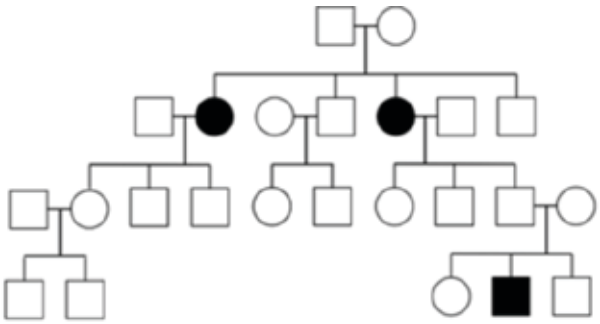
ASSESSMENT OF 30 MCQS

FPSC NO : 114
MCQS ON GENOMIC MEDICINE: CLINICAL PRIMER
SUBMISSION DEADLINE: 19 MARCH 2024, 12 NOON

INSTRUCTIONS

- **To submit answers to the following multiple choice questions, you are required to log on to the College Online Portal (https://lms.wizlearn.com/cfps/)**
- **Please contact sfp@cfps.org.sg if you have not received an email on the new LMS account.**
- **Attempt ALL the following multiple-choice questions.**
- **There is only ONE correct answer for each question.**
- **The answers should be submitted to the College of Family Physicians Singapore via the College Online Portal before the submission deadline stated above.**
- **There will be NO further extension of the submission deadline**

1. The following pedigree is an example of a/an _____ condition.



A. Autosomal dominant
B. Autosomal recessive
C. X-linked dominant
D. X-linked recessive
E. Mitochondrial

2. Which of these statements are true to the management of a VUS result?

I. They are considered as pathogenic variants and patients are managed as though they have a positive result.
II. They represent a gene variant that is insufficiently studied and whose significance is unclear.
III. They may be re-classified over time as more data is collected.
IV. Pre-test genetic counselling can prepare patients for the possibility of receiving a VUS result to minimise confusion.

A. I and II
B. I and III
C. II and III
D. III and IV
E. II, III, and IV

3. Which of the following statements are true?

I. The absence of a family history alone can be used to rule out a genetic condition even if one's personal history is suggestive of it.
II. Different members of the same family with the same genetic condition have different symptoms of varying severities.
III. Some people with pathogenic variants may not develop symptoms of the associated genetic condition.
IV. Cascade testing is only offered to the children of individuals who have a pathogenic variant.

A. I and II
B. II and III
C. II and IV
D. III and IV
E. II, III, and IV

4. A young boy has an autosomal dominant condition. Neither of his parents (who are not related) have any clinical features of the condition, but his maternal grandmother is similarly affected. This is an example of:

A. Incomplete expressivity
B. Incomplete penetrance
C. Spontaneous (de novo) mutation
D. Pleiotropy
E. Genetic heterogeneity

5. You facilitate genetic testing for a 60-year-old female patient. The patient's daughter later requests your assistance in obtaining a copy of your patient's genetic test result. What should you do? Select all that apply.

I. Inform the daughter that you would need to check if consent was given for her result to be shared with family members.
II. Email the daughter a copy of the result as you have a duty to disclose it to all family members.

III. Mail a hardcopy copy of the result to the patient's home address and inform the daughter she can retrieve it there.

IV. If you are unsure if the patient is willing to share her result, contact the patient before you proceed as you have a duty to protect your patient's privacy.

A. I and II
B. II and III
C. I and IV
D. III and IV
E. II and IV

6. Which of the following is <u>not true</u> about treatment of patients with Familial Hypercholesterolaemia (FH)?

A. PCSK9 inhibitors when added to statins can lower LDL-cholesterol by additional 50% to 70%
B. Small interfering RNA-blocking PCSK9 synthesis when added to statin therapy lowers LDL-cholesterol by an additional 50%
C. Statin therapy alone is often inadequate to achieve LDL-cholesterol goal in FH
D. With strict dietary restriction alone without the need for lipid-lowering medications, 50% of patients with FH can achieve LDL-cholesterol goal
E. The combination of Ezetimibe and high-intensity statin therapy lowers LDL-cholesterol by 60%-70%

7. Which of following is <u>not</u> in the Simon Broome Criteria for FH?

A. Total cholesterol >7.5 mmol/l in adults
B. LDL-cholesterol >4.9 mmol/l in adults
C. Presence of tendon xanthomas in patients or 1st-degree relatives
D. Family history of premature myocardial infarction before the age of 60 years in 1st-degree relatives
E. Personal history of premature myocardial infarction before the age of 60 years

8. Which outcome of genetic testing for FH is considered <u>a positive genetic test</u> result?

A. Pathogenic or Likely Pathogenic Variant detected in one of the 3 causative genes (LDL-receptor, ApoB, or PCSK9 genes)
B. Presence of variant of uncertain significance (VUS)
C. Presence of Benign Variant detected in one of the 3 causative genes (LDL-receptor, ApoB, or PCSK9 genes)
D. Presence of no variants
E. Presence of Benign Variant detected in 2 of the 3 causative genes (LDL-receptor, ApoB, or PCSK9 genes)

9. Which of following is <u>true</u> for a patient diagnosed as "Probable" or "Definite" FH who had a negative genetic test result for FH?

