STIs: Texts

Text A

How to perform an STIs check (a full STI includes chlamydia, gonorrhoea, trichomonas, mycoplasma genitalium, syphilis, HIV, Hep B Hep C. If there is a genital sore present, collect tests for genital ulcer disease (GUD).

Taking a patient history

- Take a reproductive history including:
  - Menstrual, obstetric, contraceptive, Pap smear history.
- Take a sexual history and assess sexually transmitted infection (STI)risk including:
  - New partner, multiple partners, or partner has multiple partners, regular/casual partners
  - Condom use -recent history of STI-nature of sexual intercourse
  - Do they have oral, vaginal, anal intercourse
- Assess Blood Borne Virus (BBV) risk:
- Injecting drug use (IDU), body alteration e.g. tattoos, body piercing, cultural incisions etc.
- Ask about symptoms
- Urethral (penile)/vaginal discharge
- Onset, colour, odour
- Pain or burning on passing urine (dysuria)
- Abnormal vaginal or rectal bleeding
- Genital rashes, lumps or sores
- Itching/discomfort in the perineum, perianal or pubic region
- Low abdominal pain in women
- Pain during sex (dyspareunia)
- If an STI is not treated it may cause symptoms such as fever, muscle/joint pains, rashes, enlarged lymph nodes

Text B

Administration procedure for Benzathine penicillin

Schedule	**4**	**Benzathine penicillin (Bicillin LA®)**		**DTP IHW/SM R&IP/ IPAP/SRH**
Form	**Strength**	**Route of administration**	**Recommended dosage**	**Duration**
Pre-filled	900mg in 2.3 mL	IM	**Adult only** 1.8 g (give 2 separate injections)	Stat
Provide Consumer medicine Information: may lead to development of diarrhoea, nausea and inflammation at injection site. Patients should report development of diarrhoea immediately to health professional if you get severe pain in the muscle where the injection was given				
Note: Be aware a cross-reactivity in patients with allergy to carbapenems and/or cephalosporins. Be aware that severe colitis due to CI. Difficile can be caused by penicillin. If the patient develops severe diarrhoea contact the MO/NP immediately				
Contraindication: In patients with of hypersensitivity to penicillin				
Use in Pregnancy: Category A				
Administration tips: see Administration tips for benzathine penicillin (Bicillin LA) and procaine penicillin.				

Text C

Description and treatment of common STIs

	Genital warts	Genital herpes	Syphilis	Donovanosis
Typical sores	Solid lumps, may be smooth or warty, asymmetrical, no ulceration and no inflammation of surrounding skin	Painful skin splits or cluster of blisters, which break down to from small shallow ulcers, with irregular borders surrounding skin may be inflamed	**Primary** (chancre) one or few sores, 1-2cm with well defined edges **Secondary** (Condylomata lata) multiple, often perianal skin, symmetrical and flat	Commences as one or more sores of nodules and may join to form large destructive ulcers which are beefy red and bleed easily
Painful?	No	Painful or itchy	Usually painless	Usually painless
Enlarged lymph nodes?	No	Yes/no	Yes/no	No
Heals without treatment?	No	Yes, within 1-2 weeks but usually recurs	Yes, Primary sores within 2-3 weeks, secondary sores may come and go over 12 months	No, continues to become larger over time
Treatment	Multiple treatment modalities. Exclude syphilis before treating	Valaciclovir	Commence presumptive treatment for syphilis Bicillin LA® If donovanosis is confirmed add azithromycin	

Text D

Protocol for General STI Review

- Encourage follow up one week after presentation/treatment to:
- Check adherence with medication and symptom resolution
- Check test results: STI results (especially HIV) should be given in person
- Ask again about sexual partners and confirm if any partners have been tested/treated
- Contact tracing is essential to avoid reinfection
- Reinforce continuing education and prevention information and check free condoms supplied to patient
- Encourage the patient to present for a check-up anytime they get symptoms or feel at risk of an STI
- Every patient with an STI diagnosis should have an STI check at 2 to 3 months after initial treatment:
- About one third are re-infected at 3 months, often because their partner remained untreated
- Patients treated for infectious syphilis e.g. syphilis of less than 2 years duration, should be tested at 3-6 months and at 12 months HIV test should be offered at the time of the initial STI diagnosis, however a repeat test may be needed at 6 weeks – after the 'window period.'

