

MICROBIOLOGY

What epithelium cell type lines the ovaries?

<input checked="" type="radio"/>	Cuboidal
<input type="radio"/>	Columnar
<input type="radio"/>	Stratified Squamous
<input type="radio"/>	Pseudostratified Squamous
<input type="radio"/>	Transitional

[Next question](#)

The ovaries are lined by cuboidal epithelium.

Epithelium Types

Summary of Epithelium Types

Organ	Type of Epithelium Lining
Ovaries	Cuboidal
Fallopian Tubes	Columnar
Endometrium	Columnar
Endocervix	Columnar
Ectocervix	Stratified Squamous, non keratinised

Organ	Type of Epithelium Lining
Vagina	Stratified Squamous, non-keratinised
Ureter	Transitional
Urinary Bladder	Transitional

What percentage of women with a diagnosis of Gonorrhoea will develop pelvic inflammatory disease?

<input type="radio"/>	2%
<input type="radio"/>	5%
<input checked="" type="radio"/>	15%
<input type="radio"/>	25%
<input type="radio"/>	50%

[Next question](#)

Around 15% of women who develop gonorrhoea will develop PID

Gonorrhoea

Which of the following is a double stranded RNA virus?

<input type="radio"/>	Parvovirus B19
<input checked="" type="radio"/>	Rotavirus
<input type="radio"/>	EBV
<input type="radio"/>	CMV

<input type="radio"/>	Herpes Simplex type 2
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Next question

As can be seen from the table RNA viruses are almost always single stranded whilst DNA viruses are almost always double stranded. The exceptions are rotavirus and Parvovirus B19 respectively.

Viruses

There are a number of classification systems for Viruses with the ICTV and Baltimore systems often used.

They are often simply classified according to the genetic material they are composed of i.e. RNA or DNA. They can then be further sub classified as single or double stranded and also according to their polarity i.e. positive or negative sense.

The table below summarises the common clinically relevant viruses.

Note HIV has been included as an RNA virus as it is made of RNA. It is a retrovirus however and uses DNA during replication. Because of this some systems would class the retroviruses outside of the RNA virus class.

RNA Virus		DNA Virus	
Single stranded	Double stranded	Single stranded	Double stranded
Hepatitis A,C,D,E			Hepatitis B
Rubella			CMV
HIV			VZV
			Herpes Simplex 1 and 2
			Human Papilloma

RNA Virus		DNA Virus	
			Virus
			Epstein-Barr
	Rotavirus	Parvovirus B19	

Which of the following is a DNA virus?

<input type="radio"/>	Hepatitis A
<input type="radio"/>	Hepatitis B
<input type="radio"/>	Hepatitis C
<input type="radio"/>	Hepatitis D
<input type="radio"/>	Hepatitis E

Next question

Hepatitis B is a DNA virus.
All the others are RNA viruses

Viruses

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Rubella			CMV
HIV			VZV
			Herpes Simplex 1 and 2
			Human Papilloma Virus
			Epstein-Barr
	Rotavirus	Parvovirus B19	

What is the causative organism of Toxoplasmosis?

<input checked="" type="radio"/>	Toxoplasma pallidum
<input type="radio"/>	Treponema pallidum
<input checked="" type="radio"/>	Toxoplasma Gondii
<input type="radio"/>	Toxoplasma vivax

<input type="radio"/>	Borrelia
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Next question

T.Gondii causes Toxoplasmosis

Borrelia causes Lyme Disease.

Treponema pallidum causes syphilis

Toxoplasmosis

Toxoplasmosis Key Points

- Toxoplasma gondii is an intracellular protozoan parasite
- Primary host and source of infection is domestic cats
- T. gondii oocysts excreted in cat faeces, mature in environment and then ingested by secondary hosts which include humans
- Fetal consequences more severe if infection takes place within 10 weeks of conception
- Maternal-fetal transmission risk increases as the pregnancy proceeds but the consequences become less severe
- May cause miscarriage or fetal abnormalities such as microcephaly, hydrocephalus, cerebral calcifications, cerebral palsy, epilepsy choroidoretinitis and thrombocytopenia.
- Diagnosis can be via PCR or Immunoglobulins (IgM, IgG and IgA). MRI/CT may show ring enhancing lesions in CNS tissues.
- Treatment not usually required in the immunocompetent.
- In pregnancy treatment is indicated if recent infection suspected
- Treatment varies depending on local protocols (Spiramycin or combination of pyrimethamine, sulfadiazine, and folinic acid)

What is the incubation period for Rubella?

<input checked="" type="radio"/>	2-3 days
<input type="radio"/>	5-6 days
<input type="radio"/>	5-9 days
<input checked="" type="radio"/>	12-23 days
<input type="radio"/>	2-6 weeks

Next question

The incubation period for Rubella is 12-23 days

Source www.CDC.gov

Rubella

Rubella Key Points

- Caused by Rubella virus:
- A togavirus
- Single-stranded RNA genome
- Transmission primarily via the respiratory route
- Viral replication occurs in the nasopharynx and lymph nodes
- Rubella infection in children and adults usually mild
- Incubation period 12-23 days
- Congenital rubella infection teratogenic with poor prognosis and significant complications (sensorineural deafness, cataracts and cardiac abnormalities most common)
- No specific treatment. Key is prevention through vaccination programme
- Vaccination is via live attenuated virus so cannot be given to pregnant women who are found to be non-immune.
- Which of the following is an RNA virus?

<input checked="" type="radio"/>	Herpes Simples type 1
<input type="radio"/>	Varicella Zoster
<input type="radio"/>	Cytomegalovirus
<input checked="" type="radio"/>	Rubella
<input type="radio"/>	Hepatitis B

• Next question

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As HIV is a retrovirus and sometimes not classed as a true RNA virus you are unlikely to be asked about its viral classification in these terms. You will be expected to know it is a retrovirus.

Therefore the hepatitis viruses (excluding hep B) and Rubella are the key RNA viruses to

be aware of.

- **Viruses**

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There are a number of classification systems for Viruses with the ICTV and Baltimore systems often used.

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Rubella			CMV
HIV			VZV
			Herpes Simplex 1 and 2
			Human Papilloma Virus
			Epstein-Barr
	Rotavirus	Parvovirus B19	

Which of the following infections is most commonly associated with an increased risk of ectopic pregnancy?

<input type="radio"/>	Neisseria Gonorrhoea
<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Group B streptococcus
<input type="radio"/>	Mycoplasma hominis

[Next question](#)

PID may be caused by a number of organisms but Chlamydia is by far the most common. Previous chlamydia infection is thought to increase the risk of ectopic by 2-3 times.

Ectopic Pregnancy

There are about 11,800 ectopic pregnancies in the UK each year, with an ectopic pregnancy occurring in about 11 in 1000 pregnancies.

Mortality rates for ectopic pregnancy in the UK are 2 per 1000.

The majority of ectopics are tubal with non-tubal ectopics accounting for only 3-5% of ectopic pregnancies. The typical distribution is shown below.

- Tubal 93-95%
- Interstitial 2-5%
- Cervical <1%
- Ovarian <1%
- Abdominal <1%
- Heterotopic <0.1%

Tubal pregnancies can be further subdivided into:

- Ampullary section 70-80%
- Isthmus 12%

- Fimbrial 5-11%
- Cornual and interstitial part of the tube 2%

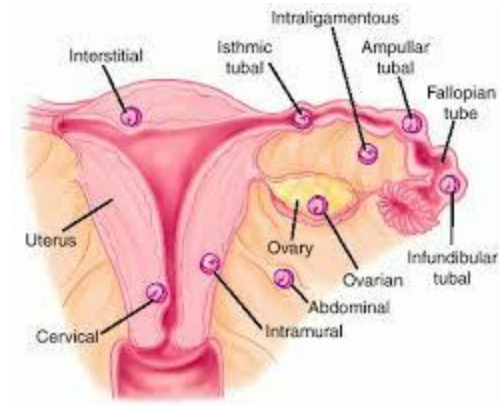


Image sourced from Wikipedia



According to the UK NSC and NICE which of the following should be screened for during routine antenatal care?

<input type="radio"/>	Syphilis
<input type="radio"/>	Chlamydia
<input type="radio"/>	Hepatitis C
<input type="radio"/>	Group B streptococcus
<input type="radio"/>	CMV

Next question

Antenatal Infection Screening

Antenatal Infection Screening Key Points

The UK National Screening Committee (UK NSC) currently recommends routine antenatal screening for the following 4 infectious diseases:

- HIV
- Hepatitis B
- Syphilis
- Rubella

*It is also now advised an MSU should be offered to test for asymptomatic bacteriuria

This is backed up by NICE guidance who advise routine screening should **NOT** be offered for the following:

- Chlamydia (though under 25s should be directed to a local screening program)
- CMV
- Hepatitis C
- Group B streptococcus
- Toxoplasmosis
- What is the primary causative organism in Bacterial Vaginosis?

<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Escherichia Coli
<input type="radio"/>	Mycoplasma hominis
<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Actinomyces israelii

• Next question

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Gardnerella vaginalis is the primary causative organism.

It is thought to be polymicrobial with several other species contributing that may include:
Lactobacillus, Prevotella, Mobiluncus, Bacteroides, Peptostreptococcus, Fusobacterium, Veillonella,
Eubacterium, Mycoplasma hominis, Ureaplasma urealyticum, and Streptococcus viridans.

- [Infections](#)

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Condition/Infection	Most Common Causative Organism
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Condition/Infection	Most Common Causative Organism
Urinary Tract Infection	Escherichia Coli
Skin/Superficial Wound/IV Line	Staphylococcus Aureus
Cellulitis/Erysipelas	Streptococcus Pyogenes (Group A strep)
Bacterial Vaginosis	Gardnerella vaginalis (polymicrobial)
Endometritis	Polymicrobial

Regarding the image of the oocyte below what is the name given to the part labelled A

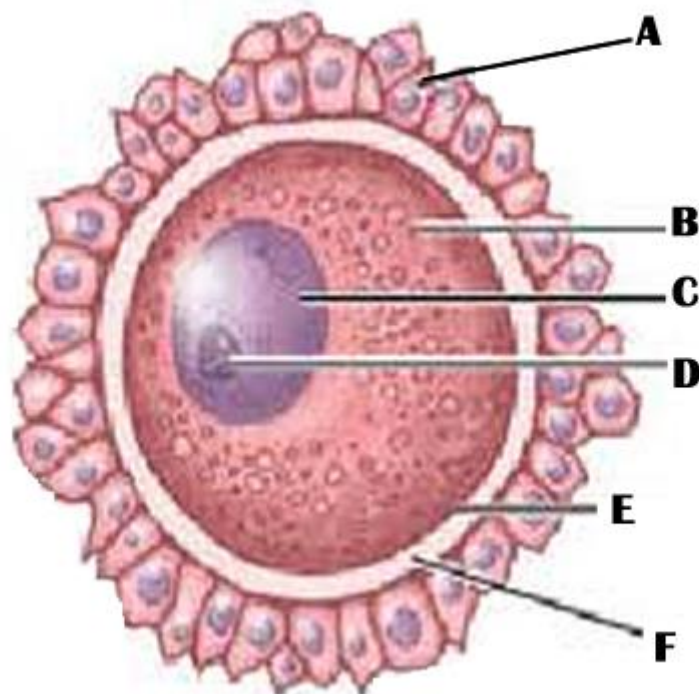


Image sourced from [Wikipedia](#)



<input type="radio"/>	Zona Pellucida
<input type="radio"/>	Plasma Membrane
<input type="radio"/>	Perivitelline Space
<input type="radio"/>	Vitelline Membrane
<input type="radio"/>	Corona Radiata

[Next question](#)

A = Corona Radiata

It is formed by follicle cells adhering to the oocyte before it leaves the follicle. The origin of the cells are squamous granulosa cells. The Corona Radiate is typically represented diagrammatically as a single layer, it is in fact the innermost layer of the cumulus oophorus.

Sperm release hyaluronidase enzyme from their acrosome to disperse the corona radiata to penetrate the Zona Pellucid

Oocyte

Diagram illustrating layers of the Oocyte

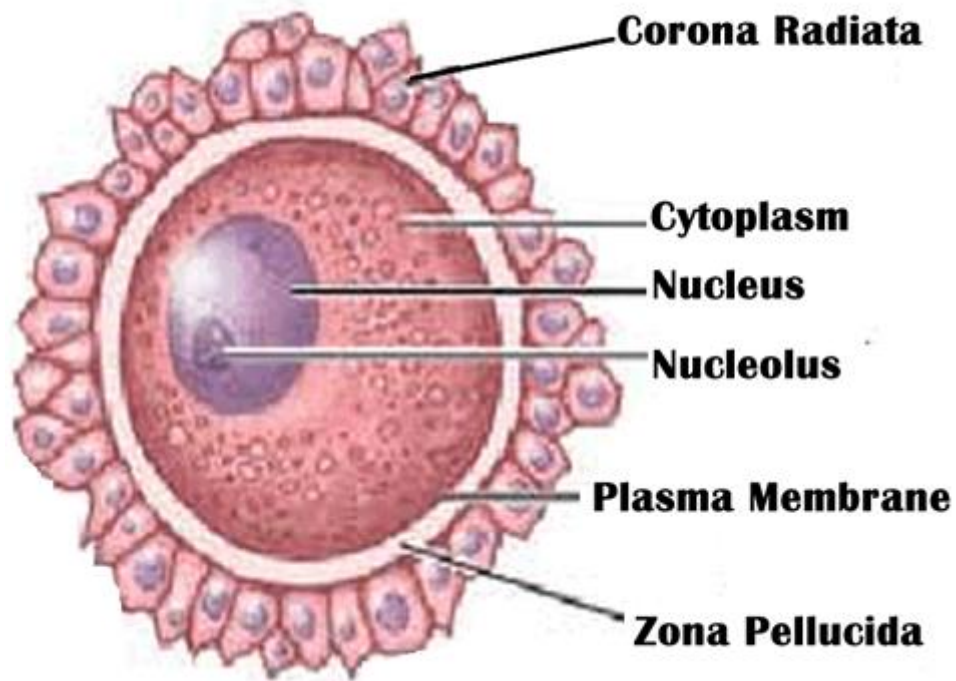


Image sourced from [Wikipedia](#)

Which of the following describes Neisseria Gonorrhoeae?

<input checked="" type="radio"/>	Gram Positive Bacilli
<input type="radio"/>	Gram Positive Cocci
<input type="radio"/>	Gram Negative Bacilli
<input checked="" type="radio"/>	Gram Negative Cocci
<input type="radio"/>	Spirochaetes

[Next question](#)

Neisseria Gonorrhoeae (and Neisseria Meningitidis which causes meningococcal septicaemia) are gram negative diplococci.

[Gonorrhoea](#)

A patient has been referred to clinic following diagnosis of a Gumma. What stage of syphilis infection is this?

<input checked="" type="radio"/>	Primary
<input type="radio"/>	Secondary
<input checked="" type="radio"/>	Tertiary
<input type="radio"/>	Early Latent
<input type="radio"/>	Late Latent

[Next question](#)

Syphilis

Stage of Syphilis	Time from Primary Infection	Symptoms
Primary	3-90 days	<ul style="list-style-type: none">• Chancre and lymphadenopathy
Secondary	4-10 weeks	<ul style="list-style-type: none">• Widespread rash typically affecting hands and soles of feet.• Wart lesions (condyloma latum) of mucus membranes
Latent	Early <1 yr after secondary stage Late >2 yr after secondary stage	<ul style="list-style-type: none">• Asymptomatic
Tertiary	3+ years after primary infection	<ul style="list-style-type: none">• Gummas OR• Neurosyphilis OR• Cardiovascular syphilis

Which of the following is a gram positive obligate anaerobe?

<input type="radio"/>	Staphylococcus
<input type="radio"/>	Streptococcus
<input type="radio"/>	Clostridia
<input type="radio"/>	Bacteroides
<input type="radio"/>	Prevotella

Next question

Almost all clinically relevant gram positive bacteria are facultative i.e. they can thrive in environments with or without Oxygen. If you are asked about a gram positive obligate anaerobe the answer should be Clostridia.

Conversely if you are asked about a gram-negative obligate anaerobe the answer should be Bacteroides (recently renamed Prevotella).

Note Some texts may quote Actinomyces as obligate anaerobes but in reality they are facultatively anaerobic with the exception of Actinomyces meyeri (obligate anaerobe). Sometimes even exam setters get it wrong and may refer to Actinomyces as obligate anaerobes. If you are asked about Actinomyces the question will usually have a reference to sulphur granules or reference a patient who has had an IUD for >2yrs.

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**
- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- Corynebacterium **Facultative anaerobe**
- Listeria *non-spore forming* **Facultative anaerobe**
- Bacillus *spore forming* **Facultative anaerobe**
- Clostridium *spore forming* **Obligate anaerobe**
- Actinomyces *spore forming* **Facultative anaerobe**

GRAM NEGATIVE

Cocci

- *Neisseria gonorrhoeae* **Obligate aerobes**
- *Neisseria meningitidis* **Obligate aerobes**
- *Moraxella catarrhalis* **Obligate aerobes**

Bacilli OR "Rods"

- *Bacteroides* **Obligate anaerobes**
- *Hemophilus influenzae* **Facultative anaerobe**
- *Klebsiella pneumoniae* **Facultative anaerobe**
- *Legionella pneumophila* **Obligate aerobes**
- *Pseudomonas aeruginosa* **Obligate aerobes**
- *Escherichia coli* **Facultative anaerobe**
- *Proteus mirabilis* **Facultative anaerobe**
- *Enterobacter cloacae* **Facultative anaerobe**
- *Helicobacter/Compylobacter* (spiral rod) **Facultative anaerobes**
- *Salmonella* **Facultative anaerobe**

Intracellular

- *Chlamydia* **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- *Treponema pallidum*
- *Borrelia burgdorferi* (considered diderm rather than gram neg or positive)

A 24 year old patient undergoes an STI screen due to development of dysuria 5 days earlier. The results are positive for chlamydia infection. With regard to contact tracing what is the recommended action regarding tracing and informing sexual partners in this case?