A. Since no mutation was detected, this patient does not have FH and does not have high risk of cardiovascular disease
B. As the patient has a high DLCN score of >5, this patient is likely to have high cardiovascular risk and should be treated as FH to appropriate LDL-C goals regardless of the genetic test result
C. Cascade screening by genetic testing is required for the 1st-degree relatives of this patient
D. The risk of cardiovascular disease for all patients with Probable FH is the same, regardless of whether genetic test result was positive or negative
E. As the patient already has "Probable" or "Definite" FH by DLCN even without genetic testing, no genetic testing is required since it does not affect the treatment plan for patient and family

10. Which of the following is <u>true</u> regarding a patient with "Possible FH" diagnosed by DLCN (i.e., score 3 to 5) who had genetic testing done, which revealed the presence of a positive genetic result for FH?

A. This patient should be considered as "Definite FH" now that the genetic result is positive
B. This patient has low risk of cardiovascular disease and can be treated to target as defined by the Singapore Modified Framingham Risk Score
C. Less than 10% of patients with possible FH have a positive genetic test result for FH
D. Patients with Possible FH often require PCSK9-based therapy to achieve LDL-C goals
E. 1 in 140 people in Singapore with Possible FH have positive genetic test result for FH

11. Hereditary cancer syndromes make up _____ of all cancers.

A. 50 percent
B. 15-20 percent
C. 5-10 percent
D. 0-2 percent
E. 70-80 percent

12. What is the percentage risk for children of patients with Hereditary Breast and Ovarian Cancer to inherit a faulty gene?

A. 5 percent
B. 10 percent
C. 15 percent
D. 25 percent
E. 50 percent

13. What genes are responsible for Lynch syndrome? Select all that apply.

I. BRCA1 and BRCA2
II. MLH1, MSH2, and MSH6
III. PALB2, TP53, PTEN, and RAD51C/D
IV. PMS2 and EPCAM
V. EGFR, KRAS and MET

A. All of the above
B. I only
C. II and IV
D. III only
E. V only

14. Select all that are true.

I. BRCA1/2 carriers have a ~95 percent risk of getting cancer in their lifetime
II. 1-in-150 Singaporeans are at risk of HBOC
III. Hereditary breast and ovarian cancer means individuals are only at risk of developing breast and/or ovarian cancer
IV. 1-in-100 Singaporeans are at risk of Lynch Syndrome

A. I only
B. II only
C. I and III
D. II and IV
E. All of the above

15. For which patient(s) is genetic testing for a hereditary cancer syndrome indicated? Select all that apply.

I. Acute lymphoblastic leukaemia (ALL) in a young child
II. A colorectal adenoma in a 68-year-old patient
III. Breast cancer in a 25-year-old female patient
IV. Lung cancer in a 75-year-old with smoking history
V. Patient with colorectal cancer at age 45 years

A. III and V
B. I only
C. II and IV
D. All of the above
E. None of the above

16. A 25-year-old lady has persistent microscopic haematuria in the range of 10-80/hpf. She does not have albuminuria. Extensive investigations such as autoimmune workup, CT urogram, and cystoscopy have been negative. Which of the following statements is true?

A. A kidney biopsy will be useful to confirm thin membrane disease
B. She is presumed to have thin membrane disease which has a benign course
C. She may have autosomal recessive Alport syndrome and has an 80% likelihood of kidney failure at 60 years old
D. She may have autosomal dominant Alport syndrome and has a 30% likelihood of kidney failure at 60 years old
E. The absence of proteinuria suggests she is not at risk of CKD in the future

17. A 10-year-old boy has persistent microscopic haematuria due to X-linked Alport syndrome. He is started on enalapril. By how long may the onset of kidney failure be delayed with this treatment?