Part A

Questions 1 –7For each question, 1-7, decide which text (A, B, Cor D) the information comes from. You may use any letter more than once.

In which text can you find information about

1. Further consultation after initial treatment of common STIs?

_____

2. Examples of body modifications that may present a risk?
   _____

3. Explanations of various STIs and their appearance?
   _____

4. Re-testing for an STI following a confirmed primary diagnosis?
   _____

5. 5what to do if symptoms such as diarrhoea develop?
   _____

6. Whether pain is a typical feature of each STI?
   _____

7. Questioning the patient on various STI symptoms?
   _____

Questions 8 –14

Answer the questions,8-14, with a word or short phrase from one of the texts. Each answer may include words, numbers or both.

8. How many Bicillin LA injections are recommended for an adult?
   _____

9. What treatment is indicated for genital herpes?
   _____

10. 10Whattreatment medication should be added to Bicillin LA if donovanosis is detected?
    _____

11. Which test may need to be read ministered six weeks after an STI diagnosis?
    _____

12. What noticeable features of urethral discharge should be noted?

_____

13. What may become enlarged if an STI is left untreated?

_____

14. What do the large ulcers associated with donovanosis look like?

_____

Questions 15 –20

Complete the sentences,15-20, with a word or short phrase from one of the texts. Each answer may include words, numbers or both.

15. Tests for GUD should be collected if there is evidence of a_____.

16. Without treatment, secondary sores of syphilis tend to_____ over a year.

17. An awareness of cross-reactivity is advised for patients allergic to_____.

18. After receiving benzathine penicillin, patients may experience _____near the injection site.

19. Patients may report that the symptoms of genital herpes feel _____ as well as painful.

20. Pain in the lower abdomen in_____ should be established when checking for an STI.

Part B

In this part of the test, there are six shorts extracts relating to the work of health professionals. For questions 1-6, choose the answer (A, B or C) Which you think fits best according to the text.

1. **The purpose of the memo about surgical hand scrub is to**
   (A) Inform staff of recent changes to procedures.
   (B) Stress the importance of particular techniques.
   (C) Remind staff to refer to a set of new regulations.

Memo to all staff: Surgical Hand Scrub
The aim of the surgical hand scrub is to remove transient micro-organisms from the nails, hands and forearms, thereby reducing the residual microbial count. All personnel, in anticipation of gowning and gloving for surgery or invasive procedures requiring surgical asepsis, must perform a surgical hand scrub according to regulations set out by the Infection Control Committee. Surgical attire must be worn during the hand scrub where required, and an effective antimicrobial surgical scrub solution or agent is to be used. A revised optimal surgical hand scrub time of 3 minutes has been introduced based on published research by both the Association of peri Operative Registered Nurses (AORN) and the Centre for Disease Control (CDC). Although the protocol is otherwise unchanged, this effectively reduces the time needed by two minutes across all specialties including orthopaedics.

2. **The notice about summer heat aims to**
   (A) Warn staff that exceptional weather conditions are forecast.
   (B) Inform staff of a likely increase in paediatric admissions.
   (C) Ensure that staff seek specialist advice when necessary.

Dealing with excessive summer heat

As we approach the summer, the issue of excessive heat arises. In this country, summer heat regularly causes more fatalities per year than floods, storms and lightning combined. Therefore, the Emergency Department is prepared to deal with increasing patient numbers as the temperature rises. Although a range of factors impacts on vulnerability, including age (<4 years and >65 years), obesity, dehydration, excessive exposure and serious health conditions, the use of psychotropic medications needs particularly careful monitoring. These drugs can greatly decrease the patient's ability to cope in hot weather by reducing the body's ability to perspire and/or regulate heat response. It is therefore imperative to discuss any such medications the patient may have in their possession or require, and/or related queries, with the attending doctor or pharmacist.

3. **The extract from the policy document about high-alert medication sets out procedures**
   (A) F or dealing with problems in obtaining them.
   (B) For avoiding errors that could cause harm to patients.
   (C) For checking that the correct dose has been prescribed.

