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COMMENTARY

Recommendations and tips for passing the key feature problem examination

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Abstract

The Key Feature Problem (KFP), is part of the Conjoint MAFP/FRACGP exit examination for Family Medicine specialisation in Malaysia. KFP tests candidates' skills in clinical reasoning and decision making. Over the years, KFP has been the cause of most of the failures in the Part 1 theory examination. This paper aims to highlight common errors committed by candidates and provide recommendations and practical examination technique tips on how to mitigate these errors. A summary of the 26 KFP cases used in the 2020 Conjoint KFP examination demonstrates the breadth and types of cases. From the feedback reports collated from eight assessors involved in this exam, we determined that although inadequate knowledge is probably the main contributor to failure, other easily correctible mistakes made by candidates further aggravate the situation. Common errors include offering more answers than requested, giving duplicate or incomplete answers, and writing answers out of context to the case scenario. The paper concludes with recommendations and sources for effective learning, and provides 12 examination technique tips. The tips include time management, reading carefully through the case, and checking that the answers are congruent with the questions asked.

Introduction

For many years, the Academy of Family Physicians of Malaysia (AFPM) has been conducting a 4-year postgraduate training course leading towards the international Conjoint MAFP/FRACGP exit examination for independent practice as a family physician.[1] This examination is a collaboration between the AFPM and the Royal Australian College of General Practitioners (RACGP).

The AFPM postgraduate Family Medicine Training Programme consists of two years of distance learning conducted through the Graduate Certificate in Family Medicine (GCFM), and an additional two years of Advanced Training in Family Medicine (ATFM), with additional support from monthly mentor-mentee meetings.

The Conjoint exam has two components: Part 1 (theory) and Part 2 (clinical). In Part 1, the questions are set in two different formats: Applied Knowledge Test (AKT), which consists of single-best and extended matching questions, and Key Feature Problems (KFPs). The KFP examination was first introduced into the RACGP fellowship examination in 1997,[2] and it was incorporated into the Malaysia-Australian Conjoint MAFP/FRACGP examination in 2000. The primary objective of the KFP is to test the candidate's ability to reason, make decisions, and solve problems. These skills are essential for the appropriate management of their patients.

A key feature is defined as a critical step in the resolution of a clinical problem;[3] making an incorrect decision can lead to irreversible damage or even death for the patient. In the KFP exam format, a case scenario accompanied by two to four questions, is presented. For each question, candidates are instructed to either 'write in' or 'select' a specified number of answers from a list of options. Writing in the answers is deemed to be more challenging and discriminating than selecting from a list, as the latter offers cues, and provides an advantage for the weaker candidates.[2]

The KFP exam has been found to be a valid and reliable test for the future independent family doctor.[2-4] Unlike the single answers required in AKT, the KFP allows for multiple answers. This mirrors the real-life situation faced by practising doctors when several options for diagnoses, investigations, and management are possible. KFPs also have

provision for the longitudinal care of the patient.[4]

KFP cases are selected based on an examination blueprint to incorporate the broad variety of patients and diseases encountered in the Family Medicine curriculum. The questions are rigorously vetted and reviewed, initially by the examination team in AFPM, and twice by the RACGP. There is also a rigorous standard setting process, with 20–25 judges using Norcini's concept of the borderline candidate[5] to determine the cut-off score required of a candidate with minimal level of skill or knowledge to be a safe practising physician.

When determining the cut-off score for a particular question, judges take into consideration the complexity of the case and whether the required answer is written in or selected. Selecting answers from a list is considered to be easier for candidates. Previously, selection of answers has been limited to only one-third of KFP cases.[2] With standard setting, 'select' questions now make up one-half of the KFP cases; these questions are mainly reserved for investigations.

Most of the Malaysian candidates who fail Part 1 of the conjoint examination, fail due to the KFP paper, although they may have passed the AKT. Due to examination confidentiality, this data is not available for publication. The Australian KFP exam report for 2020[6] showed similar findings, with more failures in the KFP than the AKT.

Despite candidates being trained to answer KFP questions in every module, in addition to having practised the KFP exams during ATFM workshops, candidates continue to perform poorly on the KFP. One possible reason is the paucity of local guidance[1,7] or practice-question books[8] for KFP, unlike the abundant availability of MCQ practice books for the single-best answer and extended matching questions in the AKT. Coaching for KFP is available via Australian training providers, one of which is ModMed[9]; however, this incurs an additional high financial cost.