<input checked="" type="radio"/>	All sexual partners past 4 weeks
<input type="radio"/>	All sexual partners past 6 weeks
<input type="radio"/>	All sexual partners past 4 months

<input type="radio"/>	All sexual partners past 6 months
<input type="radio"/>	Last sexual partner should be informed and tested

Next question

Recommended contact tracing:

- Sexual partners past 4 weeks for symptomatic patients
- Sexual partners past 6 months for asymptomatic patients or last sexual partner if >6 months.

Chlamydia

Chlamydia Key Points

- Most prevalent STI in the UK
- >50% men and 80% of women asymptomatic after initial infection
- Obligate intracellular bacteria

In type 2 necrotising fasciitis what is the most likely causative organism?

<input type="radio"/>	Clostridia Perfringens
<input type="radio"/>	Clostridia Tetani
<input type="radio"/>	Staphylococcus aureus
<input type="radio"/>	Streptococcus viridans
<input type="radio"/>	Streptococcus pyogenes

Next question

There are 2 types of necrotising fasciitis

- Type 1: Polymicrobial (65% of cases)
- Type 2: Monomicrobial (35% of cases)

The most common causative organism is Group A streptococcus (streptococcus pyogenes).

Management is surgical debridement and antibiotic therapy

Clostridium perfringens causes gas gangrene

Clostridia Tetani causes tetanus

Infections 2

You are asked to review a patient in ITU. They have undergone extensive tissue debridement for gas gangrene. What is the causative organism of gas gangrene?

<input type="radio"/>	Group A streptococcus
<input type="radio"/>	Streptococcus pyogenes
<input checked="" type="radio"/>	Clostridia perfringens
<input type="radio"/>	Clostridia tetani
<input type="radio"/>	Staphylococcus aureus

Next question

Group A streptococcus (streptococcus pyogenes) is the most common causative organism in necrotizing fasciitis. Clostridium perfringens causes gas gangrene. Clostridia is soil borne. Gas gangrene can develop following contamination of open wounds. It usually progresses rapidly and has a poor prognosis.

Clostridia Tetani causes tetanus

Staphylococcus aureus can cause a number of soft tissue infections e.g. cellulitis, wound infection.

Infections 2

When is the highest risk of maternal-fetal transmission of Toxoplasma Gondii during pregnancy?

<input type="radio"/>	0-10 weeks
<input type="radio"/>	10-16 weeks

<input type="radio"/>	10-24 weeks
<input type="radio"/>	24-26 weeks
<input checked="" type="radio"/>	26-40 weeks

Next question

The risk of transplacental transmission from mother to fetus is greater in later pregnancy i.e. 26-40 weeks.

Although the risk of transmission is lower in early pregnancy, if infection does occur earlier, particularly before 10 weeks, then complications are typically more severe.

Toxoplasmosis

Toxoplasmosis Key Points

- Toxoplasma gondii is an intracellular protozoan parasite
- Primary host and source of infection is domestic cats
- T. gondii oocysts excreted in cat faeces, mature in environment and then ingested by secondary hosts which include humans
- Fetal consequences more severe if infection takes place within 10 weeks of conception
- Maternal-fetal transmission risk increases as the pregnancy proceeds but the consequences become less severe
- May cause miscarriage or fetal abnormalities such as microcephaly, hydrocephalus, cerebral calcifications, cerebral palsy, epilepsy choroidoretinitis and thrombocytopenia.
- Diagnosis can be via PCR or Immunoglobulins (IgM, IgG and IgA). MRI/CT may show ring enhancing lesions in CNS tissues.
- Treatment not usually required in the immunocompetent.
- In pregnancy treatment is indicated if recent infection suspected
- Treatment varies depending on local protocols (Spiramycin or combination of pyrimethamine, sulfadiazine, and folinic acid)
- What percentage of women develop antibodies to Human Papilloma Virus (HPV) following infection?

<input checked="" type="radio"/>	5%
<input type="radio"/>	25%
<input type="radio"/>	50%

<input type="radio"/>	75%
<input type="radio"/>	99%

• Next question

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According to the RCOG only 50-60% of female patients produce an antibody response to HPV following infection.

• HPV

-

Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

- Regarding the image of the oocyte below what is the name given to the part labelled F

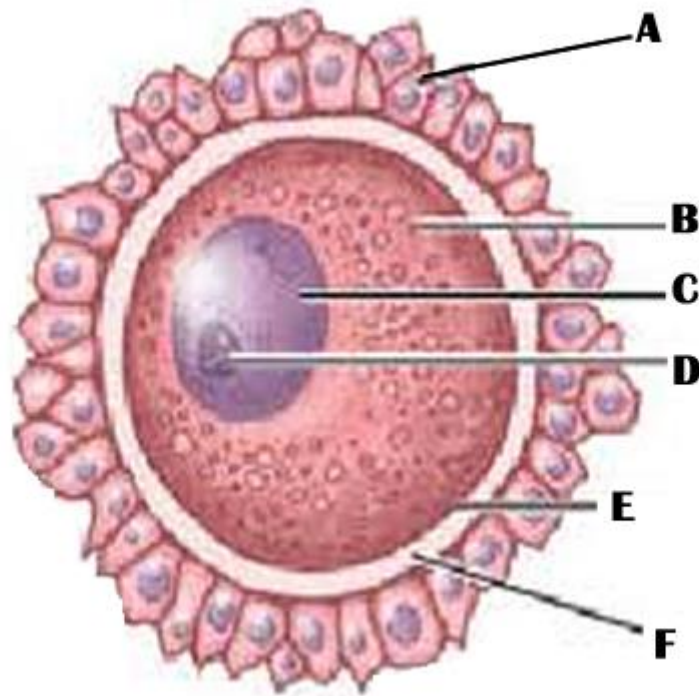


Image sourced from [Wikipedia](#)



<input type="radio"/>	Corona Radiata
<input type="radio"/>	Cytoplasm
<input type="radio"/>	Perivitelline Space
<input type="radio"/>	Vitelline Membrane
<input checked="" type="radio"/>	Zona Pellucida

• Next question

F = Zona Pellucida

The Zona Pellucida (ZP) is a glycoprotein layer that is adjacent to the Corona Radiata (the outermost layer consisting of follicular cells). The Perivitelline space is the space between the ZP and the cell membrane (or

Vitelline membrane). The Perivitelline space and cell membrane are both deep to The Corona Radiata and Zona Pellucida.

- Oocyte

- Diagram illustrating layers of the Oocyte

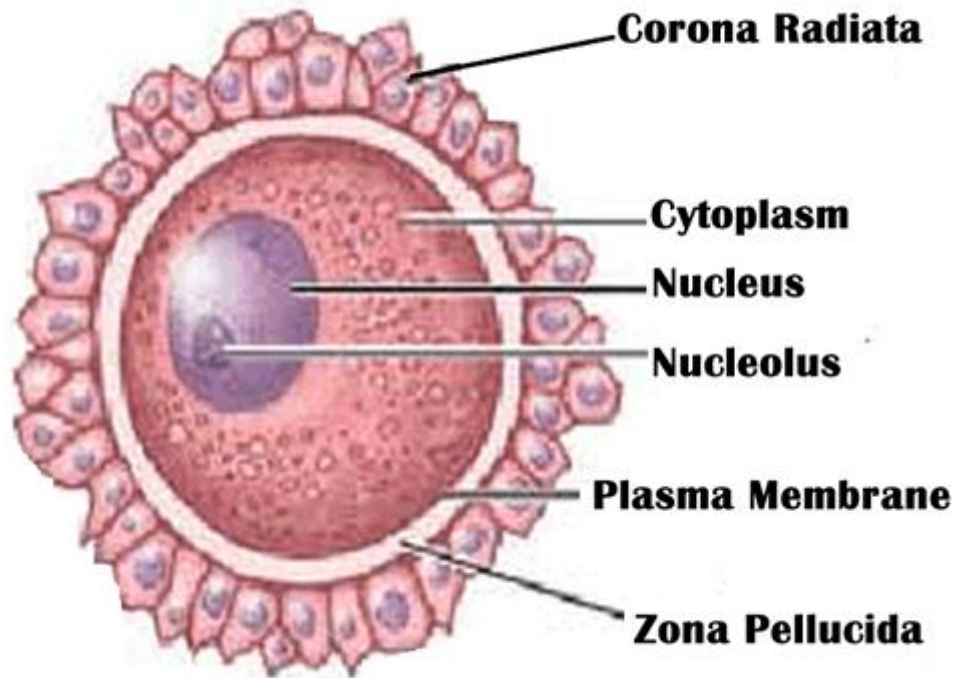


Image sourced from [Wikipedia](#)

A 29 year old patient who is 22 weeks pregnant seeks your advice as she was recently exposed to chickenpox. Regarding fetal varicella syndrome (FVS) which of the following statements is correct regarding maternal varicella infection?

<input checked="" type="radio"/>	FVS may result if there is maternal varicella infection within the 1st 20 weeks gestation
<input type="radio"/>	FVS may result if there is maternal varicella infection within the 1st 6 weeks gestation
<input type="radio"/>	FVS may result if there is maternal varicella infection within the last 6 weeks gestation

<input type="radio"/>	FVS may result if there is maternal varicella infection within the 5 days prior to labour
<input type="radio"/>	FVS may result if there is maternal varicella infection at any time during pregnancy

Next question

Congenital fetal varicella syndrome may occur if there is maternal varicella infection (chickenpox) during the 1st 20 weeks of gestation.

The risk of FVS to babies born to mothers who have chickenpox during the first 20 weeks gestation is 0.4% (1-12 weeks) -2.0% (13-20 weeks).

If a mother has chickenpox in late pregnancy (5 days prior to delivery) then there is risk of neonatal varicella infection which may be severe.

Varicella Zoster

Varicella Zoster is the virus responsible for Chicken pox and shingles.

If Chickenpox occurs during pregnancy the Green Top Guidelines advise the following:

- VZIG has no therapeutic benefit once chickenpox has developed and should therefore not be used in pregnant women who have developed a chickenpox rash.
- Intravenous aciclovir should be given to all pregnant women with severe chickenpox
- Oral aciclovir should be prescribed for pregnant women with chickenpox if they present within 24 hours of the onset of the rash and if they are 20+0 weeks of gestation or beyond. Use of aciclovir before 20+0 weeks should also be considered

You are asked to speak to a 27 year old patient who is pregnant for the first time. She is concerned as her friend recently gave birth and the baby was found to have profound hearing loss. Her friend was told this was due to an infection whilst she was pregnant. What is the most common infective cause of congenital hearing loss?

<input type="radio"/>	Toxoplasmosis
<input type="radio"/>	Rubella
<input type="radio"/>	Cytomegalovirus

<input type="radio"/>	Mycobacteria
<input type="radio"/>	Zika

Next question

CMV is the most common congenital infection causing sensorineural deafness

CMV

Cytomegalovirus (CMV) Key Points:

- >50% women seropositive
- Congenital CMV infection refers to infection during the perinatal period and tends to effect mothers who have their first CMV infection during pregnancy
- vertical transmission rate approximately 40%
- 10% of infected infants will be symptomatic
- Transmission can also be via breastmilk

Features of Congenital CMV infection

- Sensorineural Hearing Loss
- Visual Impairment
- Microcephaly
- Low Birth weight
- Seizures
- Cerebral Palsy
- Hepatosplenomagaly with jaundice
- Thrombocytopenia with petechial rash

Which species of candida is the most common cause of genital candida infection in pregnancy?

<input type="radio"/>	Candida milleri
<input type="radio"/>	Candida albicans
<input type="radio"/>	Candida glabrata

<input type="radio"/>	Candida rugosa
<input type="radio"/>	Candida parapsilosis

Next question

Candida albicans is responsible for 90% of candida infections.

Candida

Candida Key Points

- 90% of genital candida infections are the result of Candida albicans
- 20% of women of childbearing age are asymptomatic colonisers of Candida species as part of their normal vaginal flora. This increases to 40% in pregnancy
- Symptomatic candida infections more common in pregnancy
- Topical Imidazole anti-fungals should be used in pregnancy
- Symptoms of candida include: erythema often with satellite lesions, itching, soreness and creamy white discharge.

You are asked to review a 24 year old women in A&E. She delivered by C-section following failed vaginal delivery 3 weeks earlier. She complains of lower abdominal and renal angle pain and has also noticed an offensive smelling vaginal discharge over the past 2-3 days. Her observations are:

T: 38.1°C
BP: 100/60
HR: 92
RR 20

She tells you she is not breastfeeding and has no known drug allergies.
What is the most appropriate option regarding her antimicrobial management?

<input type="radio"/>	7 days oral trimethoprim 200mg BD
<input type="radio"/>	7 days oral doxycycline 100mg BD
<input type="radio"/>	Send urgent blood cultures, take vaginal swabs and routine bloods. Await initial results prior to initiating antimicrobial therapy.
<input type="radio"/>	Intravenous piperacillin and tazobactam. Dose as per patients weight and duration determined by clinical response



Intravenous cefuroxime 750mg TDS duration determined by clinical response

Next question

This patient has a number of risk factors and red flag signs of puerperal sepsis. She should have antibiotic therapy started promptly (take blood cultures but do not await the results).

Intravenous piperacillin and tazobactam is suggested by the RCOG. Cefuroxime wouldn't usually be used alone (typically metronidazole given for anaerobic cover) and the RCOG notes its association with C.difficile infection thus it is no longer 1st line.

Risk Factors for Puerperal Sepsis

- Obesity
- Impaired glucose tolerance / diabetes
- Impaired immunity / immunosuppressant medication
- Anaemia
- Vaginal discharge
- History of pelvic infection
- Amniocentesis and other invasive procedures
- Cervical cerclage
- PROM
- Vaginal trauma, caesarean section, wound haematoma
- Retained products of conception
- GAS infection in close contacts / family members
- Black or minority ethnic group origin

Puerperal Sepsis

Puerperal Sepsis Key Points

- Defined as sepsis occurring after birth until 6 weeks postnatal.
- Most commonly result of uterine infection (endometritis)
- Rise in number of deaths in recent years attributable to Group A streptococcus infection
- Puerperal sepsis responsible for 10 deaths per year in the UK
- Severe sepsis with acute organ dysfunction has a mortality rate of 20 to 40%. Septic shock mortality 60%

Red Flag Signs

- Temp > 38°C

- Sustained tachycardia > 90 bpm
- Breathlessness (respiratory rate more than 20 breaths/minute; a serious symptom)
- Abdominal or chest pain
- Diarrhoea and/or vomiting
- Uterine or renal angle pain and tenderness
- Woman is generally unwell or seems unduly anxious or distressed

Management

- Blood cultures prior to antibiotic administration
- Administer broad-spectrum antibiotic within 1 hour of recognition of severe sepsis. RCOG suggests a combination of either piperacillin/tazobactam or a carbapenem plus clindamycin but notes consultation with microbiologist may be warranted.
- Measure serum lactate (> 4 mmol/l is indicative of tissue hypoperfusion)
- Routine Bloods INC FBC, U&E, CRP
- Other tests as per symptoms e.g. throat swab, imaging, MRSA swab if not already done
- If hypotension and/or a serum lactate > 4 mmol/l:

Deliver an initial minimum 20 ml/kg of crystalloid or an equivalent

Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain MAP above 65 mmHg

- If persistent hypotension despite fluid resuscitation (septic shock) and/or serum lactate greater than 4 mmol/l:

Achieve a central venous pressure of 8 mmHg

Achieve a central venous oxygen saturation 70% or mixed venous oxygen saturation 65%

Source: Greentop Guideline No. 64

Which of the following is the most common cause of abnormal vaginal discharge in patients of childbearing age?

<input checked="" type="radio"/>	Candida albicans
<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Neisseria gonorrhoeae
<input checked="" type="radio"/>	Bacterial vaginosis
<input type="radio"/>	Trichomonas vaginalis

Next question

Bacterial vaginosis is the most common cause of abnormal PV discharge.

Bacterial Vaginosis

BV Key Points

- Most common cause of abnormal vaginal discharge in women of childbearing age.
- Overgrowth of anaerobic bacteria in the vagina. Fishy smelling discharge typical.
- Bacterial change causes more alkali environment with pH rise (pH >4.5)
- Amsel/Nugent/Hay-ison criteria commonly used to confirm diagnosis.
- Not considered a sexually transmitted disease
- More common in those with IUCD and smokers
- Treatment typically with 7 days oral metronidazole
- What epithelium cell type lines the ureters?

<input type="radio"/>	Squamous
<input type="radio"/>	Cuboidal
<input type="radio"/>	Columnal
<input checked="" type="radio"/>	Transitional
<input type="radio"/>	Pseudostratified Columnar

- Next question

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-
- See the table below for a summary of the types of epithelium

- [Epithelium Types](#)

-
- **Summary of Epithelium Types**

Organ	Type of Epithelium Lining
Ovaries	Cuboidal

Organ	Type of Epithelium Lining
Fallopian Tubes	Columnar
Endometrium	Columnar
Endocervix	Columnar
Ectocervix	Stratified Squamous, non keratinised
Vagina	Stratified Squamous, non-keratinised
Ureter	Transitional
Urinary Bladder	Transitional

Which group of beta haemolytic streptococci is associated with chorioamnionitis?

<input type="radio"/>	A
<input checked="" type="radio"/>	B
<input type="radio"/>	C
<input type="radio"/>	F
<input type="radio"/>	G

[Next question](#)

Chorioamnionitis is a complication of pregnancy caused by bacterial infection of the fetal amnion and chorion membranes. Group B Streptococcus is associated with chorioamnionitis

[Streptococcus](#)

Streptococcus Key Points

- Gram positive cocci.
- They are often classified into alpha and beta haemolytic streptococci.

Alpha haemolytic streptococci include strep pneumoniae and viridans.

Beta haemolytic streptococcus are sub classified into a number of groups (see table below):

Group	Name	Causes
A	Streptococcus pyogenes	Scarlet fever Rheumatic fever Tonsillitis/pharyngitis Glomerulonephritis Toxic shock Necrotising fasciitis
B	Streptococcus agalactia	GBS disease of newborn Chorioamnionitis Endometritis
C	Streptococcus dysgalactiae	Pharyngitis Endocarditis Toxic Shock Necrotising fasciitis
D	Reclassified as Enterococcus	Colitis Endocarditis
F	Streptococcus anginosus	liver abscess
G	Group G streptococcus	Toxic Shock Necrotising fasciitis Vaginitis
H	Not significant pathogen in humans	

What is the approximate risk of HIV transmission during a single episode of vaginal unprotected sexual intercourse with a known HIV positive person?