High-alert medications policy
High-alert medications carry an increased risk of causing significant patient harm when used in error. Therefore, they must be prescribed, dispensed and administered using the practices outlined below. Concentrated electrolyte solutions must only be stored in the Pharmacy Department and the locked cabinet/trolley. The names and strengths of the medication must be verified by two qualified members of staff before being administered to the patient. The dose is to

be prepared just prior to administration as per doctor's order. The medication, strength and dose are then confirmed by reference to the patient's record. Following this procedure will guarantee optimal safety for patients as well as providing a safeguard in the event of accusations of negligence.

4. **The extract from the guidelines about searches informs us that**
   (A) These can only be carried out with the patient's consent.
   (B) Any dangerous items found must be confiscated immediately.
   (C) The main purpose is to protect both staff and patients from harm.

Criteria for searches in an inpatient unit (section 354.1 of the Mental Health Act)
Patient searches are part of a health response, not a security response. Where consideration is given to conducting an inpatient search, this will be a planned, nurse-led initiative. As the safety of patients, visitors and staff of mental-health services is paramount, patients should not have access to items that are in any way dangerous, or which may lead to them harming themselves or others. Searching a patient or their belongings may be required to ensure this. Since searches are intrusive and may impinge upon patients' rights, every effort should be made to defuse situations in which searches are made against the patient's wishes.

5. **This extract from the policy document aims to ensure that**
   (A) The appropriate software to use for discharges.
   (B) Families are fully informed of discharge arrangements.
   (C) The role of the clinician in discharge is clearly understood.

3.3. 2: Paediatric discharge

It is a policy of this hospital that upon their child's discharge home from the unit, all parents will receive written discharge advice about their child's hospital stay using the Admissions, Discharges and Transfers (ADT) Navigator. An 'after-visit summary' (AVS) can be printed for the family along with any attendance certificates. The AVS includes a minimum data set which incorporates: name of consultant, diagnosis, medication plan, follow-up information and a phone number to contact if more is information required. This is clearly set out to avoid confusion of any kind. Clinicians should also document in the Progress Notes that the discharge advice has been given to the parents and the time of discharge.

6. **What do the guidelines say about the handover of paediatric patients?**
   - **(A)** This should take place at the bedside.
   - **(B)** Parents need to be involved or fully informed.
   - **(C)** Notes may be made in either electronic or handwritten form.

Patient-care handover procedures (Paediatric Ward)

Handover should occur by each patient's bedside. If this is not appropriate, it should occur outside the patient room, and, if available, parents are encouraged to participate in handover and must be aware of the plan for their child for the next shift. Handover must be completed in the ISBAR format utilising the handover function in Electronic Medical Record (EMR) and recorded therein. Patient identification must be incorporated as per the patient identification procedure, and clinical alerts need to be included, for example allergies and infection control precautions. Lastly, the patient/family communication boards must be updated accordingly. The staff member who is responsible for the care of the patient, and the staff member taking over that responsibility, should conduct the handover.

Part C

Text 1: Digital Therapeutics

Ann Meyer has had diabetes for twenty-two years, but it was only last year that her GP prescribed a treatment that changed her life. It has allowed her to bring her blood-sugar levels under control and lose weight. Yet this miracle of modern science is not a new type of medication. It is a smartphone app called BlueStar. 'Can an app replace a pill?' is the big question behind an emerging trend known as 'digital therapeutics.' The idea: software that can improve a person's health as much as a drug can, but without the same costs and side-effects, something that medical professionals everywhere will be interested in.

Developing digital therapeutics, or 'digiceuticals,' as some call them, has become the ultimate question some quarters of Silicon Valley, where investors see the chance to deliver medicine through smartphones. One investment firm, ***Andreessen Horowitz***, even predicts that digital drugs will become the **third phase** of medicine, meaning the successor to the chemical and protein drugs we currently prescribe, but without the billion-dollar cost of bringing one to market. 'It's going to seem like going backwards and even barbaric that our solution to everything was just giving out pills,' partner Vijay Pande wrote on the company's blog.

