TDL Sexual Health 2013

Overall trends in diagnoses in England*

Numbers of new diagnoses of sexually transmitted infections (STIs) in England increased by 2% between 2010 and 2011. Increases were noted in:

- Gonorrhoea (up 25%)
- Infectious syphilis (up 10%)
- Genital herpes (up 5%)
- Non-specific genital infection (up 5%)
- Genital warts (up 1%)
- Chlamydia (down 4% – impacted by the National Chlamydia Screening Programme (NCSP)

* Health Protection Agency (HPA) Reports : Vol 6 No 22 - 1 June 2012

HIGHEST RISK
• Young heterosexuals (15-24 years)
• Men who have sex with men

RISES ARE ATTRIBUTED TO
• Increases in testing (GUM, NCSP)
• Continuing high levels of unsafe sexual behaviour
• More sensitive and specific methodologies for testing (PCR/ NAAT testing)
• Increased patient access to screening clinics
• Remote testing (test kits sent to individuals without a direct consultation – requested through mail out, telephone, website)
• Education

Sexual Trends and Travelling

The freedom of being away from daily responsibilities liberates many travellers to take sexual risks while on vacation, and international travellers are at risk for HIV and other sexually transmitted infections. Studies show that 20%-40% of international travellers seen in an STD clinic had sex with a new partner while abroad, and the risk of acquiring an STD is 3 times more likely in travellers who have casual sex. Use of alcohol or recreational drugs during travel can also lower inhibitions, increasing the chance of a risky sexual encounter.

Risk factors

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

TREND: UP	↑
• a rise in diagnoses genital warts	+1%
• a rise in diagnoses of genital herpes	+5%
• a rise in diagnoses of non-specific genital infection	+5%
• a rise in diagnoses of infectious syphilis	+10%
• a rise in gonorrhoea	+25%

HIV in the UK (2012)

HIV continues to be one of the most important communicable diseases in the UK. It is an infection associated with serious morbidity, high costs of treatment and care, significant mortality and high number of potential years of life lost. Each year, many thousands of individuals are diagnosed with HIV for the first time. The infection has a prolonged 'silent' period during which it often remains undiagnosed. Effective antiretroviral therapy (ART) introduced in the mid-1990s transformed HIV infection from a fatal to chronic life-long infection. The number of people living with diagnosed HIV has risen year on year, with an increase in number of new diagnoses among men who have sex with men (MSM) with one in 20 MSM is infected with HIV. Of those diagnosed in 2011, nearly two-thirds had not been to a sexual health clinic in the previous three years.

HIV testing is the priority if HIV prevention efforts are to be improved

By the start of 2012, an estimated 96,000 people were living with HIV in the UK (compared with 86,500 in 2009, 91,500 in 2010 and a 58% increase since 2002); **with a consistent 25% of people unaware of their infection**. The majority of new infections are thought to be acquired in the UK (compared to 27% in 2002). Rates of HIV diagnosis and HIV prevalence continue to be significantly higher in London than elsewhere in the UK.

Reduce Undiagnosed HIV: People diagnosed late have a 10 fold increased risk of dying within a year of diagnosis.

National Aids Trust recommendation:

- Gay men should test at least once a year for STI's and HIV
- Gay men should test every 3 months if they are having unprotected sex with new or casual partners.
- HIV negative gay men diagnosed with an STI need to consider HIV as a serious risk Clinicians should take every opportunity to offer and recommend HIV testing to those known to be at higher risk of HIV infection, such as MSM, people of Black African and Caribbean ethnicity.

Most Common STIs

- Anogenital warts
- Chancroid
- Gonorrhoea
- Herpes
- Human papillomavirus
- Infectious Syphilis
- Bacterial vaginosis
- Chlamydia
- HBV and HCV
- HIV
- Mycoplasma genitalium
- Trichomoniasis

TDL Sexual Health Profiles

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

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

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)

TAT 4 HOURS

STD5

B

STD6 BLOODS ONLY

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

TAT 4 HOURS

STD6

B

STD8 VAGINITIS/BACTERIAL VAGINOSIS PROFILE

DNA Probe test for

Candida species
Gardnerella vaginalis
Trichomonas vaginalis

NEW 2013

TAT 1 DAY

STD8

Do not use PCR or Culture Swabs
Contact Laboratory for BV RNA Swabs

STD9 SYMPTOMATIC LESION SAMPLE USING PCR SWAB

Syphilis by PCR
Herpes Simplex I/II by PCR
(from single swab)

TAT 4 DAYS

STD9

PCR

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/NAT)

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)

Sample must be received in the laboratory within 2 days of sample taking

TAT 3 DAYS

STDX

A 10mls

EARLY DETECTION SCREEN WITH SYPHILIS (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 Group (Groups M & O)
HIV-2 RNA
Hepatitis B Virus (HBV DNA)
Hepatitis C Virus (HCV RNA)
Syphilis IgG/IgM

Sample must be received in the laboratory within 2 days of sample taking

TAT 3 DAYS

STXX

B A 10mls

STD QUAD

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

TAT 2 DAYS

STDQ

B FCRU

STD8 for Bacterial Vaginosis

NEW 2013

This is a direct specimen DNA probe-based diagnostic profile for the differential detection and identification of the causative agents for vaginitis: Candida species, Gardnerella vaginalis and Trichomonas vaginalis. The DNA methodology allows for early identification and treatment of patients with these pathogens. This test has its **own specific swab and instructions for sample taking** (do not use a routine PCR or CULTURE swab). This report gives a result **for each pathogen**.