<input checked="" type="radio"/>	0.01%
<input type="radio"/>	0.05%
<input checked="" type="radio"/>	0.1%
<input type="radio"/>	0.5%
<input type="radio"/>	1.0%

[Next question](#)

The table below shows the approximate risk of HIV transmission following a sexual exposure. Obviously individual circumstances such as viral load, bleeding and co-existent STIs may increase an individuals risk.

Type of exposure	Estimated median (range) risk of HIV transmission per exposure (%)
Receptive anal intercourse	1.11
Insertive anal intercourse	0.06
Receptive vaginal intercourse	0.1
Insertive vaginal intercourse	0.082
Receptive oral sex (giving fellatio)	0.02
Insertive oral sex (receiving fellatio)	0.0

Type of exposure	Estimated median (range) risk of HIV transmission per exposure (%)
Blood transfusion (one unit)	90-100
Needlestick injury	0.3
Sharing injecting equipment	0.67
Mucous membrane exposure	0.63

Source: BASHH 2011

HIV in Pregnancy

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

- For women with a plasma viral load of < 50 HIV RNA copies/mL at 36 weeks, and in the absence of obstetric contraindications, a planned vaginal delivery is recommended
- Elite controllers (Untreated women with a CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL) can start ART and aim for vaginal delivery
- For women with a plasma viral load of 50 to 399 HIV RNA copies/mL at 36 weeks, PLCS should be considered taking into account the actual viral load, the trajectory of the viral load, length of time on treatment, adherence issues, obstetric factors and the woman's views
- Where the viral load is 400 HIV RNA copies/mL at 36 weeks, PLCS is recommended

Mode of delivery Women taking Zidovudine mono therapy

- Delivery by PLCS is recommended for women, except elite controllers, taking zidovudine monotherapy irrespective of plasma viral load at the time of delivery

ART infusion

- Zidovudine infusion advised for women with viral load of > 1000 HIV RNA copies/mL who present in labour, or with ruptured membranes or who are admitted for planned CS.
- Zidovudine advised for untreated women presenting in labour or with ruptured membranes in whom the current viral load is not known

Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on mono-therapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

A 24 year old patient decides to take a Chlamydia screening test whilst in the GP surgery. He is asymptomatic. The results are positive for chlamydia infection. His partner attends for testing and wants to know the risk of contracting Chlamydia. What is the risk of chlamydia infection following intercourse with an asymptomatic chlamydia positive partner?

<input checked="" type="radio"/>	5-10%
<input type="radio"/>	25%
<input type="radio"/>	40%
<input checked="" type="radio"/>	65%
<input type="radio"/>	>90%

Next question

Approximately 2/3 of people who have sexual intercourse with an asymptomatic chlamydia positive partner will contract Chlamydia.

Chlamydia

Chlamydia Key Points

- Most prevalent STI in the UK
- >50% men and 80% of women asymptomatic after initial infection
- Obligate intracellular bacteria
- Which of the following is a single stranded DNA virus?

<input type="radio"/>	Varicella Zoster
<input type="radio"/>	Parvovirus B19
<input type="radio"/>	Rubella
<input type="radio"/>	CMV
<input type="radio"/>	Rotavirus

• Next question

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-

As can be seen from the table RNA viruses are almost always single stranded whilst DNA viruses are almost always double stranded. The exceptions are rotavirus and Parvovirus B19 respectively.

- ### Viruses

-

There are a number of classification systems for Viruses with the ICTV and Baltimore systems often used.

They are often simply classified according to the genetic material they are composed of i.e. RNA or DNA. They can then be further sub classified as single or double stranded

and also according to their polarity i.e. positive or negative sense.

The table below summarises the common clinically relevant viruses.

Note HIV has been included as an RNA virus as it is made of RNA. It is a retrovirus however and uses DNA during replication. Because of this some systems would class the retroviruses outside of the RNA virus class.

RNA Virus		DNA Virus	
Single stranded	Double stranded	Single stranded	Double stranded
Hepatitis A,C,D,E			Hepatitis B
Rubella			CMV
HIV			VZV
			Herpes Simplex 1 and 2
			Human Papilloma Virus
			Epstein-Barr
	Rotavirus	Parvovirus B19	

A 26 year old patient known to have Group B Streptococcus (GBS) on vaginal swab is going into labour. A normal vaginal delivery is planned. She is penicillin allergic. What intrapartum antibiotic treatment is advised?

<input type="radio"/>	No treatment
<input checked="" type="radio"/>	IV Clindamycin 900 mg 8 hourly
<input type="radio"/>	IV Ciprofloxacin 750mg 12 hourly

<input type="radio"/>	IV Clarithromycin 500mg 12 hourly
<input checked="" type="radio"/>	Oral doxycycline 200mg 12 hourly

Next question

The greentop guideline (No 36)

- 3g Benzylpenicillin should be administered as soon as possible after the onset of labour and 1.5g 4 hourly until delivery.
- Clindamycin 900mg should be administered to those women allergic to

benzylpenicillin

Antibiotic prophylaxis for GBS is not required for women undergoing planned caesarean section in the absence of labour and with intact membranes

Infections 2

Which of the following describes Toxoplasma Gondii?

<input checked="" type="radio"/>	intracellular bacterium
<input type="radio"/>	facultative aerobic bacterium
<input type="radio"/>	motile spirochete
<input type="radio"/>	double stranded DNA virus
<input checked="" type="radio"/>	intracellular protozoan

Next question

T Gondii is an intracellular protozoan

Toxoplasmosis

Toxoplasmosis Key Points

- Toxoplasma gondii is an intracellular protozoan parasite
- Primary host and source of infection is domestic cats
- T. gondii oocysts excreted in cat faeces, mature in environment and then ingested by secondary hosts which include humans
- Fetal consequences more severe if infection takes place within 10 weeks of conception
- Maternal-fetal transmission risk increases as the pregnancy proceeds but the consequences become less severe
- May cause miscarriage or fetal abnormalities such as microcephaly, hydrocephalus, cerebral calcifications, cerebral palsy, epilepsy choroidoretinitis and thrombocytopenia.
- Diagnosis can be via PCR or Immunoglobulins (IgM, IgG and IgA). MRI/CT may show ring enhancing lesions in CNS tissues.
- Treatment not usually required in the immunocompetent.
- In pregnancy treatment is indicated if recent infection suspected
- Treatment varies depending on local protocols (Spiramycin or combination of pyrimethamine, sulfadiazine, and folinic acid)

Which of the following is the causative organism in Syphilis infection?

<input type="radio"/>	Propionibacterium propionicus
<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Ureaplasma
<input type="radio"/>	Borrelia burgdorferi
<input checked="" type="radio"/>	Treponoma Pallidum

[Next question](#)

Treponoma Pallidum is a Spirochaete bacterium and the causative organism in Syphilis

Syphilis

Stage of Syphilis	Time from Primary Infection	Symptoms
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Stage of Syphilis	Time from Primary Infection	Symptoms
Primary	3-90 days	<ul style="list-style-type: none"> • Chancre and lymphadenopathy
Secondary	4-10 weeks	<ul style="list-style-type: none"> • Widespread rash typically affecting hands and soles of feet. • Wart lesions (condyloma latum) of mucus membranes
Latent	Early <1 yr after secondary stage Late >2 yr after secondary stage	<ul style="list-style-type: none"> • Asymptomatic
Tertiary	3+ years after primary infection	<ul style="list-style-type: none"> • Gummas OR • Neurosyphilis OR • Cardiovascular syphilis

What virus family does HIV belong to?

<input checked="" type="radio"/>	Togaviridae
<input type="radio"/>	Herpesviridae
<input type="radio"/>	Parvoviridae
<input checked="" type="radio"/>	Retroviridae
<input type="radio"/>	Flaviviridae

Next question

HIV is a retrovirus i.e. a member of the retroviridae family. Its genus is lentivirus

Rubella is a Togavirus

Herpes Simplex and CMV are members of Herpesviridae family

Parvovirus B19 (slapped cheek) is a member of the Parvoviridae family

Hepatitis C is a member of the Flaviviridae family

HIV in Pregnancy

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

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- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on mono-therapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

According to the UK NSC and NICE which of the following should **NOT** be screened for during routine antenatal care?

<input type="radio"/>	Syphilis
<input type="radio"/>	Hepatitis B
<input checked="" type="radio"/>	Hepatitis C
<input type="radio"/>	HIV
<input type="radio"/>	Rubella

Next question

Antenatal Infection Screening

Antenatal Infection Screening Key Points

The UK National Screening Committee (UK NSC) currently recommends routine antenatal screening for the following 4 infectious diseases:

- HIV
- Hepatitis B
- Syphilis
- Rubella

*It is also now advised an MSU should be offered to test for asymptomatic bacteriuria

This is backed up by NICE guidance who advise routine screening should **NOT** be offered for the following:

- Chlamydia (though under 25s should be directed to a local screening program)
- CMV
- Hepatitis C
- Group B streptococcus
- Toxoplasmosis

What is the tubal factor infertility rate following a single episode of Pelvic Inflammatory disease?

<input type="radio"/>	1-2%
<input type="radio"/>	5%
<input checked="" type="radio"/>	12.5%
<input type="radio"/>	25%
<input type="radio"/>	50%

[Next question](#)

Pelvic Inflammatory disease

PID Key Facts

- Can be caused by a number of organisms
- Chlamydia and Gonorrhoea thought to account for around 25-50% of cases
- Tubal infertility rate following 1 episode PID 12%
- Tubal infertility rate following 3 episodes PID 50%

You are asked to see a 33 year old women who is 16 weeks pregnant. She complains of frothy yellow vaginal discharge and vaginal soreness. A wet smear is sent and microscopy reveals Trichomoniasis. What percentage of women with trichomoniasis infection have the classic frothy yellow PV discharge?

<input type="radio"/>	2%
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<input type="radio"/>	5%
<input checked="" type="radio"/>	20%
<input type="radio"/>	50%
<input type="radio"/>	70%

Next question

Vaginal discharge occurs in up to 70% of cases. Only 20% will have the classic frothy yellow discharge.

Note the RCOG and BASHH both state up to 70% of women will have vaginal discharge. Its worth bearing this in mind if you are asked about what % of women have vaginal discharge and you are aware 50% are asymptomatic as the numbers don't quite add up!

Trichomoniasis

Trichomoniasis Key Points

- Trichomoniasis Vaginalis causative organism
- Flagellate protazoan
- Sexually transmitted
- Up to 50% of women have no symptoms
- Vaginal discharge is most common symptom (up to 70%). Classic discharge described as frothy and yellow-green (occurs in 20% of infected women) but can be variable. Other symptoms are vulvovaginal soreness and itching, offensive odour, lower abdo pain, dysuria and dyspareunia
- Clinical findings typically vulval inflammation. Rarely strawberry cervix (cervicitis - 2% of cases)
- Diagnosis wet smear microscopy or culture/PCR
- Metronidazole 400 to 500 mg twice a day for 5 to 7 days is 1st line treatment for men and women (including those who are breastfeeding or pregnant)

What is the incubation period for CMV?

<input checked="" type="radio"/>	2-3 days
<input type="radio"/>	5-12 days
<input type="radio"/>	2-3 weeks

<input type="radio"/>	3-12 weeks
<input type="radio"/>	3-6 months

Next question

The incubation period for CMV is 3-12 weeks

CMV

Cytomegalovirus (CMV) Key Points:

- >50% women seropositive
- Congenital CMV infection refers to infection during the perinatal period and tends to effect mothers who have their first CMV infection during pregnancy
- vertical transmission rate approximately 40%
- 10% of infected infants will be symptomatic
- Transmission can also be via breastmilk

Features of Congenital CMV infection

- Sensorineural Hearing Loss
- Visual Impairment
- Microcephaly
- Low Birth weight
- Seizures
- Cerebral Palsy
- Hepatosplenomagaly with jaundice
- Thrombocytopenia with petechial rash

What is the primary host for Toxoplasma Gondii?

<input type="radio"/>	Sheep
<input type="radio"/>	Rodents
<input type="radio"/>	Cats

<input type="radio"/>	Humans
<input type="radio"/>	Cattle

Next question

T. gondii oocysts are excreted in cat faeces. They are then ingested by secondary hosts. Secondary hosts include humans, cattle, sheep, pigs, rodents and birds.

Toxoplasmosis

Toxoplasmosis Key Points

- *Toxoplasma gondii* is an intracellular protozoan parasite
- Primary host and source of infection is domestic cats
- *T. gondii* oocysts excreted in cat faeces, mature in environment and then ingested by secondary hosts which include humans
- Fetal consequences more severe if infection takes place within 10 weeks of conception
- Maternal-fetal transmission risk increases as the pregnancy proceeds but the consequences become less severe
- May cause miscarriage or fetal abnormalities such as microcephaly, hydrocephalus, cerebral calcifications, cerebral palsy, epilepsy choroidoretinitis and thrombocytopenia.
- Diagnosis can be via PCR or Immunoglobulins (IgM, IgG and IgA). MRI/CT may show ring enhancing lesions in CNS tissues.
- Treatment not usually required in the immunocompetent.
- In pregnancy treatment is indicated if recent infection suspected
- Treatment varies depending on local protocols (Spiramycin or combination of pyrimethamine, sulfadiazine, and folinic acid)
- You are asked to see a 42 year old women due to pelvic pain and PV discharge. She had IUCD fitted for emergency contraception 4 years ago. You send swabs. The microscopy reveals sulphur granules. What is the likely causative organism?

<input type="radio"/>	<i>Actinomyces israelii</i>
<input type="radio"/>	<i>Gardnerella vaginalis</i>
<input type="radio"/>	<i>Chlamydia trachomatis</i>
<input type="radio"/>	<i>Mycoplasma hominis</i>

<input type="radio"/>	Group B Streptococcus
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• Next question

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Actinomyces is rare but it is an old exam favourite. If the question mentions sulphur think Actinomyces!

Pelvic actinomycosis is predominantly associated with intrauterine contraceptive devices (IUCDs). It usually presents with a history of prolonged use (>2 years) and symptoms of fever, vaginal discharge, pelvic or abdominal pain, and weight loss.

- Infections

-

Condition/Infection	Most Common Causative Organism
Urinary Tract Infection	Escherichia Coli
Skin/Superficial Wound/IV Line	Staphylococcus Aureus
Cellulitis/Erysipelas	Streptococcus Pyogenes (Group A strep)
Bacterial Vaginosis	Gardnerella vaginalis (polymicrobial)
Endometritis	Polymicrobial

What family of virus does Rubella belong to?

<input type="radio"/>	Parvoviruses
<input type="radio"/>	Poxviruses
<input checked="" type="radio"/>	Togaviruses
<input type="radio"/>	Retroviruses
<input type="radio"/>	Reoviruses

Next question

Rubella is a type of Togavirus.

It should be noted that when using virus terminology (taxon structure) the suffix changes according to the level of order. Although in most texts the family of viruses will be written as togavirus using its appropriate suffix it may be termed togaviridae.

Rubella

Rubella Key Points

- Caused by Rubella virus:
- A togavirus
- Single-stranded RNA genome
- Transmission primarily via the respiratory route
- Viral replication occurs in the nasopharynx and lymph nodes
- Rubella infection in children and adults usually mild
- Incubation period 12-23 days
- Congenital rubella infection teratogenic with poor prognosis and significant complications (sensorineural deafness, cataracts and cardiac abnormalities most common)
- No specific treatment. Key is prevention through vaccination programme
- Vaccination is via live attenuated virus so cannot be given to pregnant women who are found to be non-immune.

The RCOG define septic shock as the persistence of hypoperfusion despite adequate fluid replacement therapy. What is the mortality rate in patients with septic shock?

<input checked="" type="radio"/>	5%
<input type="radio"/>	10%
<input type="radio"/>	20%
<input type="radio"/>	35%
<input checked="" type="radio"/>	60%

Next question

Septic shock has a very high mortality rate of 60%

Puerperal Sepsis

Puerperal Sepsis Key Points

- Defined as sepsis occurring after birth until 6 weeks postnatal.
- Most commonly result of uterine infection (endometritis)
- Rise in number of deaths in recent years attributable to Group A streptococcus infection
- Puerperal sepsis responsible for 10 deaths per year in the UK
- Severe sepsis with acute organ dysfunction has a mortality rate of 20 to 40%. Septic shock mortality 60%

Red Flag Signs

- Temp > 38°C
- Sustained tachycardia > 90 bpm
- Breathlessness (respiratory rate more than 20 breaths/minute; a serious symptom)
- Abdominal or chest pain
- Diarrhoea and/or vomiting
- Uterine or renal angle pain and tenderness
- Woman is generally unwell or seems unduly anxious or distressed

Management

- Blood cultures prior to antibiotic administration
- Administer broad-spectrum antibiotic within 1 hour of recognition of severe sepsis. RCOG suggests a combination of either piperacillin/tazobactam or a carbapenem plus clindamycin but notes consultation with microbiologist may be warranted.
- Measure serum lactate (> 4 mmol/l is indicative of tissue hypoperfusion)
- Routine Bloods INC FBC, U&E, CRP
- Other tests as per symptoms e.g. throat swab, imaging, MRSA swab if not already done
- If hypotension and/or a serum lactate > 4 mmol/l:

Deliver an initial minimum 20 ml/kg of crystalloid or an equivalent

Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain MAP above 65 mmHg

- If persistent hypotension despite fluid resuscitation (septic shock) and/or serum lactate greater than 4 mmol/l:

Achieve a central venous pressure of 8 mmHg

Achieve a central venous oxygen saturation 70% or mixed venous oxygen saturation 65%

Source: Greentop Guideline No. 64b 2012

A 28 year old women who is known to be HIV positive delivers a term baby by planned C-section. Maternal viral load was < 50 HIV RNA copies/mL at 36 weeks gestation. She is taking cART. The infant had a negative HIV test on the day of discharge and is discharged on Zidovudine monotherapy for 4 weeks. The mum plans to breastfeed. What would you advise the mother regarding additional HIV testing for the infant when breastfeeding?