But defining exactly what a digital therapeutic actually is can be tricky. 'It's still a fluid space that everyone is trying to categorize,' says Peter Hames, the British CEO of a start-up called ***Big Health***, which offers an online therapy program for insomnia suffers called sleep. Io that, it claims, can replace 'pills or potions' with visualization exercises. Hames personally believes that digital therapies fall into two groups, which he calls 'medication augmentation' and 'medication replacement.' He says ***sleep***. Io is in

the latter category because it actually makes sleeping pills unnecessary. ‘We’ve been able to show through multiple peer-reviewed studies that the outcomes are better than drugs,’ he says.

Digital therapeutics providers are careful to distance themselves from the rest of the digital health market of ‘wellness’ gadgets such as activity monitor sand sleep trackers. Consequently, they have striven to mimic the drug industry’s practices and standards, including carrying out clinical tests and sometimes seeking regulatory approvals. *Well doc*, the makers of *BlueStar*, describe it as the ‘first FDA-cleared mobile prescription therapy’ (although digital therapeutics don’t usually need approval by the U.S. Food and Drug Administration, since they often promote lifestyle or dietary changes that are deemed to be low-risk).And *Big Health* successfully opted to test a placebo version of its insomnia app against the real thing. The digital treatment ‘absolutely spanked the placebo,’ says Hames.

Whether a digital therapeutic involves a tracking sensor or coaching through an app, the acid test is whether they provide a distinct, measure able medical benefit to patients, and so can be recommended by the medical profession. One that does is Virta Health, based in San Francisco. Its goal is to actually ‘reverse’ diabetes without drugs or surgery using online coaching to get people on a special diet high in fats and low on carbs. It has a study by Indiana State University to back up the claim—about half of the 262 people with type 2 diabetes enrolled in a ten-week trial were able to reduce their blood glucose levels to non-diabetic ranges.

Steve Kraus, an investor, says he thinks digital therapeutics will be a ‘real thing’, but he says it’s not clear how many people will succeed with lifestyle intervention in the long run. Instead, he says, digital therapeutics used ‘in combination’ with drugs, to make them work better, could be the idea’s sweet spot.’ Perhaps with that in mind, some digital companies are already allying with pharmaceutical makers. One, *Propeller Health*, worked with a major pharmaceutical

company on what it calls a ‘digitally guided therapy’ platform, combining asthma medication with sensors that patients attach to their inhalers to monitor when they’re used. Patients getting feedback from Propeller’s app end up using the medication less.

Hames believes that someday digital therapeutics companies may even outstrip drug companies when it comes to evidence. ‘We’re digital, so we’re going to have **a firehose of data**,’ he says. Pharmaceutical companies don’t always track the real-world results of their pills once clinical trials are done. But digital therapeutics companies could easily keep on getting data. ‘It’s not in the drug company’s interest because they have already sold the drug,’ he says. ‘But, the insurance companies will say to us, ‘You have the data, so why don’t you just tell us?’’

Some drug company executives remain sceptical, however. Robert Plenge, vice president at Merck’s research labs, even had to look up ‘digital therapeutics’ when asked whether they were important. Plenge doesn’t think the idea would have much impact on drug development and questioned whether digital companies will ever be able to provide the value for money that conventional medicines do. But as some digital therapies are already much cheaper than drug-based equivalents -about $33 a month, to use Big Health insomnia software compared to$73 for six tablets for the sleeping pill Ambien– cost may be what tips the scales in favour of digital.

1. **In the first paragraph, the writer suggests that the main benefit of digital therapeutics compared to conventional treatment is that**
   (A) They tend to have better patient outcomes.
   (B) They offer a better patient experience of treatment.
   (C) They are more patient-centred than existing therapies.
   (D) They provide more flexible treatment options for patients.

2. **The expression ‘third phase’ in the second paragraph refers to possible changes in**
   (A) The way drug companies are funded by investors.
   (B) The cost of developing new types of digital medication.
   (C) The methods of administering existing drugs to patients.
   (D) The types of medication that will be available for treatment.

3. **Peter Hames' categorisation of digital therapies illustrates**
   (A) The different aims of various treatments.
   (B) Disagreements over future developments.
   (C) Current uncertainty over precise terminology.
   (D) The need for proper research into the technology.