A. 1-3 years
B. 3-5 years
C. 6-10 years
D. 15-30 years
E. Will not delay onset of kidney failure

18. The most common genetic cause of CKD is

I. Renal tubular acidosis
II. Alport syndrome
III. Tubulointerstitial kidney disease
IV. Polycystic kidney disease

A. II and III
B. II and IV
C. I and II
D. II only
E. IV only

19. Which of the following is a classic feature of Alport syndrome?

A. Polydactyly
B. Cataracts
C. Glomerular basement membrane (GBM) lamellation
D. Neurosensory hearing loss at birth
E. Thin glomerular basement membrane

20. Which of the following is the strongest predictor of genetic aetiology in kidney disease?

A. Abnormal glomerular basement membrane
B. Positive family history
C. Resistance to calcineurin inhibitors
D. Resistance to ACE inhibitors
E. Hearing loss

21. The presence of HLA-B*58:01 allele has been strongly associated with _____.

A. Allopurinol overdose
B. Allopurinol-induced SCARs
C. Carbamazepine-induced SJS/TEN
D. Tramadol underdose
E. Codeine overdose

22. Which of these statements is/are true?

I. Pharmacogenetics can account for up to 20-95% of patient variability in response to drugs.
II. Pharmacogenetics is the study of the relationship between genetic variations and how our body responds to medications
III. Clinical information, including clinical guidelines and drug labels, potentially clinically actionable gene-drug associations, and genotype-phenotype relationships may be found in pharmacogenomics knowledge resources such as PharmGKB

A. I only
B. I and II
C. I and III
D. II and III
E. I, II, and III

23. The HLA-B*15:02 allele is strongly associated with which of the following drug response?

A. Allopurinol
B. Abacavir
C. Carbamazepine
D. Codeine
E. Tramadol

24. Which type of counselling is required for pharmacogenomics tests in Singapore?

A. Pre-test counselling and post-test counselling as per other diagnostic procedures
B. Only pre-test genetic counselling
C. Only pre-test counselling as per other diagnostic procedures
D. Only post-test counselling as per other diagnostic procedures
E. Both pre-test genetic and post-test genetic counselling

25. Which of the statements below is/are false?

I. An insurer is not allowed to require or pressure the individual to undertake a genetic test for the purpose of insurance application, even if the individual has a family history of genetic condition(s)
II. Pharmacogenomics tests are considered as diagnostic genetic tests
III. Undergoing a pharmacogenomics test will very likely affect the insurability of an individual

A. I only
B. II only
C. III only
D. I and II
E. II and III

26. What is the primary purpose of using a polygenic risk score (PRS) in breast cancer screening?

A. To replace mammography as the primary screening method
B. To identify individuals at higher risk of developing breast cancer
C. To determine the stage of breast cancer in diagnosed patients
D. To estimate the exact age of onset for breast cancer
E. To assess the response to breast cancer treatment

27. How is a polygenic risk score for breast cancer typically calculated?

A. By analysing a single gene associated with breast cancer
B. By considering only family history of breast cancer
C. By combining information from multiple genetic variants
D. By conducting a physical examination of the breast
E. By assessing hormonal levels in the body

28. With regards to the role that PCPs play in genetic testing, which one of the following is INCORRECT?

A. Screening & early detection
B. Risk assessment & timely referral
C. care of co-morbidities & continuity of care
D. Ignore secondary genomic findings
E. None of the above

29. With regards to barriers to implementation of genomic medicine within primary care, which of the following is NOT a barrier?

A. Excessive supply of Genetic Healthcare Professionals
B. PCPs' limited knowledge & confidence in genomic medicine skills
C. PCPs' concerns about ethical, legal, and social implications of testing
D. Logistic challenges
E. All of the above

30. With regards to facilitators to implementation of genomic medicine within primary care, which of the following is INCORRECT?

A. Promotion of evidence-based guidelines
B. Point-of-care risk assessment tools
C. Tailored education in genetics-related topics
D. Availability of Tele-genetics
E. Lack of Genetic Testing facilities

FPSC 112 "Child and Adolescent Preventive Mental Health Care" Answers to 30 MCQs					
1.	D	11.	A	21.	B
2.	C	12.	A	22.	D
3.	E	13.	C	23.	E
4.	A	14.	E	24.	A
5.	B	15.	A	25.	B
6.	D	16.	E	26.	B
7.	B	17.	B	27.	E
8.	B	18.	C	28.	D
9.	D	19.	C	29.	C
10.	E	20.	B	30.	D

FPSC 113 "Basic Obesity Management Accreditation 3" Answers to 30 MCQs					
1.	D	11.	D	21.	B
2.	E	12.	C	22.	D
3.	D	13.	C	23.	D
4.	E	14.	C	24.	C
5.	D	15.	B	25.	E
6.	E	16.	B	26.	E
7.	C	17.	D	27.	B
8.	B	18.	E	28.	E
9.	A	19.	B	29.	E
10.	B	20.	D	30.	E