<input type="radio"/>	No additional infant testing required if maternal viral load maintained at < 50 HIV RNA copies/mL
<input type="radio"/>	Additional infant testing every 6 months
<input type="radio"/>	No additional infant testing unless breastfeeding for more than 1 year
<input checked="" type="radio"/>	Additional infant testing every 1 month
<input type="radio"/>	No additional infant testing unless breastfeeding for more than 18 months

[Next question](#)

Testing regime for formula fed babies

- During the first 48 hours and prior to hospital discharge
- 2 weeks post cessation of infant prophylaxis (6 weeks of age)
- 2 months post cessation of infant prophylaxis (12 weeks of age)
- On other occasions if additional risk
- HIV antibody testing for seroreversion - age 18 months

NOTE

- Mothers who are HIV positive regardless of viral load should be advised not to breastfeed. If they breastfeed against advice the infant should undergo additional testing on a monthly basis.

HIV in Pregnancy

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

- For women with a plasma viral load of < 50 HIV RNA copies/mL at 36 weeks, and in the absence of obstetric contraindications, a planned vaginal delivery is recommended
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Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on mono-therapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

What is the prevalence of HIV in the UK obstetric population?

<input checked="" type="radio"/>	0.5 per 1000 live births
<input type="radio"/>	2 per 1000 live births
<input type="radio"/>	1 per 10,000 live births
<input type="radio"/>	2 per 10,000 live births
<input type="radio"/>	5 per 10,000 live births

[Next question](#)

The overall rate is 2 per 1000.

HIV in Pregnancy

Key Points HIV in Pregnancy

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Management HIV during labour

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- Zidovudine advised for untreated women presenting in labour or with ruptured membranes in whom the current viral load is not known

Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on monotherapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

A 26 year old patient known to have Group B Streptococcus (GBS) on vaginal swab is being admitted for elective C-section delivery. She is penicillin allergic. What intrapartum antibiotic treatment is advised?

<input type="radio"/>	No treatment
<input type="radio"/>	IV Clindamycin 900 mg 8 hourly
<input type="radio"/>	IV Ciprofloxacin 750mg 12 hourly
<input type="radio"/>	IV Clarithromycin 500mg 12 hourly

<input type="radio"/>	Oral doxycycline 200mg 12 hourly
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Next question

The greentop guideline (No 36) states:

- Antibiotic prophylaxis for GBS is not required for women undergoing planned caesarean section in the absence of labour and with intact membranes.

If Intrapartum antibiotics for GBS are indicated

- 3g Benzylpenicillin should be administered as soon as possible after the onset of labour and 1.5g 4 hourly until delivery.
- Clindamycin 900mg should be administered to those women allergic to

benzylpenicillin

Infections 2

A 35 year old lady is seen in clinic for IVF counselling. She reports having bloody watery diarrhoea for the past 5 days and a fever up to 39°C. A day or two earlier she had takeaway chicken that tasted "funny". Which gram negative rod is likely to be responsible?

<input type="radio"/>	Salmonella
<input type="radio"/>	Helicobacter
<input type="radio"/>	Listeria
<input type="radio"/>	Campylobacter
<input type="radio"/>	Escherichia coli

Next question

In the developed world *Campylobacter jejuni* is the primary cause of bacterial gastroenteritis. Typically food borne and half the cases are related to poultry. Species can be aerobic or anaerobic.

The question may have said "spiral shaped rod". If this is the case you know you are dealing with *compylobacter* or

helicobacter!

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**
- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- Corynebacterium **Facultative anaerobe**
- Listeria *non-spore forming* **Facultative anaerobe**
- Bacillus *spore forming* **Facultative anaerobe**
- Clostridium *spore forming* **Obligate anaerobe**
- Actinomyces *spore forming* **Facultative anaerobe**

GRAM NEGATIVE

Cocci

- Neisseria gonorrhoeae **Obligate aerobes**
- Neisseria meningitidis **Obligate aerobes**
- Moraxella catarrhalis **Obligate aerobes**

Bacilli OR "Rods"

- Bacteroides **Obligate anaerobes**
- Hemophilus influenzae **Facultative anaerobe**
- Klebsiella pneumoniae **Facultative anerobe**
- Legionella pneumophila **Obligate aerobes**
- Pseudomonas aeruginosa **Obligate aerobes**
- Escherichia coli **Facultative anaerobe**
- Proteus mirabilis **Facultative anaerobe**
- Enterobacter cloacae **Facultative anaerobe**
- Helicobacter/Compylobacter (spiral rod) **Facultative anaerobes**
- Salmonella **Facultative anaerobe**

Intracellular

- Chlamydia **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- Treponema pallidum
- Borrelia burgdorferi (considered diderm rather than gram neg or positive)

What type of virus is the Rubella virus?

<input checked="" type="radio"/>	Single stranded RNA (ssRNA)
<input type="radio"/>	Double stranded RNA (dsRNA)
<input type="radio"/>	Retrovirus
<input type="radio"/>	Single stranded DNA (ssDNA)
<input type="radio"/>	Double stranded DNA (dsDNA)

[Next question](#)

Rubella virus is the only member of the genus Rubivirus and is a type of Togavirus (Togaviridae). It is a single stranded RNA virus.

Note for the exam if you are unsure - most RNA viruses encountered in clinical practice are single stranded. The exception is rotavirus which is dsRNA virus. RNA viruses that use DNA during their replication are classed as retroviruses (HIV is an example)

Rubella

Rubella Key Points

- Caused by Rubella virus:
- A togavirus
- Single-stranded RNA genome
- Transmission primarily via the respiratory route

- Viral replication occurs in the nasopharynx and lymph nodes
- Rubella infection in children and adults usually mild
- Incubation period 12-23 days
- Congenital rubella infection teratogenic with poor prognosis and significant complications (sensorineural deafness, cataracts and cardiac abnormalities most common)
- No specific treatment. Key is prevention through vaccination programme
- Vaccination is via live attenuated virus so cannot be given to pregnant women who are found to be non-immune.
- HPV genotypes 6 and 11 are associated with which of the following?

<input type="radio"/>	High grade squamous intraepithelial lesions of the cervix (HSIL)
<input type="radio"/>	Low grade squamous intraepithelial lesions of the cervix (LSIL)
<input type="radio"/>	Cervical intraepithelial neoplasia (CIN) 3
<input type="radio"/>	Squamous cell carcinoma penis
<input type="radio"/>	Cervical intraepithelial neoplasia (CIN) 2

• Next question

-
-
- 6 and 11 are considered low risk and are commonly associated with genital warts and low-grade squamous intraepithelial lesions of the cervix (can correspond cytologically to CIN 1)

• HPV

- Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

Which pathogen causes chicken pox?

<input type="radio"/>	Herpes Simplex
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<input type="radio"/>	MCV 1 pox virus
<input type="radio"/>	Streptococcus pyogenes
<input checked="" type="radio"/>	Varicella Zoster
<input type="radio"/>	Parvovirus B19

Next question

MCV 1 pox virus is a type of molluscum
 Herpes simplex causes herpes eruptions
 Streptococcus pyogenes causes Scarlet Fever
 Parvovirus causes slapped cheek

Varicella Zoster

Varicella Zoster is the virus responsible for Chicken pox and shingles.

If Chickenpox occurs during pregnancy the Green Top Guidelines advise the following:

- VZIG has no therapeutic benefit once chickenpox has developed and should therefore not be used in pregnant women who have developed a chickenpox rash.
- Intravenous aciclovir should be given to all pregnant women with severe chickenpox
- Oral aciclovir should be prescribed for pregnant women with chickenpox if they present within 24 hours of the onset of the rash and if they are 20+0 weeks of gestation or beyond. Use of aciclovir before 20+0 weeks should also be considered

A 24 year old patient who is 14 weeks pregnant has her urine dipped during an antenatal visit. This shows leucocytes ++ and nitrites ++. You suspect a UTI and send a urine sample for culture. According to NICE guidance which of the following is most appropriate treatment option?

<input type="radio"/>	No treatment until culture result received
<input type="radio"/>	Trimethoprim 200mg BD for 3 days
<input type="radio"/>	Trimethoprim 200mg BD for 7 days

<input type="radio"/>	Nitrofurantoin 50mg QDS for 7 days
<input type="radio"/>	Amoxicillin 500mg TDS for 7 days

Next question

Urinary Tract Infection In Pregnancy

NICE guidance on UTI in pregnancy was updated in July 2015

The following is advised:

- Send urine for culture and sensitivity from all women in whom UTI is suspected before starting empirical antibiotics and 7 days after antibiotic treatment is completed.
- Prescribe an antibiotic to all women with suspected UTI (awaiting culture result is not advised)
- Although local antibiotic resistance needs to be taken into account the following is advised in terms of antibiotic selection:

1. Nitrofurantoin 50 mg QDS (or 100 mg MR BD) for 7 days.
2. Trimethoprim 200 mg twice daily, for 7 days

- **Give folic acid 5 mg OD if it is the 1st trimester**
- **Do not give trimethoprim if the woman is folate deficient, taking a folate antagonist, or has been treated with trimethoprim in the past year.**

3. Cefalexin 500 mg BD (or 250 mg 6qds) for 7 days

A 32 year old patient develops painful ulcerated genital lesions and inguinal lymphadenopathy. She is 32 weeks pregnant. You suspect genital herpes and send swabs. Which of the following is appropriate management according to the 2014 BASHH/RCOG guidelines?

<input type="radio"/>	Send bloods to check antibody status. If this supports this is a first episode genital HSV then patient should be advised to have C-section delivery
<input type="radio"/>	Give Aciclovir 400mg TDS orally for 5 days
<input type="radio"/>	No medical treatment required

<input type="radio"/>	Admit for intravenous Aciclovir for 5 days
<input type="radio"/>	Give Aciclovir 800mg 5 times daily for 5 days

Next question

Although aciclovir should be given, this patient is in the 3rd trimester so the course should continue until delivery. Dose will be 400mg TDS unless disseminated disease.

If this is a primary HSV infection (This should be confirmed by lesion swabs to confirm HSV infection and bloods to check no antibody response i.e. evidence previous infection) then C-section is indicated.

Herpes Simplex

Herpes Simplex (HSV) in Pregnancy Key Points

- Types 1 and 2 (type 2 accounts for 70% of genital herpes infections)
- Double stranded DNA virus
- HSV infection may be transmitted to neonates. Transmission is typically due to the neonate coming into contact with infected maternal secretions during delivery (transplacental infection reported but very rare)
- Highest risk with primary herpes infection within 6 weeks of delivery. Viral shedding can continue after lesions have healed.
- Neonatal herpes rare (UK incidence 3/100,000 live births) but serious
- 3 types of Neonatal herpes:
 1. Restricted to skin/superficial infection (eye/mouth) which is the least severe form
 2. CNS infection (mortality with antiviral treatment 6% neurological sequelae 70%)
 3. Disseminated infection (mortality with antiviral treatment 30% neurological sequelae 17%)
- 70% of cases are disseminated or CNS involvement

Management 1st or 2nd trimester Acquisition of Genital Herpes

(Joint BASHH/RCOG guidance October 2014)

- Initial episode treated aciclovir 400 mg TDS for 5 days
- Following 1st or 2nd trimester acquisition, daily suppressive aciclovir 400 mg TDS from 36 weeks of gestation reduces HSV lesions at term and hence the need for delivery by caesarean section

Management 3rd trimester Acquisition of Genital Herpes (from 28 weeks)

- Initiate aciclovir 400 mg TDS and continue until delivery

- C-section delivery is advised for these patients in whom this is a 1st episode of HSV
- What is the causative organism of Scarlet Fever?

<input type="radio"/>	Staphylococcus aureus
<input type="radio"/>	Streptococcus epidermidis
<input checked="" type="radio"/>	Streptococcus pyogenes
<input type="radio"/>	Streptococcus Pneumonia
<input type="radio"/>	Parvovirus B19

• Next question

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-
- It is Streptococcus pyogenes.
- Parvovirus B19 causes Slapped cheek (Fifth disease).

• Infections 2

Which of the following is **LEAST** appropriate for the diagnosis of Bacterial Vaginosis (BV)?

<input type="radio"/>	Nugents score
<input type="radio"/>	Amsels criteria
<input checked="" type="radio"/>	Positive vaginal culture for Gardnerella vaginalis
<input type="radio"/>	Hay/Ison Criteria
<input type="radio"/>	OSOM BVBlue

Next question

The RCOG advise that the Amsel's criteria or Nugent's score should be used to diagnose BV as per BASHH 2012 guidance. The BASHH guidance itself actually suggests the Amsel or Nugents or Hay/Ison criteria can be used (and suggest Hay/Ison is used in GUM clinics). OSOM BVblue is a commercially available kit that BASHH advises performs adequately compared with Amsel criteria.

Although high levels of Gardnerella vaginalis are associated with BV, detection of Gardnerella vaginalis does not

confirm BV as the bacteria is present in up to 50% of women without BV.

Amsels criteria

3/4 criteria required for confirmation of BV

- 1. Thin, white, homogeneous discharge
- 2. Clue cells on microscopy of wet mount
- 3. pH of vaginal fluid >4.5
- 4. Release of a fishy odour on adding alkali (10% KOH)

The Nugent score

Estimates the relative proportions of bacterial morphotypes to give a score between 0 and 10

- <4 = normal
- 4-6 = intermediate
- >6 = BV

The Hay/Ison criteria

- Grade 1 (Normal): Lactobacillus morphotypes predominate
- Grade 2 (Intermediate): Mixed flora with some Lactobacilli present, but Gardnerella or Mobiluncus morphotypes also present
- Grade 3 (BV): Predominantly Gardnerella and/or Mobiluncus morphotypes. Few or absent Lactobacilli

Bacterial Vaginosis

BV Key Points

- Most common cause of abnormal vaginal discharge in women of childbearing age.
- Overgrowth of anaerobic bacteria in the vagina. Fishy smelling discharge typical.
- Bacterial change causes more alkali environment with pH rise (pH >4.5)
- Amsel/Nugent/Hay-ison criteria commonly used to confirm diagnosis.
- Not considered a sexually transmitted disease
- More common in those with IUCD and smokers
- Treatment typically with 7 days oral metronidazole

A mother develops her 1st episode of genital herpes 4 weeks prior to delivery. Following delivery her baby develops disseminated neonatal herpes. What is the mortality rate associated with disseminated neonatal herpes assuming appropriate antiviral treatment is given?

<input type="radio"/>	5%
<input type="radio"/>	10%
<input checked="" type="radio"/>	30%
<input type="radio"/>	50%
<input type="radio"/>	80%

[Next question](#)

The mortality rate is 30% with treated disseminated neonatal herpes

Herpes Simplex

Herpes Simplex (HSV) in Pregnancy Key Points

- Types 1 and 2 (type 2 accounts for 70% of genital herpes infections)
- Double stranded DNA virus
- HSV infection may be transmitted to neonates. Transmission is typically due to the neonate coming into contact with infected maternal secretions during delivery (transplacental infection reported but very rare)
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- 70% of cases are disseminated or CNS involvement

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Management 3rd trimester Acquisition of Genital Herpes (from 28 weeks)

- Initiate aciclovir 400 mg TDS and continue until delivery
- C-section delivery is advised for these patients in whom this is a 1st episode of HSV

What percentage of infants with congenital CMV infection are symptomatic?

<input type="radio"/>	>99%
<input type="radio"/>	50%
<input checked="" type="radio"/>	10%
<input type="radio"/>	1-2%
<input type="radio"/>	<1%

[Next question](#)

CMV

Cytomegalovirus (CMV) Key Points:

- >50% women seropositive
- Congenital CMV infection refers to infection during the perinatal period and tends to effect mothers who have their first CMV infection during pregnancy
- vertical transmission rate approximately 40%
- 10% of infected infants will be symptomatic
- Transmission can also be via breastmilk

Features of Congenital CMV infection

- Sensorineural Hearing Loss
- Visual Impairment
- Microcephaly

- Low Birth weight
- Seizures
- Cerebral Palsy
- Hepatosplenomegaly with jaundice
- Thrombocytopenia with petechial rash

A 28 year old woman who is known to be HIV positive delivers a term baby by planned C-section. Maternal viral load was < 50 HIV RNA copies/mL at 36 weeks gestation. She is taking cART. The infant had a negative HIV test on the day of discharge and is discharged on Zidovudine monotherapy for 4 weeks. The mum plans to exclusively formula feed. What would you advise the mother regarding timing of the next HIV test for the infant?

<input type="radio"/>	No further tests required if remains formula fed
<input type="radio"/>	Next test at 18 months of age
<input type="radio"/>	Next test at 6 months of age
<input checked="" type="radio"/>	Next test at 6 weeks of age
<input type="radio"/>	Next test in 4 weeks

[Next question](#)

Testing regime for formula fed babies

- During the first 48 hours and prior to hospital discharge
- 2 weeks post cessation of infant prophylaxis (6 weeks of age)
- 2 months post cessation of infant prophylaxis (12 weeks of age)
- On other occasions if additional risk
- HIV antibody testing for seroreversion - age 18 months

NOTE

- Mothers who are HIV positive regardless of viral load should be advised not to breastfeed. If they breastfeed against advice the infant should undergo additional testing on a monthly basis.

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

- For women with a plasma viral load of < 50 HIV RNA copies/mL at 36 weeks, and in the absence of obstetric contraindications, a planned vaginal delivery is recommended
- Elite controllers (Untreated women with a CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL) can start ART and aim for vaginal delivery
- For women with a plasma viral load of 50 to 399 HIV RNA copies/mL at 36 weeks, PLCS should be considered taking into account the actual viral load, the trajectory of the viral load, length of time on treatment, adherence issues, obstetric factors and the woman's views
- Where the viral load is 400 HIV RNA copies/mL at 36 weeks, PLCS is recommended

Mode of delivery Women taking Zidovudine mono therapy

- Delivery by PLCS is recommended for women, except elite controllers, taking zidovudine monotherapy irrespective of plasma viral load at the time of delivery

ART infusion

- Zidovudine infusion advised for women with viral load of > 1000 HIV RNA copies/mL who present in labour, or with ruptured membranes or who are admitted for planned CS.
- Zidovudine advised for untreated women presenting in labour or with ruptured membranes in whom the current viral load is not known

Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on monotherapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

You are asked to review a patient 7 days after a laparoscopic oophorectomy. One of the port sites has notable surrounding erythema and there is some pus visible at the site of the incision. What is the most likely causative organism?