4. **In the fourth paragraph, the writer suggests that digital therapeutics providers have adopted similar practices to the drug industry in order to**
   (A) Be taken seriously as providers of healthcare.
   (B) Gain acceptance from the relevant authorities.
   (C) Satisfy themselves that their products are effective.
   (D) Move into more high-risk areas of health care provision.

5. **The writer cites Virta Health as an example of a product that**
   (A) Has met certain criteria set by regulators.
   (B) Uses online research to support its claims.
   (C) Other similar providers would do well to copy.
   (D) Fits the profile of a worthwhile treatment option.

6. **The writer thinks that companies like Propeller Health want to co-operate with drug manufacturers because**

(A) Digital companies are lacking in confidence about the future.

(B) The digital companies want better access to certain research data.

(C) Many patients are failing to stick to care based solely on digital therapies

(D) Results for patients are likely to be more positive than digital-only therapies.

7. **In the seventh paragraph, the word 'firehose' in the phrase 'a firehose of data' is used to emphasise the**

   (A) Ease with which the effectiveness of digital therapeutics can be proved.

   (B) Type of sales information now available to digital therapeutics companies.

   (C) Volume of research information available to digital therapeutics companies.

   (D) Value of information on digital therapeutics to medical insurance companies.

8. **What possible error by one drug company executive does the writer identify in the final paragraph?**

   (A) Saying that drugs will always be the best option for affordable medical treatment.

   (B) Claiming that new drugs will continue to be developed in the same way in future.

   (C) Stating that digital therapeutics will only work with a limited range of conditions.

   (D) Arguing that costs are usually easier for traditional manufacturers to control.

Text 2: The Human Microbiome

Over the past few decades, medical researchers have begun to shine a light on a largely uncharted and complex world: the human gut. In a dizzying number of studies, the gut microbiome has been linked to clinical fields beyond gastroenterology, including immunology, oncology and diabetes. Estimates of how many microbes the human gut plays host to vary considerably, some as high as 400 trillion. It was once thought that microbes outnumber cells in the body by 10 to 1. However, this factoid was recently exposed to have been erroneously calculated in an earlier study.

The microbiome is composed primarily of bacteria but also archaea (single-cell organisms), fungi, viruses, and protozoa, and its delicate ecologic balance has given rise to the theory that modern hygienic practices (e.g. overuse of antibiotics, improved sanitation) have been detrimental to health by reducing exposure to bacteria on which humans thrived for millennia. Isolated hunter-gatherer tribes in South America actually have considerably more diverse microbiomes than people in industrialized societies. In an **ironic twist**, the very same progress that may be hurting us has also given us the means to unravel the reasons why–and potentially intervene to correct it.

The first theories of the microbiome's role in maintaining health were proposed by Metchnikoff (1845-1916). A Russian scientist working in Louis Pasteur's laboratory, Metchnikoff won a Nobel Prize in 1908 for helping to pioneer cellular and humoral immunology. Late in his life, Metchnikoff embarked on a personal quest to research methods of staving off senility and other markers of aging. Noticing that some economically-disadvantaged people nonetheless experienced longer lives, he studied their diet and lifestyle choices. This led to his theory that aging-related illnesses were the result of phagocytes being transformed from protective to destructive via bacteria in the colon. He believed that regular consumption of lactic acid bacteria in fermented dairy products would reverse **this action**

and promote longevity, perhaps the first instance in which probiotics (the practice of introducing microorganisms for their health benefits) were offered as a medical solution.

In the first decade of the present century, multiple studies appeared in quick succession that would reshape our concept of the gut microbiome's role in health and illness. One of the first crucial discoveries came in a 2005 gene-sequencing study of colonic samples from healthy subjects. It noted that a majority of newly-discovered microorganisms had little overlap from patient to patient and there were slight differences from place to place. A comparative study then determined that lean and obese subjects had different groupings of microbes present in their gut, and that an obese person’s profile changed upon weight loss on a lower-calorie diet, giving tangible evidence of the value of even moderate adjustments to eating habits.