Following the 2020 KFP examination, the eight examiners involved in correcting the papers were invited to submit their written comments on candidates' performance. Although failure was attributed partly to the candidates' inadequate knowledge, poor clinical reasoning, and poor clinical decision-making skills; lack of knowledge of examination techniques and poor adherence to instructions were further aggravating factors. Twelve of these common mistakes and pitfalls have been identified.

This manuscript aims to provide future candidates with guidance on their approach to tackling the KFP paper to improve their chances of passing. Guidance will include recommendations on how to enhance their knowledge base and decision-making skills, in addition to 12 simple examination technique tips to follow.

Summary of the cases in the 2020 KFP examination

Table 1. Cases from the 2020 Conjoint MAFP/FRACGP KFP Examination

Case	
1	55-year-old cleaner with carpal tunnel syndrome presenting with pain in the hand: for diagnosis and management.
2	74-year-old man presenting with intermittent tinnitus and deafness for a few years, with a recent brief spell of dizziness: for diagnosis, interpretation of investigation, and management.
3	35-year-old woman with occupational asthma presenting with recurrent cough: for diagnosis, interpretation of investigations, and management.
4	30-year-old para 1 with menorrhagia and iron deficiency anaemia from uterine fibroids presenting with tiredness: for diagnosis, data interpretation, and management.
5	37-year-old man presenting with sudden onset of palpitation and chest discomfort: for data interpretation, diagnosis of rapid ventricular fibrillation, and management.
6	42-year-old elderly primigravida with hypertension in pregnancy presenting for antenatal booking: for risk identification, selection of investigations, and management.
7	18-year-old student brought in by parents due to change in behaviour: for differential diagnoses, selection of investigations and management
8	30-year-old man presenting with progressive low back pain with features of ankylosing spondylitis: for data interpretation, selection of investigations, and management.
9	3-year-old girl brought in by parents for fever and increased urinary frequency: for data interpretation, diagnosis of urinary infection, selection of investigations, and management.

Case	
10	35-year-old volunteer traveling to a remote region: request for vaccination, advice on prevention of diarrhoea, and selection of investigations for chronic diarrhoea.
11	12-month-old girl brought in for sudden onset of breathing difficulty and generalised rash after ingesting some food: for initial treatment of anaphylaxis and future prevention.
12	56-year-old woman with previous PTB, long-standing hypertension, and asthma, presenting with persistent cough: for diagnosis and selection of investigations.
13	72-year-old woman with terminal cancer: for end-of-life care, clinical features of impending death, and management of breakthrough pain.
14	17-year-old rugby player presenting with fever, sore throat, rash after an antibiotic, and moderate splenomegaly: for diagnosis, selection of investigations, and management.
15	12-month-old infant with persistent diarrhoea due to lactose intolerance following acute gastroenteritis: for diagnosis, and management strategies.
16	10-year-old boy with acute-on-chronic slipped upper femoral epiphysis: for diagnosis, selection of investigations, and management.
17	21-year-old teacher presenting with painless genital growth (condylomata lata): for diagnosis, selection of investigations, and management of syphilis.
18	8-year-old girl with enuresis: for diagnosis of type 1 diabetes mellitus, selection of investigations, and management of complications of diabetic ketoacidosis.
19	20-year-old student with vertigo, delayed lower motor 7th cranial nerve palsy, and Battle sign following fracture of the petrous temporal bone: for diagnosis and management.
20	Practice management issue involving a justifiably angry patient who was not recalled for abnormal test results: for management strategies and prevention.
21	48-year-old woman with a 1-year history of gradual weight gain, fatigue, dry skin, and irregular menstrual cycles: for diagnosis of Hashimoto's thyroiditis, data interpretation, and counselling regarding medication.
22	65-year-old retired teacher with recent onset of epilepsy: to identify issues with driving, medications, and drug interaction with Gingko biloba
23	28-year-old morbidly obese woman requesting bariatric surgery: for selection of investigations, management of obesity, and indications of bariatric surgery
24	34-year-old bodybuilder with hypogonadism, tiredness, and sexual dysfunction: for further history to elicit and investigations to order.
25	28-year-old first-time mother presenting 10 days after delivery: for diagnosis and management of postpartum blues/ postpartum depression and management of episiotomy wound pain.
26	17-year-old student: for diagnosis and management of severe nodulocystic acne, treatment for scarring, and management of depression.