<input type="radio"/>	Streptococcus viridans
<input type="radio"/>	Escherichia coli
<input type="radio"/>	Pseudomonas aeruginosa
<input type="radio"/>	Streptococcus pyogenes
<input checked="" type="radio"/>	Staphylococcus aureus

[Next question](#)

Staphylococcus aureus is the leading cause of surgical site infections (SSIs). A number of large studies have shown that staphylococcus aureus accounts for approximately 50% of SSIs.

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**
- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- Corynebacterium **Facultative anaerobe**
- Listeria *non-spore forming* **Facultative anaerobe**
- Bacillus *spore forming* **Facultative anaerobe**

- *Clostridium* *spore forming* **Obligate anaerobe**
- *Actinomyces* *spore forming* **Facultative anaerobe**

GRAM NEGATIVE

Cocci

- *Neisseria gonorrhoeae* **Obligate aerobes**
- *Neisseria meningitidis* **Obligate aerobes**
- *Moraxella catarrhalis* **Obligate aerobes**

Bacilli OR "Rods"

- *Bacteroides* **Obligate anaerobes**
- *Hemophilus influenzae* **Facultative anaerobe**
- *Klebsiella pneumoniae* **Facultative anaerobe**
- *Legionella pneumophila* **Obligate aerobes**
- *Pseudomonas aeruginosa* **Obligate aerobes**
- *Escherichia coli* **Facultative anaerobe**
- *Proteus mirabilis* **Facultative anaerobe**
- *Enterobacter cloacae* **Facultative anaerobe**
- *Helicobacter/Compylobacter* (spiral rod) **Facultative anaerobes**
- *Salmonella* **Facultative anaerobe**

Intracellular

- *Chlamydia* **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- *Treponema pallidum*
- *Borrelia burgdorferi* (considered *disseminata* rather than gram neg or positive)
- What percentage of HPV infections will be cleared by the host within 1 year?

<input type="radio"/>	5%
<input checked="" type="radio"/>	20%
<input type="radio"/>	50%

<input checked="" type="radio"/>	70%
<input type="radio"/>	90%

• Next question

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Typically 70% of HPV infections are cleared within 1 year and 90% are cleared within 2 years.

• HPV

-

Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

You see a 23 year old woman in clinic complaining of odorous vaginal discharge. Which facultative anaerobic bacteria is most likely to be responsible?

<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Neisseria gonorrhoeae
<input checked="" type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Treponema pallidum
<input type="radio"/>	Mycoplasma hominis

Next question

Gardnerella vaginalis is the main causative organism of bacterial vaginosis. It is also one of the few gram-indeterminate bacteria (note the question doesn't give information on the gram stain properties).

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**
- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- Corynebacterium **Facultative anaerobe**
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GRAM NEGATIVE

Cocci

- Neisseria gonorrhoeae **Obligate aerobes**
- Neisseria meningitidis **Obligate aerobes**
- Moraxella catarrhalis **Obligate aerobes**

Bacilli OR "Rods"

- Bacteroides **Obligate anaerobes**
- Hemophilus influenzae **Facultative anaerobe**
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Intracellular

- Chlamydia **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- Treponema pallidum
- Borrelia burgdorferi (considered diderm rather than gram neg or positive)

Which group of beta haemolytic streptococci is associated with liver abscess formation?

<input type="radio"/>	A
<input checked="" type="radio"/>	B
<input type="radio"/>	C
<input checked="" type="radio"/>	F
<input type="radio"/>	G

Next question

Group F (Streptococcus anginosus) is associated with liver abscess formation

Streptococcus

Streptococcus Key Points

- Gram positive cocci.
- They are often classified into alpha and beta haemolytic streptococci.

Alpha haemolytic streptococci include strep pneumoniae and viridans.

Beta haemolytic streptococcus are sub classified into a number of groups (see table below):

Group	Name	Causes
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Group	Name	Causes
A	Streptococcus pyogenes	Scarlet fever Rheumatic fever Tonsillitis/pharyngitis Glomerulonephritis Toxic shock Necrotising fasciitis
B	Streptococcus agalactia	GBS disease of newborn Chorioamnionitis Endometritis
C	Streptococcus dysgalactiae	Pharyngitis Endocarditis Toxic Shock Necrotising fasciitis
D	Reclassified as Enterococcus	Colitis Endocarditis
F	Streptococcus anginosus	liver abscess
G	Group G streptococcus	Toxic Shock Necrotising fasciitis Vaginitis
H	Not significant pathogen in humans	

What is the fetal case mortality rate associated with listeria infection during pregnancy?

<input type="radio"/>	1%
<input type="radio"/>	10%
<input checked="" type="radio"/>	25%

<input type="radio"/>	50%
<input type="radio"/>	95%

Next question

The fetal case mortality rate is quoted at 20-30%. Note for newborns who acquire infection from their mothers some studies quote mortality rates as high as 50%.

Listeriosis

Listeriosis Key Points

- Listeria Monocytogenes causative organism
- Source usually food, typically soft cheeses or cold meats
- Fetus can be infected via transplacental or ascending spread
- Incidence in pregnancy around 12 per 100,000
- 20 times more likely in pregnancy than general population (0.7 per 100,000)
- Typically mild illness in adults unless immunocompromised
- Causes chorioamnionitis and placental necrosis and granuloma formation
- Miscarriage, stillbirth and meningitis can result from listeria infection during pregnancy.
- Fetal mortality rate is quoted at 20-30%* Note some sources quote up to 50%
- Treatment is typically with amoxicillin for 2-3 weeks

*Sources:

1. www.cdc.gov

2. Janakiraman V; Listeriosis in pregnancy: diagnosis, treatment, and prevention. Rev Obstet Gynecol. 2008 Fall;1(4):179-85

What epithelium cell type lines the urinary bladder?

<input type="radio"/>	Columnar
<input type="radio"/>	Cuboidal
<input type="radio"/>	Squamous
<input type="radio"/>	Pseudostratified Columnar
<input checked="" type="radio"/>	Transitional

The table below summarises the epithelium cell

Epithelium Types

Summary of Epithelium Types

Organ	Type of Epithelium Lining
Ovaries	Cuboidal
Fallopian Tubes	Columnar
Endometrium	Columnar
Endocervix	Columnar
Ectocervix	Stratified Squamous, non keratinised
Vagina	Stratified Squamous, non-keratinised
Ureter	Transitional
Urinary Bladder	Transitional

You see a patient in clinic who complains of vaginal soreness and discharge. Examination reveals vulval irritation and a "strawberry" cervix. A wet smear is sent for microscopy which confirms trichomoniasis. What percentage of trichomoniasis cases would you expect to see a strawberry cervix?

<input checked="" type="radio"/>	2%
<input type="radio"/>	10-20%
<input type="radio"/>	50%

<input type="radio"/>	70%
<input type="radio"/>	>90%

Next question

A "strawberry" cervix signifying cervicitis is rare in trichomoniasis, it occurs in only 2% of cases.

Trichomoniasis

Trichomoniasis Key Points

- Trichomoniasis Vaginalis causative organism
- Flagellate protazoan
- Sexually transmitted
- Up to 50% of women have no symptoms
- Vaginal discharge is most common symptom (up to 70%). Classic discharge described as frothy and yellow-green (occurs in 20% of infected women) but can be variable. Other symptoms are vulvovaginal soreness and itching, offensive odour, lower abdo pain, dysuria and dyspareunia
- Clinical findings typically vulval inflammation. Rarely strawberry cervix (cervicitis - 2% of cases)
- Diagnosis wet smear microscopy or culture/PCR
- Metronidazole 400 to 500 mg twice a day for 5 to 7 days is 1st line treatment for men and women (including those who are breastfeeding or pregnant)

A patient is seen in the sexual health clinic. Speculum examination reveals a firm 12mm ulcerated lesion with smooth edges to the cervix. The patient denies any pain. What is the likely cause?

<input type="radio"/>	Herpes Simplex Type 1
<input type="radio"/>	Herpes Simplex Type 2
<input checked="" type="radio"/>	Neisseria gonorrhoeae
<input type="radio"/>	Chlamydia Trachomatis D-K
<input checked="" type="radio"/>	Treponema pallidum

Next question

This is describing a chancre. The chancre is the hallmark of primary syphilis. Syphilis is caused by the bacteria

Treponema pallidum.

Chancres are painless ulcers that typically develop around 3 weeks after sexual contact with an infected individual. They range from 3mm to 3cm in size.

Stage of Syphilis	Time from Primary Infection	Symptoms
Primary	3-90 days	<ul style="list-style-type: none">• Chancre and lymphadenopathy
Secondary	4-10 weeks	<ul style="list-style-type: none">• Widespread rash typically affecting hands and soles of feet.• Wart lesions (condyloma latum) of mucus membranes
Latent	Early <1 yr after secondary stage Late >2 yr after secondary stage	<ul style="list-style-type: none">• Asymptomatic
Tertiary	3+ years after primary infection	<ul style="list-style-type: none">• Gummas OR• Neurosyphilis OR• Cardiovascular syphilis

Infections 2

The HPV vaccine Gardasil® is what type of vaccine?

<input checked="" type="radio"/>	Live attenuated viruses
<input type="radio"/>	Inactivated viruses
<input type="radio"/>	Toxoid based vaccine
<input type="radio"/>	Polysaccharide based vaccine
<input checked="" type="radio"/>	Recombinant vaccine of virus-like particles (VLPs)

Next question

Gardasil® is a recombinant vaccine of virus-like particles (VLPs). These resemble HPV virions but lack viral DNA. They therefore provoke an antibody response but cannot induce infection or cancer.

It should be noted it is not yet known if the effects of Gardasil® are lifelong or fade with time.

Live attenuated virus vaccine examples include rubella, measles, oral polio, mumps.

Inactivated virus examples include influenza

Toxoid and polysaccharide vaccines are used to vaccinate against bacterial infections

HPV

Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

What type of virus is HIV?

<input type="radio"/>	Rubivirus
<input type="radio"/>	Hepacivirus
<input checked="" type="radio"/>	Lentivirus
<input type="radio"/>	Flavivirus
<input type="radio"/>	Enterovirus

[Next question](#)

HIV is a retrovirus i.e. a member of the retroviridae family. Its genus is lentivirus

Rubella genus is Rubivirus a member of the Togaviridae family

Hepatitis C genus is Hepacivirus a member of the Flaviviridae family

Zika virus genus is Flavivirus

Polio genus is Enterovirus

HIV in Pregnancy

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

- For women with a plasma viral load of < 50 HIV RNA copies/mL at 36 weeks, and in the absence of obstetric contraindications, a planned vaginal delivery is recommended
- Elite controllers (Untreated women with a CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL) can start ART and aim for vaginal delivery
- For women with a plasma viral load of 50 to 399 HIV RNA copies/mL at 36 weeks, PLCS should be considered taking into account the actual viral load, the trajectory of the viral load, length of time on treatment, adherence issues, obstetric factors and the woman's views
- Where the viral load is 400 HIV RNA copies/mL at 36 weeks, PLCS is recommended

Mode of delivery Women taking Zidovudine mono therapy

- Delivery by PLCS is recommended for women, except elite controllers, taking zidovudine monotherapy irrespective of plasma viral load at the time of delivery

ART infusion

- Zidovudine infusion advised for women with viral load of > 1000 HIV RNA copies/mL who present in labour, or with ruptured membranes or who are admitted for planned CS.
- Zidovudine advised for untreated women presenting in labour or with ruptured membranes in whom the current viral load is not known

Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on mono-therapy) infant should receive Zidovudine mono-therapy for 4 weeks.

- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

Congenital Cytomegalovirus (CMV) infection effects how many pregnancies?

<input type="radio"/>	1 in 10
<input type="radio"/>	1 in 150
<input type="radio"/>	1 in 500
<input type="radio"/>	1 in 1,000
<input type="radio"/>	1 in 10,000

Next question

In the UK and USA around 1 in 150 babies will be born with congenital CMV infection. Of these around 10-15% will have clinically apparent problems at birth with a further 10-15% developing CMV related problems later on.

CMV

Cytomegalovirus (CMV) Key Points:

- >50% women seropositive
- Congenital CMV infection refers to infection during the perinatal period and tends to effect mothers who have their first CMV infection during pregnancy
- vertical transmission rate approximately 40%
- 10% of infected infants will be symptomatic
- Transmission can also be via breastmilk

Features of Congenital CMV infection

- Sensorineural Hearing Loss
- Visual Impairment
- Microcephaly
- Low Birth weight
- Seizures
- Cerebral Palsy
- Hepatosplenomegaly with jaundice
- Thrombocytopenia with petechial rash
- You are asked to review a 25 year old patient who is currently 14 weeks pregnant. She has several anogenital warts which she finds psychologically distressing. Which of the following options is **NOT** appropriate?

<input type="radio"/>	Podophylline paint
<input type="radio"/>	Trichloroacetic acid
<input type="radio"/>	Liquid nitrogen cryotherapy
<input type="radio"/>	Imiquimod 5% cream
<input type="radio"/>	LASER treatment

• Next question

-
-

All of the above are appropriate treatment options in the non-pregnant patient. Podophylline is considered potentially teratogenic and shouldn't be used.
5-fluorouracil although not listed would also be inappropriate for the same reason.

The other options are safe to use during pregnancy (although Imiquimod is not licensed for use in pregnancy). Non treatment is also a safe option.

- HPV
-

Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

You are asked to review a 65 year old lady's legs pre-operatively. You diagnose cellulitis. What is the most common causative organism?

<input type="radio"/>	Staphylococcus Aureus
<input type="radio"/>	Staphylococcus Epidermidis
<input type="radio"/>	Clostridium Perfringens
<input type="radio"/>	Streptococcus Mutans
<input type="radio"/>	Streptococcus Pyogenes

Next question

Group A streptococcus AKA Streptococcus Pyogenes is the most common cause of cellulitis.

- Staph. aureus is the second most common
- Staph. epidermis can form biofilms on catheters/implants
- Clostridia Perfringens causes gas gangrene
- Strep. Mutans causes tooth decay and dental cavities

Group A Streptococcus can also cause Tonsillitis (strep.throat), Scarlet fever and Rheumatic fever.

Candidates should also be familiar with Group B Streptococcus AKA Streptococcus Agalactiae which can cause neonatal sepsis.

Infections

Condition/Infection	Most Common Causative Organism
Urinary Tract Infection	Escherichia Coli

Condition/Infection	Most Common Causative Organism
Skin/Superficial Wound/IV Line	Staphylococcus Aureus
Cellulitis/Erysipelas	Streptococcus Pyogenes (Group A strep)
Bacterial Vaginosis	Gardnerella vaginalis (polymicrobial)
Endometritis	Polymicrobial

You see a 23 year old women in clinic complaining of vaginal discharge. The lab phone to tell you microscopy and staining shows a gram negative diplococcus. Which organism is most likely to be responsible?

<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Neisseria gonorrhoeae
<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Treponema pallidum
<input type="radio"/>	Mycoplasma hominis

Next question

Neisseria, haemophilus and Moraxella are the main clinically relevant gram negative diplococci.

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**
- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- *Corynebacterium* **Facultative anaerobe**
- *Listeria non-spore forming* **Facultative anaerobe**
- *Bacillus spore forming* **Facultative anaerobe**
- *Clostridium spore forming* **Obligate anaerobe**
- *Actinomyces spore forming* **Facultative anaerobe**

GRAM NEGATIVE

Cocci

- *Neisseria gonorrhoeae* **Obligate aerobes**
- *Neisseria meningitidis* **Obligate aerobes**
- *Moraxella catarrhalis* **Obligate aerobes**

Bacilli OR "Rods"

- *Bacteroides* **Obligate anaerobes**
- *Hemophilus influenzae* **Facultative anaerobe**
- *Klebsiella pneumoniae* **Facultative anaerobe**
- *Legionella pneumophila* **Obligate aerobes**
- *Pseudomonas aeruginosa* **Obligate aerobes**
- *Escherichia coli* **Facultative anaerobe**
- *Proteus mirabilis* **Facultative anaerobe**
- *Enterobacter cloacae* **Facultative anaerobe**
- *Helicobacter/Compylobacter* (spiral rod) **Facultative anaerobes**
- *Salmonella* **Facultative anaerobe**

Intracellular

- *Chlamydia* **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- *Treponema pallidum*
- *Borrelia burgdorferi* (considered diderm rather than gram neg or positive)

A patient presents to clinic with a maculopapular rash to the hands and soles of the feet. Examination also reveals some wart like lesions to the vagina. You diagnose condyloma latum. What stage of syphilis infection is this

<input type="radio"/>	Primary
<input type="radio"/>	Secondary
<input type="radio"/>	Tertiary
<input type="radio"/>	Early Latent
<input type="radio"/>	Late Latent

[Next question](#)

Syphilis

Stage of Syphilis	Time from Primary Infection	Symptoms
Primary	3-90 days	<ul style="list-style-type: none">• Chancre and lymphadenopathy
Secondary	4-10 weeks	<ul style="list-style-type: none">• Widespread rash typically affecting hands and soles of feet.• Wart lesions (condyloma latum) of mucus membranes
Latent	Early <1 yr after secondary stage Late >2 yr after secondary stage	<ul style="list-style-type: none">• Asymptomatic
Tertiary	3+ years after primary infection	<ul style="list-style-type: none">• Gummas OR• Neurosyphilis OR• Cardiovascular syphilis

A 29 year old patient who is 8 weeks pregnant comes to see you. She currently has chickenpox. She is concerned her baby may get congenital fetal varicella syndrome (FVS). What would you advise her the risk of this is?

<input checked="" type="radio"/>	0.4%
<input type="radio"/>	2.0%
<input type="radio"/>	5.0%
<input type="radio"/>	10.0%
<input type="radio"/>	25.0%

[Next question](#)

Congenital fetal varicella syndrome may occur if there is maternal varicella infection (chickenpox) during the 1st 20 weeks of gestation.

The risk of FVS to babies born to mothers who have chickenpox during the first 20 weeks gestation is 0.4% (1-12 weeks) - 2.0% (13-20 weeks).

If a mother has chickenpox in late pregnancy (5 days prior to delivery) then there is risk of neonatal varicella infection which may be severe.

FVS can cause the following abnormalities

- Hypoplasia of one limb
- Cicatricial lesions with a dermatomal distribution
- CNS abnormalities
- Eye abnormalities

Varicella Zoster

Varicella Zoster is the virus responsible for Chicken pox and shingles.

