerella vaginalis** **Herpes Simplex I/II**	PP12 PP12 PP12	Thin Prep Vial or First Catch Urine or PCR Swab	5 days 5 days 5 days
HIV/HBV/HCV	Early Detection Screen by PCR Multiplex HIV/HCV at 10 days	Blood	**HIV 1&2 RNA** **Hepatitis B (HBV DNA)** **Hepatitis C (HCV RNA)**	STDX	10mls EDTA	3 days
NEW **HIV 1 DNA/RNA**	Early Detection by PCR 10 days Contact Laboratory for DBS Pack	Dried Blood Spot	**HIV 1 Qualitative (Abbott Real Time Assay)**	DBSH	Dried Blood Spot	2 days

When to test? What to test? How to test?

STDs can be caused by virus, fungus, parasite or bacteria. Anyone who is sexually active may be at risk of acquiring an STD. The risk is higher for those with increased numbers of sexual partners, or who have had sex with someone who has/had many partners, or have/had unprotected sex.

STD		INCUBATION PERIOD	SAMPLE SITE	TEST	TEST CODE	SAMPLE TYPE	TAT
Chlamydia CT	Bacterial	1–3 weeks, up to 6 weeks	Urine	**Chlamydia**	CPCR	First catch Urine	2 days
			Cervix/Vagina	**Chlamydia**	SPCR	PCR Swab	2 days
			Cervix/Vagina	**Chlamydia**	TPCR	Thin Prep Vial	3 days
Gonorrhoea GC	Bacterial	2–7 days, up to 1 month	Urine	**Gonorrhoea by PCR**	CGON	First Catch Urine	2 days
			Cervix/Vagina	**Gonorrhoea by PCR**	SGON	PCR Swab	2 days
			Cervix/Vagina	**Gonorrhoea by PCR**	TGON	Thin Prep Vial	3 days
			Cervix/Vagina	**Gonorrhoea by CULTURE**	GONN	Culture swab	2 days
CT/GC Combined	Bacterial	1–3 weeks, up to 6 weeks	Urine	**CT/GC**	CCG	First Catch Urine	2 days
			Cervix/Vagina	**CT/GC**	SCG	PCR Swab	2 days
			Cervix/Vagina	**CT/GC**	TCG	Thin Prep Vial	3 days
			Rectum	**CT/GC**	RSCG	PCR Swab	2 days
			Throat	**CT/GC**	TSCG	PCR Swab	2 days
Mycoplasma genitalium	Bacterial	Symptoms develop at 1–3 weeks	Urine	**Mycoplasma genitalium by PCR**	MGEN	First Catch Urine	5 days
			GU Site	**Mycoplasma genitalium by PCR**	MGEN	PCR Swab	5 days
			Cervix/Vagina	**Mycoplasma genitalium by PCR**	MGEN	Thin Prep Vial	5 days
Ureaplasma urealyticum	Bacterial	Symptoms develop at 1–3 weeks	Urine	**Ureaplasma by PCR**	UGEN	First Catch Urine	5 days
			GU Site	**Ureaplasma by PCR**	UGEN	PCR Swab	5 days
			Cervix/Vagina	**Ureaplasma by PCR**	UGEN	Thin Prep Vial	5 days
Trichomonas vaginalis	Parasitic	4–28 days, many patients are asymptomatic carriers	Urine	**Trichomonas vaginalis by PCR**	TVPC	First Catch Urine	5 days
			GU Site	**Trichomonas vaginalis by PCR**	TVPC	PCR Swab	5 days
			Cervix/Vagina	**Trichomonas vaginalis by PCR**	TVPC	Thin Prep Vial	5 days
Gardnerella vaginalis	Bacterial	Imbalance of normal flora	Urine	**Gardnerella vaginalis by PCR**	GVPC	First Catch Urine	5 days
			GU Site	**Gardnerella vaginalis by PCR**	GVPC	PCR Swab	5 days
			Cervix/Vagina	**Gardnerella vaginalis by PCR**	GVPC	Thin Prep Vial	5 days
Bacterial Vaginosis (BV)	Bacterial	Imbalance of normal flora	Cervix/Vagina	**Bacterial Vaginosis (BV) Profile** by both PCR and CULTURE	STD8	Both Culture & PCR swab	4 days
Herpes Simplex Viral I/II	Viral	2–14 days, testing is most appropriate for patients with symptomatic lesion(s)	PCR swab	**Herpes by PCR**	HERS	PCR Swab	5 days
			PCR swab	**Herpes by PCR**	HERD	First Catch Urine	5 days
Human Papillomavirus	Viral	HPV is the most common sexually transmitted infection – usually asymptomatic	Cervical cells	**HPV DNA/mRNA**	HPVT	Thin Prep Vial	5 days
			Cells/papilloma from site (throat/ penile/anal)	**HPV Typed DNA**	HP20	PCR Swab	5 days
				HPV Typed DNA	HP20	Cells/Papilloma	5 days

High Risk Human Papillomavirus (HR- HPV)

Introducing Triage and Test of Cure

Cervical cancer prevention is in transition, with a move from cytology only based screening programmes to HPV based prevention. HPV testing will be important to decide which women need to be referred for further evaluation or treatment. Treatment will be aimed at women who are at risk of developing cervical cancer and extended screening intervals should become more confidently accepted after a negative HPV test.