This Conjoint exam has been designed to cover all topics and domains in the Family Medicine curriculum in Malaysia and Australia. As can be seen in Table 1, the 2020 KFP examination covers the breadth of family medicine encounters; from womb to tomb, and from preventive to acute, chronic, and palliative. Cases may be common but complicated, or rare but with long-term dangerous consequences if not diagnosed early.

Most candidates fail to answer questions regarding secondary syphilis in Case 17. A possible reason is that most of them work in government public clinics and may not have personally managed sexually transmitted infections (STIs), as these patients prefer the privacy of fee-for-service general practice clinics. When undertaking any courses, the trainees' foremost responsibility is to be aware of the curriculum—STIs are within the curriculum. As future independent practitioners, trainees are expected to function in any setting, whether public or private. It is advised that candidates should identify and fill their knowledge gaps in the curriculum.

As this is a Conjoint examination, the KFP exam can include diseases like infectious mononucleosis, which is common in Australia. Candidates should be aware of the epidemiology of diseases in Australia. A clue on whether the case is Australian or Malaysian lies in the patient's name or case scenario.

Why do candidates fail?

The post-examination analysis based on examiners' feedback suggests that inadequate knowledge coupled with poor examination techniques are causes for KFP failure. To answer KFP questions well, candidates must have adequate prior knowledge and experience, and must be able to identify the key information provided in the scenario. Only

then can they use their clinical reasoning to determine the most appropriate decision to resolve the problem, taking into consideration the case's unique features.

Clinical decision-making (CDM) skills are an essential core competency expected of an independent primary care provider. CDM is particularly difficult in Family Medicine, as we deal with all population groups, and all stages of disease manifestation, including early disease with vague symptoms and diagnostic uncertainties. We must also manage patients with multiple morbidities, using evidence-based clinical practice guidelines that mainly focus on single disease and tertiary management. Without a strong knowledge base and clinical experience, candidates will not be able to develop sufficient CDM skills to take into consideration the context, clinical setting, patients' circumstances, and the legal and ethical aspects of the cases.

Recommendations on how to improve knowledge and clinical decision-making skills

Reflection

Acquiring CDM skills is a difficult lifelong learning process that requires knowledge, experience, and reflection. Trainees should start by reflecting daily on their challenging cases and patients with issues. They should search for the latest guidelines, discuss the cases with their supervisors, mentors, or other trainees, explore differential diagnoses, and write reflective reports on how they will approach and manage similar cases differently in the future.

Using study aids and RACGP learning resources

A useful approach utilised by experienced family doctors is spot diagnosis and pattern recognition: Case 11 - acute anaphylactic shock, Case 14 - infectious mononucleosis, Case 17 - condylomata lata, Case 19 - Battle sign, and Case 26 – acne. The use of pictorial atlases for dermatology and other conditions with characteristic appearances are very helpful for initial and differential diagnoses. This must be supplemented by using up-to-date clinical practice guidelines on investigations and management. Some candidates were able to diagnose the problems but did not know the immediate and long-term management.

The AFPM does not have a library, but as RACGP members, candidates can make use of the RACGP virtual library, clinical, and other educational resources to access reference papers, clinical guidance, and become familiar with Australian practice.

Maximising AFPM study modules

In addition to formal assignments and practice exam questions that require submission for assessment, the GCFM and ATFM study modules provide extra references and exercises for directed self-learning. Reading the references and completion of these additional exercises are not compulsory or collated. Therefore, it is not known how many trainees have actually completed them, and received the full benefit of learning from their modules. Trainees should complete these additional teacher-directed exercises to improve their knowledge and, in turn, their clinical reasoning and decision-making skills. GCFM trainees can discuss problems with their peers or during the Module Workshops. ATFM trainees can bring up their difficulties with their peers, clinical supervisors, or during the monthly mentor-mentee meetings.

Study groups

Forming small study groups helps to pool expertise and resources (e.g., online examination guides, books, papers, ModMed subscription) for exam revision. Although no published data is available on the optimal number of candidates in a family medicine exam study group, university websites advise three to five members.[10-11]

In summary, recommendations to improve knowledge and CDM skills include the use of reflection, RACGP educational resources, GCFM and AFPM study modules, and peer-to-peer learning from study groups.

In the next part of this paper, we discuss 12 practical exam technique tips that are easy to implement to improve candidates' chances of passing the KFP examination.