If Chickenpox occurs during pregnancy the Green Top Guidelines advise the following:

- VZIG has no therapeutic benefit once chickenpox has developed and should therefore not be used in pregnant women who have developed a chickenpox rash.
- Intravenous aciclovir should be given to all pregnant women with severe chickenpox
- Oral aciclovir should be prescribed for pregnant women with chickenpox if they present within 24 hours of the onset of the rash and if they are 20+0 weeks of gestation or beyond. Use of aciclovir before 20+0 weeks should also be considered

You are asked to speak to a patient following a recent cervical smear. Microscopy has revealed trichomoniasis infection. The patient has had no symptoms. What percentage of trichomoniasis infections are asymptomatic?

<input type="radio"/>	2%
<input type="radio"/>	5%
<input type="radio"/>	10%
<input checked="" type="radio"/>	50%
<input type="radio"/>	90%

Next question

The RCOG quotes up to 50% of women as being asymptomatic and as they set the exam its best to use their figures. BASHH advise 10-50% are asymptomatic.

Note the RCOG and BASHH both state up to 70% of women will have vaginal discharge. Its worth bearing this in mind if you are asked about what % of women have vaginal discharge and you are aware 50% are asymptomatic as the numbers don't quite add up!

Trichomoniasis

Trichomoniasis Key Points

- Trichomoniasis Vaginalis causative organism
- Flagellate protazoan
- Sexually transmitted
- Up to 50% of women have no symptoms
- Vaginal discharge is most common symptom (up to 70%). Classic discharge described as frothy and yellow-green (occurs in 20% of infected women) but can be variable. Other symptoms are vulvovaginal soreness and itching, offensive odour, lower abdo pain, dysuria and dyspareunia
- Clinical findings typically vulval inflammation. Rarely strawberry cervix (cervicitis - 2% of cases)
- Diagnosis wet smear microscopy or culture/PCR

- Metronidazole 400 to 500 mg twice a day for 5 to 7 days is 1st line treatment for men and women (including those who are breastfeeding or pregnant)
- Herpes Simplex is which type of virus

<input type="radio"/>	single stranded RNA
<input type="radio"/>	double stranded RNA
<input type="radio"/>	single stranded DNA
<input checked="" type="radio"/>	double stranded DNA
<input type="radio"/>	Retrovirus

• Next question

-
-

• Viruses

-

There are a number of classification systems for Viruses with the ICTV and Baltimore systems often used.

They are often simply classified according to the genetic material they are composed of i.e. RNA or DNA. They can then be further sub classified as single or double stranded and also according to their polarity i.e. positive or negative sense.

The table below summarises the common clinically relevant viruses.

Note HIV has been included as an RNA virus as it is made of RNA. It is a retrovirus however and uses DNA during replication. Because of this some systems would class the retroviruses outside of the RNA virus class.

RNA Virus		DNA Virus	
Single stranded	Double stranded	Single stranded	Double stranded
Hepatitis			Hepatitis B

RNA Virus		DNA Virus	
A,C,D,E			
Rubella			CMV
HIV			VZV
			Herpes Simplex 1 and 2
			Human Papilloma Virus
			Epstein-Barr
	Rotavirus	Parvovirus B19	

A 29 year old women on labour ward has just gone into labour. A normal vaginal delivery is planned. Her last child, born 2 years ago, had early-onset neonatal group B streptococcal (EOGBS) disease. Vaginal swab taken 2 weeks ago was negative for GBS. What antibiotic treatment should be administered?

<input type="radio"/>	No treatment
<input type="radio"/>	IV Clindamycin 900 mg
<input type="radio"/>	IV Clarithromycin 500mg
<input type="radio"/>	IV Amoxicillin 1g
<input type="radio"/>	IV Benzylpenicillin 3g

Next question

Group B streptococcus (*Streptococcus agalactiae*) is recognised as the most frequent cause of severe early-onset (<7 days old) infection in newborns.

Greentop guideline 36 states:

- Intrapartum antibiotics should be offered to women with a previous baby with neonatal GBS disease - even if current swabs are negative for GBS.
- IV Benzylpenicillin is 1st Line. Clindamycin is advised if penicillin allergic

Infections 2

What epithelium cell type lines the endometrium?

<input type="radio"/>	Columnar
<input type="radio"/>	Cuboidal
<input checked="" type="radio"/>	Stratified Squamous
<input type="radio"/>	Pseudostratified Squamous
<input type="radio"/>	Transitional

Next question

The endometrium is lined by columnar epithelium

Epithelium Types

Summary of Epithelium Types

Organ	Type of Epithelium Lining
Ovaries	Cuboidal
Fallopian Tubes	Columnar
Endometrium	Columnar

Organ	Type of Epithelium Lining
Endocervix	Columnar
Ectocervix	Stratified Squamous, non keratinised
Vagina	Stratified Squamous, non-keratinised
Ureter	Transitional
Urinary Bladder	Transitional

A 30 year old patient is 36 weeks pregnant. She is known to be HIV positive and is having her viral load checked. What is the current BASHH advice regarding HIV positive mothers breastfeeding?

<input type="radio"/>	Safe to breastfeed if patient is an elite controller i.e. CD4 cell count >350 cells/L and a viral load of <50 HIV RNA copies/mL
<input type="radio"/>	Safe to breastfeed if CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL and taking cART
<input type="radio"/>	Safe to breastfeed if CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL and taking Zidovudine monotherapy
<input type="radio"/>	Safe to breastfeed whilst infant taking ART and maternal viral load is < 50 HIV RNA copies/mL
<input type="radio"/>	Avoid breastfeeding

Next question

BASHH advises all HIV positive mothers to avoid breastfeeding

HIV in Pregnancy

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

- For women with a plasma viral load of < 50 HIV RNA copies/mL at 36 weeks, and in the absence of obstetric contraindications, a planned vaginal delivery is recommended
- Elite controllers (Untreated women with a CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL) can start ART and aim for vaginal delivery
- For women with a plasma viral load of 50 to 399 HIV RNA copies/mL at 36 weeks, PLCS should be considered taking into account the actual viral load, the trajectory of the viral load, length of time on treatment, adherence issues, obstetric factors and the woman's views
- Where the viral load is 400 HIV RNA copies/mL at 36 weeks, PLCS is recommended

Mode of delivery Women taking Zidovudine mono therapy

- Delivery by PLCS is recommended for women, except elite controllers, taking zidovudine monotherapy irrespective of plasma viral load at the time of delivery

ART infusion

- Zidovudine infusion advised for women with viral load of > 1000 HIV RNA copies/mL who present in labour, or with ruptured membranes or who are admitted for planned CS.
- Zidovudine advised for untreated women presenting in labour or with ruptured membranes in whom the current viral load is not known

Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on mono-therapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)

Which of the following is a gram negative obligate anaerobe?

<input type="radio"/>	Bacteroides
<input type="radio"/>	Clostridia
<input type="radio"/>	Chlamydia
<input type="radio"/>	Escherichia coli
<input type="radio"/>	Salmonella

[Next question](#)

If you are asked about obligate anaerobes you are likely dealing with either:

- Clostridium **gram positive**
- Bacteroides (also called Prevotella) **gram negative**

There are some other obligate anaerobes but these are less clinically relevant or in the case of Actinomyces not appropriately classified :

- Porphyromonas gingivalis **causes gingivitis**
- Peptostreptococcus **typically commensal**
- Actinomyces **mostly facultative, one strain is an obligate anaerobe**

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**

- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- Corynebacterium **Facultative anaerobe**
- Listeria *non-spore forming* **Facultative anaerobe**
- Bacillus *spore forming* **Facultative anaerobe**
- Clostridium *spore forming* **Obligate anaerobe**
- Actinomyces *spore forming* **Facultative anaerobe**

GRAM NEGATIVE

Cocci

- Neisseria gonorrhoeae **Obligate aerobes**
- Neisseria meningitidis **Obligate aerobes**
- Moraxella catarrhalis **Obligate aerobes**

Bacilli OR "Rods"

- Bacteroides **Obligate anaerobes**
- Hemophilus influenzae **Facultative anaerobe**
- Klebsiella pneumoniae **Facultative anaerobe**
- Legionella pneumophila **Obligate aerobes**
- Pseudomonas aeruginosa **Obligate aerobes**
- Escherichia coli **Facultative anaerobe**
- Proteus mirabilis **Facultative anaerobe**
- Enterobacter cloacae **Facultative anaerobe**
- Helicobacter/Compylobacter (spiral rod) **Facultative anaerobes**
- Salmonella **Facultative anaerobe**

Intracellular

- Chlamydia **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- Treponema pallidum
- Borrelia burgdorferi (considered diderm rather than gram neg or positive)

A 29 year old patient who is 15 weeks pregnant comes to see you. She currently has chickenpox. She is concerned her baby may get congenital fetal varicella syndrome (FVS). What would you advise her the risk of this is?

<input type="radio"/>	0.4%
<input checked="" type="radio"/>	2.0%
<input type="radio"/>	5.0%
<input type="radio"/>	10.0%
<input type="radio"/>	20.0%

[Next question](#)

Congenital fetal varicella syndrome may occur if there is maternal varicella infection (chickenpox) during the 1st 20 weeks of gestation.

The risk of FVS to babies born to mothers who have chickenpox during the first 20 weeks gestation is 0.4% (1-12 weeks) - 2.0% (13-20 weeks).

If a mother has chickenpox in late pregnancy (5 days prior to delivery) then there is risk of neonatal varicella infection which may be severe.

FVS can cause the following abnormalities

- Hypoplasia of one limb
- Cicatricial lesions with a dermatomal distribution
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Varicella Zoster

Varicella Zoster is the virus responsible for Chicken pox and shingles.

If Chickenpox occurs during pregnancy the Green Top Guidelines advise the following:

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- Intravenous aciclovir should be given to all pregnant women with severe chickenpox
- Oral aciclovir should be prescribed for pregnant women with chickenpox if they present within 24 hours of the onset of the rash and if they are 20+0 weeks of gestation or beyond. Use of aciclovir before 20+0 weeks should also be considered

Which of the following is the most appropriate for diagnosis of Bacterial Vaginosis (BV)?

<input type="radio"/>	Amsel's criteria
<input type="radio"/>	Fitz-Hugh-Curtis score
<input type="radio"/>	Gardnerella vaginalis wet prep culture
<input type="radio"/>	Gardnerella vaginalis PCR
<input type="radio"/>	SAPS III score

Next question

The RCOG advise that the Amsel's criteria or Nugent's score should be used to diagnose BV as per BASHH 2012 guidance. The BASHH guidance itself actually suggests the Amsel or Nugents or Hay/Ison criteria can be used (and suggest Hay/Ison is used in GUM clinics)

Although high levels of Gardnerella vaginalis are associated with BV, detection of Gardnerella vaginalis does not confirm BV as the bacteria is present in up to 50% of women without BV.

Amsels criteria

3/4 criteria required for confirmation of BV

- 1. Thin, white, homogeneous discharge
- 2. Clue cells on microscopy of wet mount
- 3. pH of vaginal fluid >4.5
- 4. Release of a fishy odour on adding alkali (10% KOH)

The Nugent score

Estimates the relative proportions of bacterial morphotypes to give a score between 0 and 10

- <4 = normal
- 4-6 = intermediate

- >6 = BV

The Hay/Ison criteria

- Grade 1 (Normal): Lactobacillus morphotypes predominate
- Grade 2 (Intermediate): Mixed flora with some Lactobacilli present, but Gardnerella or Mobiluncus morphotypes also present
- Grade 3 (BV): Predominantly Gardnerella and/or Mobiluncus morphotypes. Few or absent Lactobacilli

Note

Fitz-Hugh-Curtis syndrome is a rare complication of PID in which perihepatitis develops.
SAPS III is a scoring system used to predict mortality on ITU

Bacterial Vaginosis

BV Key Points

- Most common cause of abnormal vaginal discharge in women of childbearing age.
- Overgrowth of anaerobic bacteria in the vagina. Fishy smelling discharge typical.
- Bacterial change causes more alkali environment with pH rise (pH >4.5)
- Amsel/Nugent/Hay-ison criteria commonly used to confirm diagnosis.
- Not considered a sexually transmitted disease
- More common in those with IUCD and smokers
- Treatment typically with 7 days oral metronidazole
- What is the incubation period of Scarlet Fever (in days)?

<input checked="" type="radio"/>	1-7
<input type="radio"/>	3-11
<input type="radio"/>	7-14
<input type="radio"/>	14-21
<input type="radio"/>	14-28

- Next question

-
- Typically 2-5 days (range 1-7).

- Incubation Periods
-

Disease	Incubation Period (days)
Chickenpox	14 (10-21)
Rubella	14 (12-23)
Influenza	1-3
Parvovirus (Fifth Disease)	4-20
Streptococcus pyogenes (Scarlet Fever)	1-7

Which streptococcus causes Scarlet fever?

<input type="radio"/>	Streptococcus viridans
<input checked="" type="radio"/>	Streptococcus pyogenes
<input type="radio"/>	Streptococcus anginosus
<input type="radio"/>	Streptococcus dysgalactiae
<input type="radio"/>	Streptococcus agalactiae

Next question

Group A beta haemolytic strep AKA strep.pyogenes causes Scarlet fever

Streptococcus

Streptococcus Key Points

- Gram positive cocci.
- They are often classified into alpha and beta haemolytic streptococci.

Alpha haemolytic streptococci include strep pneumoniae and viridans.

Beta haemolytic streptococcus are sub classified into a number of groups (see table below):

Group	Name	Causes
A	Streptococcus pyogenes	Scarlet fever Rheumatic fever Tonsillitis/pharyngitis Glomerulonephritis Toxic shock Necrotising fasciitis
B	Streptococcus agalactia	GBS disease of newborn Chorioamnionitis Endometritis
C	Streptococcus dysgalactiae	Pharyngitis Endocarditis Toxic Shock Necrotising fasciitis
D	Reclassified as Enterococcus	Colitis Endocarditis
F	Streptococcus anginosus	liver abscess
G	Group G streptococcus	Toxic Shock Necrotising fasciitis Vaginitis
H	Not significant pathogen in humans	

You are asked to see a 26 year old patient following her first visit to antenatal clinic. She is 9 weeks pregnant and bloods have shown her to be non-immune to Rubella. She is concerned about congenital rubella syndrome (CRS). What is the most appropriate advice to give?

<input checked="" type="radio"/>	Reassure that CRS is the result of infection during the first 6 weeks of pregnancy
<input type="radio"/>	Advise vaccination as soon as possible
<input type="radio"/>	Advise vaccination after birth and when breast feeding has ceased
<input checked="" type="radio"/>	Advise vaccination after birth regardless of breast feeding status
<input type="radio"/>	Advise vaccination prior to 16 weeks gestation

[Next question](#)

Congenital rubella infection that occurs after 16 weeks gestation does not typically cause fetal abnormalities. This however plays no part in vaccination advice.

Rubella vaccine is live and should not be given during pregnancy. The mother should be offered vaccination after giving birth. It is safe for the vaccine (typically given as combined MMR) to be administered if the mother is breastfeeding.

Rubella

Rubella Key Points

- Caused by Rubella virus:
- A togavirus
- Single-stranded RNA genome
- Transmission primarily via the respiratory route
- Viral replication occurs in the nasopharynx and lymph nodes
- Rubella infection in children and adults usually mild
- Incubation period 12-23 days
- Congenital rubella infection teratogenic with poor prognosis and significant complications (sensorineural deafness, cataracts and cardiac abnormalities most common)
- No specific treatment. Key is prevention through vaccination programme
- Vaccination is via live attenuated virus so cannot be given to pregnant women who are found to be non-immune.

A 29 year old women wants to speak to you regarding infections in pregnancy. Her two year old son has sensorineural deafness as a result of infection in her previous pregnancy. She tells you he was born with a "blueberry muffin" rash. What was the most likely infection?

<input type="radio"/>	Toxoplasmosis
<input type="radio"/>	Parvovirus B19
<input checked="" type="radio"/>	Rubella
<input type="radio"/>	Varicella Zoster
<input type="radio"/>	CMV

Next question

The "Blueberry muffin" rash is a descriptor for the rash seen in Congenital Rubella Syndrome. A similar petechial rash may also occur in CMV infection but shouldn't be termed "blueberry muffin"

Congenital Infections

TORCH infections (toxoplasmosis, other organisms, rubella, cytomegalovirus, and herpes simplex) can lead to congenital abnormalities. The key features are shown below:

Infection	Key Points	Clinical Features
CMV	Most common congenital infection Neonates typically affected when primary infection in pregnancy	Sensorineural Deafness Visual impairment Neurodevelopment delay Hepatosplenomegaly with jaundice Petecial Rash
Rubella	Vaccine has reduced incidence of CRS	Sensorineural Deafness Ophthalmic Defects <ul style="list-style-type: none"> Retinopathy, Glaucoma, Cataracts, Microphthalmia Cardiovascular Defects <ul style="list-style-type: none"> PDA, VSD, Pulmonary

Infection	Key Points	Clinical Features
		<p>stenosis</p> <p>CNS</p> <ul style="list-style-type: none"> Neurodevelopmental delay, Microcephaly, Meningoencephalitis <p>Others</p> <ul style="list-style-type: none"> Thrombocytopenia, Hepatosplenomegaly Late onset: diabetes, GH deficiency, thyroiditis
Toxoplasmosis	<p>Protazoan Infection</p> <p>Treatment with Spiramycin</p> <p>Neonatal sequelae worse if infection during first 10 weeks of pregnancy</p>	<p>Hydrocephalus</p> <p>Microcephaly</p> <p>Intracranial calcifications</p> <p>Ophthalmic Defects</p> <ul style="list-style-type: none"> Chorioretinitis, strabismus, blindness <p>Epilepsy</p> <p>Neurodevelopmental delay</p> <p>Thrombocytopenia</p> <p>Anaemia</p>
Herpes Simplex	<p>Genital HSV infection occurring in early pregnancy is associated: Increased risk of spontaneous abortion, IUGR, preterm labour and congenital herpes (rare 2 per 100,000 live births)</p>	<p>Neonatal Herpes can lead to severe neurological impairment and death</p>

A 30 year old woman comes to see you and advises she has felt a little unwell with diarrhoea and flu like symptoms. She is 28 weeks pregnant. Upon questioning she discloses she ate a soft cheese and deli meats platter 5 days earlier. A blood culture confirms listeria infection. What is the appropriate treatment (she has no known drug allergies)?

allergies)?