One of the most interesting recent findings has been that the microbiome communicates with the brain indirectly (via hormones or the immune system) and directly (via neurotransmitters in the gut), and has been linked to several neurologic conditions. Autism spectrum disorders have a potential association with changes in the gut microbiome, while the inflammatory-state changes noted in schizophrenia and bipolar disorder indicate a similar link. This connectivity has inspired new treatments for psychological and neurologic conditions. Participants given probiotics were shown to experience a reduction in aggressive thoughts, and probiotics were observed to decrease stress in those undergoing laryngeal cancer surgery. Another study observed that long-term, broad-spectrum antibiotics decreased plaques that contribute to Alzheimer’s disease.

It should be noted that the overwhelming attention given to the microbiome has not been without critics. A review in the journal Nature expressed this concern: ‘The hype surrounding microbiome research is dangerous, for individuals who might make ill-informed

decisions, and for the scientific enterprise, which needs to develop better experimental methods to generate hypotheses and evaluate conclusions.' The article's author also referenced companies that, similar to those conducting individual human genetic profiling, offer to provide a microbial portrait using fecal samples, and expressed concern about the varying and imprecise results that can come from such an analysis. The research community must consider the question of whether the tools pivotal to this research–the use of germ-free laboratory mice–truly reflect the real-world diversity of the human microbiome.

If the microbiome was a largely undiscovered territory twenty years ago, it is now awash with pioneers. I believe more discoveries are to come. These will draw more researchers looking to produce crucial interventions, as well as healthcare companies hoping to convert that work into healthy returns. While clinicians await proven therapeutic options, they can take steps to positively affect patients' microbiomes, beginning with dietary and lifestyle recommendations. Although these involve re-iterating current recommendations, they now come with new robust data to back up their utility. Such established strategies include shifting patients toward fiber-rich diets, and promoting immunity and intestinal health by modifying sleep patterns.

1. **What do we learn about the human gut in the first paragraph?**
   (A) A widely accepted statistic was the result of a mistake.
   (B) Studies so far have lacked sufficient focus to be helpful.
   (C) It contains more microbes than was previously calculated.
   (D) Different microbes are understood to cause different diseases.

2. **What is the <u>ironic twist</u> that is referred to in the second paragraph?**

(A) Scientists are now focusing their research on only one continent.
(B) Being too concerned about cleanliness has caused new problems.
(C) The damage caused by progress could also enable it to be repaired.
(D) Traditional societies understand more about gut health than modern ones.

3. **What do we learn about Metchnikoff's research into dementia?**
   (A) It was overshadowed by Pasteur's achievements.
   (B) The timing of it was of particular relevance to him.
   (C) The significance of it was acknowledged within his lifetime.
   (D) It allowed him to return to his earlier work in the field of immunology.

4. **What does <u>this action</u> in the third paragraph refer to?**
   (A) The fermentation of lactic acid
   (B) The effect of bacteria on phagocytes
   (C) The pursuit of a diet which is rich in bacteria
   (D) The addition of bacteria to some dairy products

5. **One conclusion of the gut microbiome research mentioned in the fourth paragraph was that**
   (A) Previously unknown microbes were found only in people from remote communities.
   (B) Obese people who started restrictive diets soon had similar microbes to thin people.

(C) Radical dietary changes were essential in order to achieve any observable benefits.

(D) Organisms in the gut varied widely, particularly according to where individuals live.

6. **What did the studies described in the fifth paragraph find?**

(A) Both probiotics and antibiotics can have positive effects on mental wellbeing.

(B) Various types of probiotics are needed according to the type of neurological condition.

(C) Antibiotics might one day help to calm psychiatric inpatients who are agitated or angry.

(D) The way that bacteria in the gut act on hormones differs from how they act on neurotransmitters.

7. **What warning is given in the sixth paragraph?**

(A) Using mice which are kept in sterile lab conditions is unsustainable.

(B) Research effort is being unnecessarily directed towards the microbiome.

(C) Medical researchers are making a mistake in not sharing their results freely.

(D) Certain screening tests produce results which are too unreliable to be helpful.

8. **What is the writer's suggestion to clinicians in the final paragraph?**

(A) To wait for further evidence before deciding what to tell patients

(B) To direct patients to make radical changes in how they live

(C) To use facts and figures to support their advice to patients
(D) To avoid referring patients to commercial organisations