- Speed of turnaround – as this will be a same or next day result
- Sensitivity and specificity from DNA testing – sample stable for 3 days
- 3 pathogens processed from one BV Swab for one price
- Ideal for patient self-sampling/home collection, remote testing or postal pathology.

TDLTinies for Remote Testing/Self Collection

NEW 2013

The range of tests for Sexual Health Screening now includes serology testing for remote testing/self-taken blood samples (home collection) and postal pathology using TDL TINIES. TDL TINIES (packs with instructions) can be fulfilled by TDL by arrangement or supplied directly to doctors or healthcare companies. This is not point of care testing. All testing is undertaken in the laboratory and results for postal samples are always returned directly to the healthcare company or doctor, not to the patient.

Up to four tests can be taken from one TINY sample

- HIV/p24 Antigen
- Hep B sAg
- Hep C Abs
- Hep C Antigen for early detection
- Syphilis IgG/IgM

For information and packs, please contact Annette Wilkinson on **020 7307 7343** or email **tinies@tdlpathology.com**

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.

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.

Male Factor Infertility

High rates of abnormal semen findings are found in men with asymptomatic or symptomatic non-specific urethritis (NSU) but the highest rates occurred in those with non-symptomatic NSU. It is not clear, however, whether or not antibiotic treatment improves low sperm counts.

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**

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 if not treated. 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 taken 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-chlamydial, non-gonococcal persistent urethritis in men. It is also likely to cause immobility of spermatozoa *in vitro.*

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. In males with lower sperm quality, the effect of *U. urealyticum* infection could lead to a more pronounced decreased in some seminal parameter and what is more compromise their fertility. The attachment of *U. urealyticum* to spermatozoa could imply the possibility of passive transport to the upper female tract, affecting, in turn, female fertility.

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 and is also linked with male factor infertility. 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 be requested individually.

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

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

BLOOD		INCUBATION PERIOD	SAMPLE SITE	TEST	TEST CODE	SAMPLE TYPE	TAT
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
Hep C Ag	Viral	Usually 9–180 days, average of 45–65 days	Blood Blood	**Hep C Antigen** (See table on page 46) 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 A	3 days

NO LONGER AVAILABLE

The DRIED BLOOD SPOT for Early Detection of HIV (DBSH) is no longer available – see TDL TINIES on page 2 for self-taken/home collection HIV and Sexual Health Screening.

OPTIONS FOR EARLY DETECTION HIV (10 days post exposure) [see Page 61 in the 2013 Laboratory Guide]

Profile STDX for HIV/HBV/HCV	See page 2
HIV 1 RNA by PCR (IDSQ)	See page 61, 2013 Laboratory Guide
HIV 2 RNA by PCR (HIV2)	See page 61, 2013 Laboratory Guide

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**	5 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**	5 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**	5 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
Genital warts	Viral	Weeks/months after exposure	GU Warts	**HPV Typed DNA**	HPVT	**Thin Prep Vial**	5 days
				HPV Typed DNA	HP20	**PCR Swab**	5 days
				HPV Typed DNA	HP20	**Cells/Papilloma**	5 days
Syphilis/Herpes	Bacterial/ Viral	Whenever active lesions are present	Symptomatic Lesion	**Syphilis/Herpes Lesion Profile**	STD9	**PCR Swab**	4 days

High Risk Human Papillomavirus (HR-HPV) Introducing Triage and Test of Cure

HPV testing in conjunction with cervical cytology is important to determine 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 are becoming more confidently accepted after a negative HPV test.

The aetiological role of HPV infection among women with cervical cancer is now well understood, 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, and without treatment. A small but still significant number of HPV infections do not clear spontaneously, and it is these women who are at 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. If HR-HPV is detected, a recommendation to refer for colposcopy will be made. 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, further referral is needed for colposcopy and followed up in accordance with national guidelines. This strategy does not apply to women receiving treatment for CGIN or for invasive disease.

The TDL reflex test for HR-HPV Assay is an NHS approved qualitative 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 provides a genotype result for types 16 and 18 when present. This assay provides the minimum necessary information for patient stratification.

Any request to TDL for Cervical Cytology that is received without a specific request for HPV testing, but is reported with either borderline or mild changes will automatically reflex to this HR-HPV 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 be given, as standard.

The primary benefit of using HPV testing lies in its high sensitivity and high negative predictive value (NPV), 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 this 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
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
High Risk HPV (HR-HPV) subtypes, reported collectively (negative/positive) with Types 16 and 18 reported if present.			
HPV Typed DNA	HP20	**TPV/PCR**	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 (NPV) – meaning a negative result indicates that a patient is at very low risk of developing cervical disease. The 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 from subtypes 16, 18, 31, 33 and 45.

Note: mRNA testing can be undertaken from Cytyc Thin Prep samples only.

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