<input checked="" type="radio"/>	Cefuroxime
<input type="radio"/>	Cefalexin
<input type="radio"/>	Gentamicin
<input checked="" type="radio"/>	Amoxicillin
<input type="radio"/>	No treatment required

Next question

Amoxicillin or Ampicillin is 1st line.

Gentamicin can be used to treat listeria but not in pregnancy

Cefuroxime and Cefalexin are both cephalosporins and cephalosporins have no activity against listeria.

(Remember "LAME" to note organisms against which cephalosporins do not have activity: Listeria, Atypicals (including Mycoplasma and Chlamydia), MRSA, and enterococci)

Co-trimoxazole is 2nd line

Listeria infection during pregnancy carries a high risk of miscarriage, stillbirth or fetal sequelae so should be treated.

Duration of treatment will depend on local policies but 2-3 weeks is typical.

Listeriosis

Listeriosis Key Points

- Listeria Monocytogenes causative organism
- Source usually food, typically soft cheeses or cold meats
- Fetus can be infected via transplacental or ascending spread
- Incidence in pregnancy around 12 per 100,000
- 20 times more likely in pregnancy than general population (0.7 per 100,000)
- Typically mild illness in adults unless immunocompromised
- Causes chorioamnionitis and placental necrosis and granuloma formation
- Miscarriage, stillbirth and meningitis can result from listeria infection during pregnancy.
- Fetal mortality rate is quoted at 20-30%* Note some sources quote up to 50%
- Treatment is typically with amoxicillin for 2-3 weeks

*Sources:

1. www.cdc.gov

2. Janakiraman V; Listeriosis in pregnancy: diagnosis, treatment, and prevention. Rev Obstet Gynecol. 2008 Fall;1(4):179-85

You are asked to see a 30 year old women who is 12 weeks pregnant. She complains of frothy yellow vaginal discharge and vaginal soreness. A wet smear is sent and microscopy reveals Trichomoniasis. What is the most appropriate treatment (she has no known drug allergies)?

<input type="radio"/>	Amoxicillin 500mg TDS 7 days
<input type="radio"/>	Metronidazole 2g orally single dose
<input checked="" type="radio"/>	Metronidazole 400mg TDS 7 days
<input type="radio"/>	Spiramycin 1.5g BD 14 days
<input type="radio"/>	Amoxicillin 1g TDS 14 days

[Next question](#)

Metronidazole is 1st line and is safe during pregnancy and whilst breastfeeding.

The RCOG advises the single dose regimen is best avoided in pregnancy. Although compliance is better the failure rate is higher with the single dose regime.

Also note if the patient is HIV positive then metronidazole 500mg BD for 7 days is advised by BASHH and is more effective than the single dose regime.

Trichomoniasis

Trichomoniasis Key Points

- Trichomoniasis Vaginalis causative organism
- Flagellate protazoan
- Sexually transmitted
- Up to 50% of women have no symptoms
- Vaginal discharge is most common symptom (up to 70%). Classic discharge described as frothy and yellow-green (occurs in 20% of infected women) but can be variable. Other symptoms are vulvovaginal soreness and itching, offensive odour, lower abdo pain, dysuria and dyspareunia
- Clinical findings typically vulval inflammation. Rarely strawberry cervix (cervicitis - 2% of cases)
- Diagnosis wet smear microscopy or culture/PCR
- Metronidazole 400 to 500 mg twice a day for 5 to 7 days is 1st line treatment for men and women (including those who are breastfeeding or pregnant)

Which HPV subtypes are responsible for around 70% of HPV related cancers?

<input type="radio"/>	1 and 2
<input type="radio"/>	6 and 8
<input type="radio"/>	8 and 12
<input type="radio"/>	12 and 16
<input type="radio"/>	16 and 18

[Next question](#)

HPV

Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

You are asked to see a 33 year old woman who is 16 weeks pregnant. She is HIV positive. She complains of frothy yellow vaginal discharge and vaginal soreness. A wet smear is sent and microscopy reveals Trichomoniasis. What is the most appropriate treatment (she has no known drug allergies)?

<input type="radio"/>	Metronidazole 2g orally single dose
<input type="radio"/>	Metronidazole 400mg BD 5 days
<input type="radio"/>	Metronidazole 500mg BD 7 days

<input type="radio"/>	Spiramycin 1.5g BD 14 days
<input type="radio"/>	Spiramycin 1.5g BD 21 days

Next question

Metonidazole is 1st line in all patients (i.e. men, women, pregnant women, breastfeeding women and HIV positive patients).

The 2g single dose has better compliance but increased failure rates so is never preferred over the longer courses.

In HIV positive patients 500mg BD for 7 days is advised by BASHH. For other patient groups 400mg BD for 5 to 7 days is advised.

Trichomoniasis

Trichomoniasis Key Points

- Trichomoniasis Vaginalis causative organism
- Flagellate protazoan
- Sexually transmitted
- Up to 50% of women have no symptoms
- Vaginal discharge is most common symptom (up to 70%). Classic discharge described as frothy and yellow-green (occurs in 20% of infected women) but can be variable. Other symptoms are vulvovaginal soreness and itching, offensive odour, lower abdo pain, dysuria and dyspareunia
- Clinical findings typically vulval inflammation. Rarely strawberry cervix (cervicitis - 2% of cases)
- Diagnosis wet smear microscopy or culture/PCR
- Metronidazole 400 to 500 mg twice a day for 5 to 7 days is 1st line treatment for men and women (including those who are breastfeeding or pregnant)

What percentage of pregnant women have asymptomatic vaginal colonisation with candida?

<input type="radio"/>	5%
<input type="radio"/>	40%
<input type="radio"/>	75%
<input type="radio"/>	90%

<input type="radio"/>	>99%
-----------------------	------

Next question

Up to 40% are asymptotically colonised in pregnancy compared to 20% of non-pregnant women of childbearing age.

Candida

Candida Key Points

- 90% of genital candida infections are the result of *Candida albicans*
- 20% of women of childbearing age are asymptotic colonisers of *Candida* species as part of their normal vaginal flora. This increases to 40% in pregnancy
- Symptomatic candida infections more common in pregnancy
- Topical Imidazole anti-fungals should be used in pregnancy
- Symptoms of candida include: erythema often with satellite lesions, itching, soreness and creamy white discharge.

You receive a swab result from a patient who had complained of odorous vaginal discharge. It confirms bacterial vaginosis (BV). Which pathogen is most commonly associated with BV?

<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Streptococcus angiosus
<input type="radio"/>	Treponema Pallidum
<input type="radio"/>	Candida albicans
<input type="radio"/>	Enterococcus

Next question

BV typically presents as an increase in vaginal discharge and vaginal malodor caused by a change in vaginal bacterial flora. PV discharge due to BV is typically grey fluid that adheres to the vaginal mucosa.

BV is a polymicrobial infection. *Gardnerella* is the most commonly associated pathogen.

Other associated bacteria include *Lactobacillus* species, *Prevotella*, *Mobiluncus*, *Bacteroides*, *Peptostreptococcus*,

Fusobacterium, Veillonella, Eubacterium species, Mycoplasma hominis, Ureaplasma urealyticum and Streptococcus viridans.

Bacterial Vaginosis

BV Key Points

- Most common cause of abnormal vaginal discharge in women of childbearing age.
- Overgrowth of anaerobic bacteria in the vagina. Fishy smelling discharge typical.
- Bacterial change causes more alkali environment with pH rise (pH >4.5)
- Amsel/Nugent/Hay-ison criteria commonly used to confirm diagnosis.
- Not considered a sexually transmitted disease
- More common in those with IUCD and smokers
- Treatment typically with 7 days oral metronidazole

What is the incubation period for Varicella Zoster infection?

<input checked="" type="radio"/>	2-3 days
<input type="radio"/>	5-7 days
<input type="radio"/>	5-14 days
<input checked="" type="radio"/>	10-21 days
<input type="radio"/>	21-28 days

Next question

Chickenpox typically has an incubator period of around 14 days. Range 10-21 days

Incubation Periods

Disease	Incubation Period (days)
Chickenpox	14 (10-21)

Disease	Incubation Period (days)
Rubella	14 (12-23)
Influenza	1-3
Parvovirus (Fifth Disease)	4-20
Streptococcus pyogenes (Scalet Fever)	1-7

Source CDC

Figures in brackets period range, preceding figure is typical incubation period

Which are the 2 major onco-proteins associated with high risk HPV?

<input type="radio"/>	L1 and L2
<input type="radio"/>	L5 and L6
<input type="radio"/>	P53 and P55
<input type="radio"/>	L3 and E5
<input checked="" type="radio"/>	E6 and E7

Next question

E6 and E7 are the major onco-proteins that inactivate tumour suppressor genes p53 and pRb respectively.

HPV

Gardasil® is a quadrivalent vaccine against HPV Types 6, 11, 16, and 18

HPV types 16 and 18 are responsible for 70% of cases of HPV related cancers. They are considered the most important high risk genotypes of HPV. As well as cervical cancer they are associated with cancers of the oropharynx and anogenital region.

There are over 100 genotypes of HPV including several other high risk HPV types.

HPV is thought to induce cancer via onco-proteins. The primary onco-proteins are E6 and E7 which inactivate two tumor suppressor proteins, p53 (inactivated by E6) and pRb (inactivated by E7)

HPV genotypes 6 and 11 are low risk and cause anogenital warts.

What is the name given to the glycoprotein layer of the Oocyte that binds spermatozoa and is essential for the acrosome reaction to take place

<input type="radio"/>	Cumulus Oophorus
<input type="radio"/>	Corona Radiata
<input type="radio"/>	Plasma Membrane
<input checked="" type="radio"/>	Zona Pellucida
<input type="radio"/>	Zona Vitelline

[Next question](#)

The Zona Pellucida is essential for sperm binding and initiating the acrosome reaction.

The Corona Radiata is part of the Cumulus Oophorus which is the outermost cell layer of the Oocyte. In most texts this layer is just referred to as the Corona Radiata.

Oocyte

Diagram illustrating layers of the Oocyte

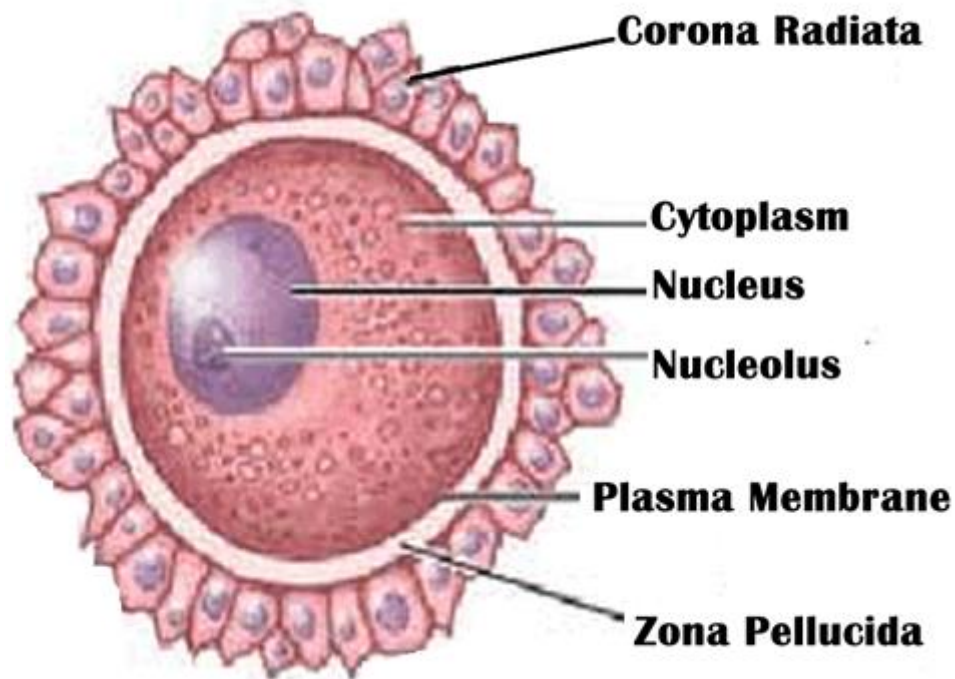


Image sourced from Wikipedia



A 29 year old women wants to speak to you regarding infections in pregnancy. Her two year old son has sensorineural deafness as a result of infection in her previous pregnancy. What was the most likely infection?

<input type="radio"/>	Coxsackie Virus
<input type="radio"/>	Toxoplasmosis
<input type="radio"/>	Rubella
<input checked="" type="radio"/>	CMV
<input type="radio"/>	HSV type 2

Next question

The TORCH infections can all lead to deafness. CMV is the most common of these infections.

[Congenital Infections](#)

TORCH infections (toxoplasmosis, other organisms, rubella, cytomegalovirus, and herpes simplex) can lead to congenital abnormalities. The key features are shown below:

Infection	Key Points	Clinical Features
CMV	Most common congenital infection Neonates typically affected when primary infection in pregnancy	Sensorineural Deafness Visual impairment Neurodevelopment delay Hepatosplenomegaly with jaundice Petecial Rash
Rubella	Vaccine has reduced incidence of CRS	<p>Sensorineural Deafness Ophthalmic Defects</p> <ul style="list-style-type: none"> Retinopathy, Glaucoma, Cataracts, Microphthalmia <p>Cardiovascular Defects</p> <ul style="list-style-type: none"> PDA, VSD, Pulmonary stenosis <p>CNS</p> <ul style="list-style-type: none"> Neurodevelopmental delay, Microcephaly, Meningoencephalitis <p>Others</p> <ul style="list-style-type: none"> Thrombocytopenia, Hepatosplenomegaly Late onset: diabetes, GH deficiency, thyroiditis
Toxoplasmosis	Protazoan Infection Treatment with Spiramycin Neonatal sequelae worse	Hydrocephalus Microcephaly Intracranial calcifications Ophthalmic Defects

Infection	Key Points	Clinical Features
	if infection during first 10 weeks of pregnancy	<ul style="list-style-type: none"> Chorioretinitis, strabismus, blindness Epilepsy Neurodevelopmental delay Thrombocytopenia Anaemia
Herpes Simplex	Genital HSV infection occurring in early pregnancy is associated: Increased risk of spontaneous abortion, IUGR, preterm labour and congenital herpes (rare 2 per 100,000 live births)	Neonatal Herpes can lead to severe neurological impairment and death

What is the most common cause of sepsis in the puerperium?

<input type="radio"/>	Mastitis
<input checked="" type="radio"/>	Urinary tract infection
<input type="radio"/>	Pneumonia
<input checked="" type="radio"/>	Endometritis
<input type="radio"/>	Soft tissue infection

Next question

All of the above are documented sources of puerperal infection however the genital tract is the most common source with puerperal sepsis following endometritis.

Puerperal Sepsis

Puerperal Sepsis Key Points

- Defined as sepsis occurring after birth until 6 weeks postnatal.
- Most commonly result of uterine infection (endometritis)
- Rise in number of deaths in recent years attributable to Group A streptococcus infection
- Puerperal sepsis responsible for 10 deaths per year in the UK
- Severe sepsis with acute organ dysfunction has a mortality rate of 20 to 40%. Septic shock mortality 60%

Red Flag Signs

- Temp > 38°C
- Sustained tachycardia > 90 bpm
- Breathlessness (respiratory rate more than 20 breaths/minute; a serious symptom)
- Abdominal or chest pain
- Diarrhoea and/or vomiting
- Uterine or renal angle pain and tenderness
- Woman is generally unwell or seems unduly anxious or distressed

Management

- Blood cultures prior to antibiotic administration
- Administer broad-spectrum antibiotic within 1 hour of recognition of severe sepsis. RCOG suggests a combination of either piperacillin/tazobactam or a carbapenem plus clindamycin but notes consultation with microbiologist may be warranted.
- Measure serum lactate (> 4 mmol/l is indicative of tissue hypoperfusion)
- Routine Bloods INC FBC, U&E, CRP
- Other tests as per symptoms e.g. throat swab, imaging, MRSA swab if not already done
- If hypotension and/or a serum lactate > 4 mmol/l:

Deliver an initial minimum 20 ml/kg of crystalloid or an equivalent

Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain MAP above 65 mmHg

- If persistent hypotension despite fluid resuscitation (septic shock) and/or serum lactate greater than 4 mmol/l:

Achieve a central venous pressure of 8 mmHg

Achieve a central venous oxygen saturation 70% or mixed venous oxygen saturation 65%

Source: Greentop Guideline No. 64b 2012

Regarding urinary tract infection (UTI) in pregnancy. What is the most common causative organism of urinary tract infection?

<input checked="" type="radio"/>	Escherichia coli
<input type="radio"/>	Staphylococcus aureus
<input type="radio"/>	Proteus mirabilis
<input type="radio"/>	Candida albicans
<input type="radio"/>	enterococci

[Next question](#)

Although all of the above can cause UTI's. Escherichia coli is by far the most common accounting for around 80% of UTI's.

Urinary Tract Infection In Pregnancy

NICE guidance on UTI in pregnancy was updated in July 2015

The following is advised:

- Send urine for culture and sensitivity from all women in whom UTI is suspected before starting empirical antibiotics and 7 days after antibiotic treatment is completed.
- Prescribe an antibiotic to all women with suspected UTI (awaiting culture result is not advised)
- Although local antibiotic resistance needs to be taken into account the following is advised in terms of antibiotic selection:

1. Nitrofurantoin 50 mg QDS (or 100 mg MR BD) for 7 days.
2. Trimethoprim 200 mg twice daily, for 7 days

- **Give folic acid 5 mg OD if it is the 1st trimester**
- **Do not give trimethoprim if the woman is folate deficient, taking a folate antagonist, or has been treated with trimethoprim in the past year.**

3. Cefalexin 500 mg BD (or 250 mg 6qds) for 7 days

Which organism is the most common cause of puerperal sepsis?

<input checked="" type="radio"/>	Group A Streptococcus
<input type="radio"/>	Group B Streptococcus
<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Staphylococcus aureus
<input type="radio"/>	Enterococcus

[Next question](#)

Group A Streptococcus was directly responsible for 13 of the 29 maternal deaths from infection in the UK during 2006-2008.