The aetiological role of HPV infection among women with cervical cancer is now clearly established, and the use of testing for high risk HPV in the management of low grade cytological abnormalities of the cervix well documented.

There are over 100 subtypes of HPV, most of which do not cause significant disease but some (notably types 16 and 18 which account for 70% of all cervical cancer cases worldwide) have been identified and confirmed as causal agents for cervical cancer. These are known as High Risk HPV (HR-HPV) types. Although most women will have at least one HPV infection at some time in their lives, the majority of HPV infections are transient and are cleared by the immune system. A small but still significant number of HPV infections do not clear spontaneously, and it is these women who are at an increased risk of developing cervical intraepithelial neoplasia (CIN) and cervical cancer. Because it is recognised that almost 100% of cervical cancers contain HPV DNA,women with no evidence of HR-HPV infection are extremely unlikely to develop cervical cancer in the short to medium term.

HPV Triage and Test of Cure is being introduced across the NHS Cervical Screening Programme and implementation in the NHS will follow national protocols. All women in the screening age range of 25–64 are eligible for HPV Triage and Test of Cure.

HPV Triage introduces reflex testing for HR-HPV for women whose cervical cytology shows either borderline changes or mild dyskaryosis. A recommendation to refer for colposcopy will be made if HR-HPV is detected. If results are negative, the recommendation will be to return to routine screening.

Test of Cure uses HR-HPV testing to assess the risk of residual or recurrent disease in women who have been treated for any grade of CIN. Women who have normal cytology and are negative for HR-HPV at the time of their follow up screening appointment are at very low risk of residual disease, and can be returned to 3 yearly recall, unless advised different by their gynaecologist. If HR-HPV is detected she needs to be referred again for colposcopy and followed up in accordance with national guidelines. This strategy would not be applied to women receiving treatment for CGIN or for invasive disease.

TDL is introducing a HR-HPV Assay that is an NHS approved qualitative DNA assay, able to collectively test for 14 high risk HPV subtypes (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68) and partially genotype 16 and 18. This assay provides the minimum necessary information for patient stratification

Any request for Cervical Cytology that is not accompanied by a specific request for HPV testing, but is reported with either borderline or mild changes, will automatically reflex to this DNA test. The cost of this reflexed test is included in the price of the cervical cytology (PAPT). There is no additional charge. For women whose cytology findings are more abnormal than borderline or mild, the recommendation for referral for colposcopy will continue to be given, as standard.

The primary benefit of using HPV testing lies in its high sensitivity and high negative predictive value, but HPV DNA testing, on its own, cannot identify progression from transient to a transforming infection or oncogenic activity. This is when an HPV infection has transformed from merely being present and insignificant, to become an integrated infection. The expression of viral oncoproteins E6 and E7, which affect cell cycle control, initiate the cervical cancer process. The detection of E6/E7 mRNA confirms the persistent expression of viral oncoproteins in human cells.

TEST	CODE	SAMPLE REQS	TAT	
HPV DNA	HPV	TPV	2 days	NEW
If HPV has not been included with a request for Thin Prep PAP (PAPT) and the cervical cytology shows borderline or mild changes, this High Risk HPV (HR-HPV) DNA test will be undertaken at no additional charge. HR-HPV subtypes are reported collectively (negative/positive) with Types 16 and 18 reported if present.				
HPV DNA	HPV	TPV	2 days	NEW
High Risk HPV (HR-HPV) subtypes, reported collectively (negative/positive) with Types 16 and 18 reported if present.				
HPV Typed DNA	HP20	TPV	5 days	
20 HPV DNA subtypes will be reported (5 low risk and 15 high risk).				
HPV Typed DNA/mRNA	HPVT	TPV	5 days	
If one or more of types 16, 18, 31, 33 or 45 are positive, reflex testing for expression of E6/E7 oncoproteins will be undertaken.				
HPV mRNA only	HPVR	TPV	3 days	
Usually requested by laboratories who have undertaken DNA testing, this option confirms expression of E6/E7 oncoproteins.				

The benefit of a negative HPV result is its negative predictive value – meaning a negative result indicates that a patient is at very low risk of developing cervical disease. The Negative Predictive Value (NPV) for both DNA and mRNA is the same. DNA based tests detect presence of virus only, whilst the mRNA-based test detects the persistence of viral oncogenic expression. mRNA testing can be undertaken from Cytyc Thin Prep samples only.

HPV/PAPT Combined Report

NEW

Where an HPV result is reported with Cervical Cytology, a recommendation for patient management will be given, based on the combined findings.

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