Twelve practical exam technique tips for passing

Tip 1

Keep track of the time

The KFP examination consists of 26 cases (25 cases after 2021) of equal weightage in scoring that must be completed within 3.5 hours. This allows approximately eight minutes per case, or seven cases per hour. Candidates should be aware of their timing so as not to spend too much time on difficult questions, and

leave inadequate time for others. As per the instructions, candidates must write point-form or brief notes rather than elaborate answers or full sentences.

Tip 2

Read through the whole case before answering

It is beneficial to read through the whole case before answering. Knowing subsequent scenarios and questions can provide clues. This is especially true for questions with answers regarding investigations and management options to be selected from a list.[2] The list of answers may trigger or provide cues to the diagnosis.

Knowing the subsequent scenario and questions can prevent candidates from writing an answer for one question when it is meant for the next question, which results in them losing marks for both. In Case 23, when asked about the management of obesity, candidates gave answers meant for the next question on indications for bariatric surgery.

Tip 3

Do not write-in or select more answers than asked

The examination rules are strictly enforced for the number of answers offered by candidates. Writing or selecting more choices than instructed, either intentionally or unintentionally, will cost candidates all their marks for that question, even though some of the answers may be correct. This is the easiest mistake to avoid. It has been highlighted in errors to avoid in 2007[5] and is mentioned repeatedly throughout the programme.

Tip 4

Select the maximum number of options allowed

Conversely, some candidates who are fearful of making a mistake dare not select the maximum number of options allowed, and consequently lose marks. Candidates should eliminate obviously incorrect answers and then make an educated guess from the plausible options, selecting the maximum number of options allowed. There is no penalty for wrong answers (negative marking) but candidates must be aware of one caveat: when the question asks to tick as many answers as appropriate, they must be mindful of how many options to tick, as this process is a test for appropriate use of resources. Thus far, this line of questioning has not yet been asked.

Tip 5

Answer to the question

This is a common problem, mainly due to candidates not reading the question carefully or not understanding what is required. Sometimes, the candidates understand the question, but because they do not know the answer, they write extensively about something they know instead. This wastes precious time, leaving insufficient time to complete other parts of the examination.

Candidates must read the question carefully and, after answering, read the question again to ensure that they have answered it correctly. Case 25 asks for non-pharmacological management strategies for postpartum blues/depression; some candidates discussed drug treatment. Conversely, when asked for pharmacological management, some candidates instead mentioned hospital referrals and types of operations.

Tip 6

Answer according to the context of the case

A noted recurrent problem is that candidates do not read the case scenario carefully. They should underline important, key information given in the scenario and take into consideration the case context and patient's sociodemographic characteristics when offering diagnosis or management. In Case 22, the 65-year-old retired teacher with newly diagnosed epilepsy was advised by a candidate to avoid high-risk activities like parachuting and bungee-jumping—activities that were not stated as her hobbies, and which she was unlikely to do. A better example would have been 'cooking alone', as having an epileptic seizure would be dangerous while cooking.

A dangerous piece of advice resulting from not taking the age or disease into consideration was to recommend drinking 2–3 litres of water per day for hydration, to a 3-year-old girl with urinary infection. Another superfluous piece of advice given to a 10-day postpartum woman presenting for management of episiotomy wound pain was to avoid sexual intercourse. In Case 17, it was stated that the patient already had a normal Pap smear test one year ago. Offering a Pap smear again is unnecessary and caused the candidate to lose a mark, which could have been avoided by selecting a different investigation.

Tip 7

Do not write similar answers

Writing similar differential diagnoses, like schizophrenia and schizophrenic disorder in Case 7, caused candidates to lose an opportunity to score a mark with another diagnosis. For management, be mindful not to repeat issues or plans. In Case 26 on severe acne, one candidate used up four of the six management plans to elaborate on facial cleansing alone.

Tip 8

Write complete answers for diagnoses

Despite instructions asking for 'complete diagnosis', candidates often fail to provide this. For Case 4, a complete diagnosis should include 'iron deficiency anaemia secondary to menorrhagia from uterine fibroids', not 'anaemia' without the type of anaemia and underlying cause. For Case 7, writing 'depression' for diagnosis is incomplete and scores a zero mark because the patient clearly has psychotic features; the correct diagnosis would be 'depression with psychosis'.

For Case 18, writing 'diabetes mellitus' alone for diagnosis is incomplete and is scored as zero. Had candidates read the complete case, they could logically deduce that this was type 1 diabetes mellitus.