Other associated organisms: E Coli, staph aureus (inc MRSA), Streptococcus pneumoniae, Clostridium septicum and Morganella morganii

Puerperal Sepsis

Puerperal Sepsis Key Points

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Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain MAP above 65 mmHg

- If persistent hypotension despite fluid resuscitation (septic shock) and/or serum lactate greater than 4 mmol/l:

Achieve a central venous pressure of 8 mmHg

Achieve a central venous oxygen saturation 70% or mixed venous oxygen saturation 65%

Source: Greentop Guideline No. 64b 2012

Which pathogen is the most common causative organism in female urinary tract infection?

<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Staphylococcus Aureus
<input checked="" type="radio"/>	Escherichia Coli
<input type="radio"/>	Neisseria gonorrhoea
<input type="radio"/>	Gardnerella vaginalis

Next question

E Coli is the most common cause accounting for around 80% of UTIs.

Infections

Condition/Infection	Most Common Causative Organism
Urinary Tract Infection	Escherichia Coli
Skin/Superficial Wound/IV Line	Staphylococcus Aureus
Cellulitis/Erysipelas	Streptococcus Pyogenes (Group A strep)
Bacterial Vaginosis	Gardnerella vaginalis (polymicrobial)
Endometritis	Polymicrobial

You see a 23 year old women in clinic with cervicitis. Which gram negative intracellular organism is most likely to be responsible?

<input checked="" type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Neisseria gonorrhoeae
<input type="radio"/>	Gardnerella vaginalis
<input type="radio"/>	Treponema pallidum
<input type="radio"/>	Mycoplasma hominis

[Next question](#)

Chlamydia trachomatis (D-K subtypes) is the most common cause in this age group and fits the descriptors given.

Bacteria

GRAM POSITIVE

Cocci

- Staphylococcus **Facultative anaerobes**

- Streptococcus **Facultative anaerobes**

Bacilli OR "Rods"

- Corynebacterium **Facultative anaerobe**
- Listeria *non-spore forming* **Facultative anaerobe**
- Bacillus *spore forming* **Facultative anaerobe**
- Clostridium *spore forming* **Obligate anaerobe**
- Actinomyces *spore forming* **Facultative anaerobe**

GRAM NEGATIVE

Cocci

- Neisseria gonorrhoeae **Obligate aerobes**
- Neisseria meningitidis **Obligate aerobes**
- Moraxella catarrhalis **Obligate aerobes**

Bacilli OR "Rods"

- Bacteroides **Obligate anaerobes**
- Hemophilus influenzae **Facultative anaerobe**
- Klebsiella pneumoniae **Facultative anaerobe**
- Legionella pneumophila **Obligate aerobes**
- Pseudomonas aeruginosa **Obligate aerobes**
- Escherichia coli **Facultative anaerobe**
- Proteus mirabilis **Facultative anaerobe**
- Enterobacter cloacae **Facultative anaerobe**
- Helicobacter/Compylobacter (spiral rod) **Facultative anaerobes**
- Salmonella **Facultative anaerobe**

Intracellular

- Chlamydia **Obligate aerobes**

Spirochaetes OR Spiral Shaped

- Treponema pallidum
- Borrelia burgdorferi (considered diderm rather than gram neg or positive)

You are asked to see a patient on the medial ward who has a mild pyrexia but complained of vaginal discharge when giving a history. A swab is sent for microscopy and culture. The initial microscopy reveals clue cells. What infection are these a feature of?

<input type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Group B streptococcus
<input checked="" type="radio"/>	Bacterial Vaginosis
<input type="radio"/>	Actinomycosis
<input type="radio"/>	Neisseria gonorrhoea

[Next question](#)

Clue cells are epithelial cells of the vagina that get their distinctive appearance due to being covered with bacteria

Gardnerella vaginalis is the main causative organism of bacterial vaginosis. It is also one of the few gram-indeterminate bacteria

Pyrexia is not a feature of bacterial vaginosis. This is a red herring. Note the patient is on a medical ward and has been admitted for a non-gynaecological cause which may well explain her mild pyrexia.

In Actinomycosis sulphur granules are seen

Bacterial Vaginosis

BV Key Points

- Most common cause of abnormal vaginal discharge in women of childbearing age.
- Overgrowth of anaerobic bacteria in the vagina. Fishy smelling discharge typical.
- Bacterial change causes more alkali environment with pH rise (pH >4.5)
- Amsel/Nugent/Hay-Ison criteria commonly used to confirm diagnosis.
- Not considered a sexually transmitted disease
- More common in those with IUCD and smokers
- Treatment typically with 7 days oral metronidazole
- What is the incubation period of Rubella (in days)?

<input type="radio"/>	2-5
-----------------------	-----

<input type="radio"/>	4-11
<input type="radio"/>	7-14
<input checked="" type="radio"/>	12-23
<input type="radio"/>	21-28

• Next question

-
-

Rubella typically has an incubation period of around 14 days. Range 12-23 days

- **Incubation Periods**

-

Disease	Incubation Period (days)
Chickenpox	14 (10-21)
Rubella	14 (12-23)
Influenza	1-3
Parvovirus (Fifth Disease)	4-20
Streptococcus pyogenes (Scarlet Fever)	1-7

-

Source CDC

Figures in brackets period range, preceding figure is typical incubation period

A 17 year old patient returns to the ward 3 days after delivery. The delivery was complicated by PROM and the baby was eventually delivered via C-section after failed instrumental delivery. The mother is currently pyrexial with a temperature of 38.5°C, pulse is 110 and she complains of lower abdominal pain with blood stained vaginal discharge. She is tender suprapubically. What is the likely causative organism?

<input type="radio"/>	Neisseria Gonorrhoea
<input type="radio"/>	Actinomyces israelii

<input type="radio"/>	Klebsiella
<input type="radio"/>	Non-infective aetiology
<input checked="" type="radio"/>	Polymicrobial

[Next question](#)

This patient has endometritis. She has a number of risk factors for endometritis:

- C-section (biggest risk factor)
- PROM
- Mother's age at extremes of reproductive span

It is usually caused by 2-3 organisms i.e. it is polymicrobial. Species may include:

Staphylococcus, Streptococcus, Escherichia coli, Klebsiella, Chlamydia trachomatis, Proteus, Enterobacter, Gardnerella vaginalis, Neisseria, Bacteroids, Peptostreptococcus spp, Mycoplasma spp, Ureaplasma spp, tuberculosis.

Infections

Condition/Infection	Most Common Causative Organism
Urinary Tract Infection	Escherichia Coli
Skin/Superficial Wound/IV Line	Staphylococcus Aureus
Cellulitis/Erysipelas	Streptococcus Pyogenes (Group A strep)
Bacterial Vaginosis	Gardnerella vaginalis (polymicrobial)
Endometritis	Polymicrobial

What is the incidence of listeriosis in pregnancy?

<input type="radio"/>	1 in 1,000
<input type="radio"/>	1 in 10,000
<input type="radio"/>	1 in 100,000
<input type="radio"/>	25 in 10,000
<input type="radio"/>	25 in 1000

Next question

Typically figures quoted are 12 per 100,000 or 1 per 10,000.

Listeriosis

Listeriosis Key Points

- Listeria Monocytogenes causative organism
- Source usually food, typically soft cheeses or cold meats
- Fetus can be infected via transplacental or ascending spread
- Incidence in pregnancy around 12 per 100,000
- 20 times more likely in pregnancy than general population (0.7 per 100,000)
- Typically mild illness in adults unless immunocompromised
- Causes chorioamnionitis and placental necrosis and granuloma formation
- Miscarriage, stillbirth and meningitis can result from listeria infection during pregnancy.
- Fetal mortality rate is quoted at 20-30%* Note some sources quote up to 50%
- Treatment is typically with amoxicillin for 2-3 weeks

*Sources:

1. www.cdc.gov

2. Janakiraman V; Listeriosis in pregnancy: diagnosis, treatment, and prevention. Rev Obstet Gynecol. 2008 Fall;1(4):179-85

You are asked to explain to a patient the results of her Rubella screen. They are as follows:

- Rubella IgG +ve
- Rubella IgM -ve

What does this indicate?

<input checked="" type="radio"/>	Acute Rubella Infection
<input type="radio"/>	Past Rubella Infection
<input checked="" type="radio"/>	Immunity to Rubella
<input type="radio"/>	Patient susceptible to Rubella
<input type="radio"/>	Chronic Rubella Infection

[Next question](#)

IgM rise is typically seen with acute infection. IgG is produced in response to infection but is produced later than IgM. IgG is also produced in response to vaccination.

If IgG and IgM are negative the patient is susceptible to Rubella infection.

If IgG +ve and IgM -ve the patient should be considered immune.

If IgM +ve this suggests acute infection or false positive IgM (not uncommon)

Rubella

Rubella Key Points

- Caused by Rubella virus:
- A togavirus
- Single-stranded RNA genome
- Transmission primarily via the respiratory route
- Viral replication occurs in the nasopharynx and lymph nodes
- Rubella infection in children and adults usually mild
- Incubation period 12-23 days
- Congenital rubella infection teratogenic with poor prognosis and significant complications (sensorineural deafness, cataracts and cardiac abnormalities most common)
- No specific treatment. Key is prevention through vaccination programme
- Vaccination is via live attenuated virus so cannot be given to pregnant women who are found to be non-immune.

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- Rubella IgG +ve
- Rubella IgM +ve

What does this indicate?

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<input type="radio"/>	Immunity to Rubella
<input type="radio"/>	Patient susceptible to Rubella
<input type="radio"/>	Past Rubella Infection

[Next question](#)

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According to NICE guidance what should be used for wound cleansing for the first 48 hours postoperatively?

<input type="radio"/>	Tap water
<input checked="" type="radio"/>	Sterile saline
<input type="radio"/>	Povidone iodine solution
<input type="radio"/>	Chlorhexidine solution
<input type="radio"/>	Hydrogen peroxide

[Next question](#)

Principles of wound care is required knowledge according to the RCOG syllabus.

NICE guidelines (CG74) advise the following regarding postoperative wound management

- Use sterile saline for wound cleansing up to 48 hours after surgery.
- Advise patients that they may shower safely 48 hours after surgery.
- Use tap water for wound cleansing after 48 hours if the surgical wound has separated or has been surgically opened to drain pus.
- Do not use topical antimicrobial agents for surgical wounds that are healing by primary intention to reduce the risk of surgical site infection

Surgical Site Infections

A 26 year old lady comes to see you in the antenatal clinic. She is 8 weeks pregnant and is concerned as she has a new cat and her friend told her she shouldn't be changing cat litter when pregnant. You send bloods which show high High IgM for toxoplasmosis gondii. Which of the following is an appropriate treatment option?

<input type="radio"/>	Metronidazole
<input type="radio"/>	Mebendazole
<input type="radio"/>	Erythromycin

<input type="radio"/>	Spiramycin
<input type="radio"/>	Rifampicin

Next question

There are 2 treatment options:

- Spiramycin ASAP if fetus not infected or status of the fetus not known. This reduces risk of transplacental infection. This is continued until term, or until fetal infection is documented.
- Pyrimethamine, sulfadiazine and folinic acid where fetal infection is known e.g. positive amniotic fluid PCR. Monitoring for haemotoxicity required. Pyrimethamine should be avoided in the 1st trimester as teratogenic

Congenital Infections

TORCH infections (toxoplasmosis, other organisms, rubella, cytomegalovirus, and herpes simplex) can lead to congenital abnormalities. The key features are shown below:

Infection	Key Points	Clinical Features
CMV	Most common congenital infection Neonates typically affected when primary infection in pregnancy	Sensorneural Deafness Visual impairment Neurodevelopment delay Hepatosplenomegaly with jaundice Petecial Rash
Rubella	Vaccine has reduced incidence of CRS	Sensorneural Deafness Ophthalmic Defects <ul style="list-style-type: none"> • Retinopathy, Glaucoma, Cataracts, Microphthalmia Cardiovascular Defects <ul style="list-style-type: none"> • PDA, VSD, Pulmonary stenosis

Infection	Key Points	Clinical Features
		<p>CNS</p> <ul style="list-style-type: none"> Neurodevelopmental delay, Microcephaly, Meningoencephalitis <p>Others</p> <ul style="list-style-type: none"> Thrombocytopenia, Hepatosplenomegaly Late onset: diabetes, GH deficiency, thyroiditis
Toxoplasmosis	<p>Protazoan Infection</p> <p>Treatment with Spiramycin</p> <p>Neonatal sequelae worse if infection during first 10 weeks of pregnancy</p>	<p>Hydrocephalus</p> <p>Microcephaly</p> <p>Intracranial calcifications</p> <p>Ophthalmic Defects</p> <ul style="list-style-type: none"> Chorioretinitis, strabismus, blindness <p>Epilepsy</p> <p>Neurodevelopmental delay</p> <p>Thrombocytopenia</p> <p>Anaemia</p>
Herpes Simplex	<p>Genital HSV infection occurring in early pregnancy is associated: Increased risk of spontaneous abortion, IUGR, preterm labour and congenital herpes (rare 2 per 100,000 live births)</p>	<p>Neonatal Herpes can lead to severe neurological impairment and death</p>

What is the most common causative organism in FitzHughCurtis syndrome and ophthalmia neonatorum?

	Trichomoniasis vaginalis
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<input type="radio"/>	Neisseria gonorrhoeae
<input type="radio"/>	Toxoplasma Gondii
<input checked="" type="radio"/>	Chlamydia trachomatis
<input type="radio"/>	Streptococcus viridans

Next question

FitzHughCurtis syndrome is a rare complication of pelvic inflammatory disease where a perihepatitis develops and causes liver capsule inflammation with adhesions. Chlamydia and Gonorrhoea are the 2 most common pathogens.

ophthalmia neonatorum or neonatal conjunctivitis occurs when the neonate acquires an eye infection during delivery. Chlamydia and Gonorrhoea are the 2 most common pathogens with the former the more common of the two.

Chlamydia

Chlamydia Key Points

- Most prevalent STI in the UK
- >50% men and 80% of women asymptomatic after initial infection
- Obligate intracellular bacteria

Which of the following does not increase the risk of HIV acquisition?

<input checked="" type="radio"/>	Bacterial Vaginosis
<input type="radio"/>	Herpes Simplex
<input type="radio"/>	Trichomoniasis
<input checked="" type="radio"/>	Male circumcision
<input type="radio"/>	Gonorrhoea

Next question

Acquiring HIV & STIs

The presence of an inflammatory STD significantly increases susceptibility to HIV, with a relative increased risk of acquiring HIV of 1.5 to 2.2. The risk effect is greater for men than for women. Multiple studies have demonstrated that genital ulcer disease increases the risk of HIV acquisition, with active clinical lesions increasing the risk by about 2.1 to 2.7 fold. The increased link between HSV and HIV acquisition is well established.

BV has been linked to increased risk of HIV as well as possible increased risk of transmission.

Circumcised males have been shown to have a lower risk of HIV acquisition.

Transmitting HIV & STIs

The risk of transmitting HIV is affected when an HIV-infected person has either an inflammatory or ulcerative STD.

Gonorrhea, chlamydia, and trichomoniasis significantly increase HIV shedding from the genital tract. Furthermore, the treatment of NSU, gonococcal or chlamydial infection reduces the semen HIV RNA levels in HIV-infected men.

Similarly, treating cervicitis caused by gonorrhea, chlamydia, or trichomonas reduces HIV RNA levels in cervical or vaginal secretions in HIV-infected women.

HIV in Pregnancy

Key Points HIV in Pregnancy

- HIV is a lentivirus (retrovirus)
- Primarily infects CD4+ T-helper cells
- UK prevalence around 2 per 1000 live births (3.5 per 1000 in London and 0.7 per 1000 in rest of England)
- Rate of HIV Mother to child transmission was 25% in 1993. With retroviral therapy and appropriate care rate had decreased to 1.2% by 2006
- Use of highly active antiretroviral therapy (HAART) can reduce vertical transmission rate to <1%
- HIV can be transmitted via breastfeeding so breastfeeding should be avoided regardless of viral load.

Management HIV during labour

Mode of delivery Women taking cART

- For women with a plasma viral load of < 50 HIV RNA copies/mL at 36 weeks, and in the absence of obstetric contraindications, a planned vaginal delivery is recommended
- Elite controllers (Untreated women with a CD4 cell count >350 cells/L and a viral load of < 50 HIV RNA copies/mL) can start ART and aim for vaginal delivery
- For women with a plasma viral load of 50 to 399 HIV RNA copies/mL at 36 weeks, PLCS should be considered taking into account the actual viral load, the trajectory of the viral load, length of time on treatment, adherence issues, obstetric factors and the woman's views
- Where the viral load is 400 HIV RNA copies/mL at 36 weeks, PLCS is recommended

Mode of delivery Women taking Zidovudine mono therapy

- Delivery by PLCS is recommended for women, except elite controllers, taking zidovudine monotherapy irrespective of plasma viral load at the time of delivery

ART infusion

- Zidovudine infusion advised for women with viral load of > 1000 HIV RNA copies/mL who present in labour, or with ruptured membranes or who are admitted for planned CS.
- Zidovudine advised for untreated women presenting in labour or with ruptured membranes in whom the current viral load is not known

Infant Antiretroviral therapy(ART)

- Low risk birth (maternal viral load <50 HIV RNA copies/mL at 36 weeks or PLCS delivery whilst on mono-therapy) infant should receive Zidovudine mono-therapy for 4 weeks.
- High risk birth infant should receive triple combination PEP

Infant testing

- Standard infant HIV testing schedule for formula fed infants. If breastfed (against advice) then infants should have monthly HIV tests

Source: BHIVA guidelines for the management of HIV infection in pregnant women 2012 (2014 update)
Regarding pelvic Gonorrhoea infection in women. What percentage of cases are asymptomatic?

<input type="radio"/>	5%
<input type="radio"/>	15%
<input type="radio"/>	30%
<input checked="" type="radio"/>	50%
<input type="radio"/>	90%

According to NICE up to 50% of cases of Gonorrhoea are asymptomatic in women and most will have no abnormal findings on examination.

When present symptoms include:

- Increased/change in vaginal discharge (up to 50% of women)

- Dysuria (12% of women)
- Intermenstrual and/or postcoital bleeding
- Dyspareunia

Gonorrhoea