The diagnosis of acne in Case 26 is a very common adolescent problem and requires the inclusion of its severity ('severe' or 'nodulocystic' acne) for a complete answer, as this distinction is important for management. An answer of 'acne' alone scores a zero mark, as any layman can offer that answer.

Incomplete answers extend to interpretation of investigations. In Case 5, writing 'atrial fibrillation' alone is insufficient. The complete answer should be 'atrial fibrillation with rapid ventricular response', as the immediate management is a key feature that will determine the patient's outcome.

Tip 9

Provide details for management

Some candidates continue to offer undergraduate-level answers, like 'counsel, reassure, explain, inform the diagnosis, inform side effects and complications, follow-up.' Such vague, non-specific answers without clarification or examples are unacceptable for KFPs. When including referral or admission as a management plan, a complete answer should include the specialist for referral (e.g., orthopaedic surgeon), the clinic or hospital, urgency to be seen, whether an ambulance is required, and the reasons for referral or admission.

If the question asks specifically for a medication name, route of administration, dosage, and duration of treatment, it is important to use generic names and comply to the instructions. Unfortunately, some candidates are still unfamiliar with common medications used in primary care, their indications, interactions, contraindications, side effects, and dosing schedule.

In giving advice for follow-up, candidates should inform when the patient should be seen and specify red flags for which patients must present urgently.

Tip 10

Use only universally recognised abbreviations

Candidates should not use abbreviations or acronyms unless they are well-established, such as 'BP' for blood pressure. A term must be written in full at its first usage (e.g., atrial fibrillation [AF]) before the abbreviation can be used subsequently. 'PID' can mean 'prolapsed intervertebral disease' or 'pelvic inflammatory disease'; 'SOB' does not necessarily mean 'shortness of breath'.

Tip 11

Be mindful of spelling and grammar mistakes

Some candidates exhibit poor command of the English language, as reflected in many spelling and grammar mistakes. Examiners may opt to not give marks for diagnoses that are spelled incorrectly. In the 2021 examination, examples of incorrect spelling included 'zooster' and 'zoaster' for zoster, 'meazlese' for measles, 'hatching' instead of latching.

When candidates have poor command of English, examiners must decipher the meaning that the candidate is trying to convey. In a worst-case scenario, examiners may simply give a zero score rather than attempt to guess at the candidates' intended meaning.

Tip 12

Write legibly with adequate font size

It is difficult for examiners to decipher handwriting that is illegible or small (i.e., font size 4–5) and to read sentences written all in capital letters. Poor handwriting could

be a deliberate attempt by candidates to cause confusion. In the answer for type 1 diabetes mellitus, '1' was written in such a way that it could have been read as either 1 or 2. It is unclear whether this was done intentionally by a candidate who was unsure if the diagnosis was type 1 or 2. Candidates should write clearly in a font size of at least 10. If answers are written in pencil, ensure that the lead is dark enough and all corrections are completely erased.

With the onset of online examination, poor handwriting would no longer be relevant, but candidates need to practise speed typing, using the same size font as set by the software, and not typing answers all in capital letters—this is tantamount to shouting.

In conclusion, failure to perform well on the KFP examination results from a combination of poor knowledge, decision-making skills, and examination techniques. Recommendations to improve knowledge base and decision-making skills are provided with examination technique tips to improve the likelihood of passing the KFP exam.

Take-home message

1. Keep track of the time
2. Read through the whole case before answering
3. Do not select or write-in more answers than asked
4. Select the maximum number of options allowed
5. Answer to the question
6. Answer according to the context of the case
7. Do not write similar answers
8. Write complete answers for diagnoses
9. Provide details for management
10. Use only universally recognised abbreviations
11. Be mindful of spelling and grammar mistakes
12. Write legibly with adequate font size

How does this paper make a difference to Family Medicine?

- Key feature problems (KFP) test clinical reasoning and decision-making skills essential for resolution of problems and management of patients.
- Many candidates fail the KFP component in the Conjoint MAFP/FRACGP examination for Family Medicine specialisation.
- This paper reviews the causes of failure and common mistakes made by candidates in the 2020 KFP paper.
- Recommendations for improving candidates' performance and tips on examination techniques for KFP are provided.
- We hope that this paper will not only improve candidates' chances of passing the KFP exam, but also improve their clinical decision-making skills in future practice.

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