

Mastering your Fellowship

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Abstract

The series, "Mastering your Fellowship", provides examples of the question format encountered in the written examination, Part A of the FCFP(SA) examination. The series aims to help Family Medicine registrars prepare for this examination. Model answers are available online.

Keywords: FCFP(SA) examination, Family Medicine registrars

Introduction

This section in the *South African Family Practice Journal* is aimed at helping registrars prepare for the FCFP (SA) Final Part A examination (Fellowship of the College of Family Physicians) and will provide examples of the question formats encountered in the written examination: Multiple Choice Question (MCQ) in the form of Single Best Answer (SBA – Type A) and/or Extended Matching Question (EMQ – Type R); Modified Essay Questions (MEQ)/Short Answer Question (SAQ) and questions based on the Critical Reading of a Journal (evidence-based medicine). Each of these question types is presented based on the College of Family Physicians blueprint and the key learning outcomes of the FCFP programme. The MCQs will be based on the ten clinical domains of family medicine, the MEQs will be aligned with the five national unit standards and the critical reading section will include evidence-based medicine and primary care research methods. This month's edition is based on unit standard 2 (Evaluate a patient according to the bio-psycho social approach) and unit standard 1 (critically appraising quantitative research). We suggest that you attempt answering the questions (by yourself or with peers/supervisors), before finding the model answers online: <http://www.safpj.co.za/>.

Please visit the Colleges of Medicine website for guidelines on the Fellowship examination: http://www.collegemedsa.ac.za/view_exam.aspx?examid=102

We are keen to hear about how this series is assisting registrars and their supervisors in preparing for the FCFP (SA) examination. Please email us your feedback and suggestions.

1. EMQ (extended matching questions): orthopaedics

For each of the following clinical scenarios describing patients with knee pain, select the most appropriate diagnosis from the options below. Each option may be used once, more than once or not at all.

1.1 A 25-year-old female presents with pain on the anterior

aspect of one of her knees especially when walking down the stairway at home. On examination, she has a full range of movement of her knee and her pain is relieved with the knee in extension. Crepitus is palpated in the knee with passive movement.

- 1.2 A 45-year-old male who is a long-distance runner complains of knee pain over the lateral aspect of the knee. Pain is worse on running downhill. Tenderness is noted on the lateral aspect of the knee and is worse when the lateral aspect of the knee is compressed and the knee is extended.
- 1.3 A 38-year-old domestic worker complains of pain over the anterior aspect of the knee. Tenderness and swelling are noted on the anterior aspect of the knee. The patella tap is negative, but on palpation tissue thickening is noted just below the patella.
- 1.4 A 36-year-old marathon runner complains of pain over the anterior aspect of the knee. Most of his training occurs on the road surface. He reports that the pain is relieved after warming up. On examination, tenderness on the anterior aspect of the knee is found on extending the knee against resistance.

TOTAL: [4]

Options:

- A. Anserine bursitis
- B. Collateral ligament injury
- C. Cruciate ligament injury
- D. Iliotibial band friction syndrome
- E. Meniscal Injury
- F. Osteoarthritis
- G. Patella-femoral syndrome
- H. Patellar plica syndrome
- I. Patellar tendinopathy
- J. Popliteus tendinopathy
- K. Pre-patellar bursitis

Short answers:

- 1.1 G
1.2 D
1.3 K
1.4 I

Long answers:

Knee pain is a common presentation in clinical practice and is often managed poorly in primary care. A careful history and examination taking into consideration the patient's age, weight, occupation, past medical and surgical history, biomechanics of the lower limb, occupation and activity levels is critical in establishing a diagnosis.

Patella femoral syndrome is common and is caused by friction or excessive loading of the patella on the femur. Abnormal tracking of the patella over the femoral groove causes excessive friction and pain and occurs if the femoral groove is too shallow, if the vastus medialis muscle is poorly developed, if there is excessive laxity of the patella retinaculum or if there are abnormal biomechanics such as excessive foot pronation or an abnormal Q angle.

Patients usually complain of anterior knee pain which is aggravated when walking up and down stairs and is relieved by straitening the knee as this relieves the friction of the patella on the femoral condyle. Compression of the patella into the femoral groove elicits the pain and wet leather crepitus is often palpated with passive movements.

Treatment involves treating the cause such as hyper pronation with corrective footwear and improving the flexibility and strength of the quadriceps muscles. Specific taping can also help take the load off the patella. Short term solutions would include icing, use of non-steroidal anti-inflammatory drugs and intra-articular steroids. In some instances, corrective surgery may be required.

Iliotibial band (ITB) friction syndrome is also a common condition especially in long distance athletes such as runners and cyclists. The pathology is due to friction of the iliotibial band over the lateral epicondyle of the femur which often results in inflammation and may lead to fibrinoid necrosis. Pain is worse on running, presents early and is aggravated by running downhill. Tenderness is elicited by compressing the ITB over the lateral epicondyle and extending the knee from 90° of flexion.

Treatment is to advise the athlete to reduce mileage and correct abnormal biomechanics. Short course NSAIDs and icing is usually advocated. Specific stretching of the ITB and physiotherapy are usually advocated as well. Corticosteroid infiltrations into the epicondylar region may also assist. Surgery to release the ITB is sometimes advocated.

Pre-patella bursitis or housemaid's knee is often precipitated by repetitive friction or direct trauma. The lining of the bursa thickens and becomes inflamed, which usually settles with rest. The bursa usually has a small amount of fluid within. Swelling occurs in front of the knee and can present as a painful or

painless swelling. Synovial thickening and irregularity may be palpated. Treatment usually involves rest, ice compression with or without aspiration and the use of NSAIDs for a short duration.

Patella tendinopathy occurs with repetitive overloading of the quadriceps mechanism and occurs with many sporting activities especially in males less than 40 years of age. Micro-tears in the patella tendon with associated collagen degeneration is usually found at the patella-tendon junction. Secondary inflammation, calcification and ossification are complications. Grading of severity is based on when the pain is experienced after activity (grade 1), at the onset activity (grade 2), throughout activity (grade 3) and continually (grade 4). Pain is aggravated by forced knee extension and a localised swelling is sometimes palpated.

Patella tendinopathy is difficult to treat. Rest, ice, patella bracing or strapping and NSAIDs may prove beneficial in the short term. The patient should be introduced to quadriceps strengthening exercises as part of rehabilitation. Many patients are forced to choose other sporting activity. Surgery is sometimes offered when conservative management fails.

Further reading:

1. Calmbach WL, Hutchens MA. Evaluation of patients presenting with knee pain: Part I. History, physical examination, radiographs, and laboratory tests. *American Family Physician*. 2003;68(5):907-12.
2. Calmbach WL, Hutchens M. Evaluation of patients presenting with knee pain. Part II. *American Family Physician*. 2003;68(5):917-22.
3. Noble C. *The Pfizer manual of sports injuries*. Pfizer; 1989.

2. SAQ (short answer question): The family physician's role as a care provider and consultant

You have been the family physician for the Mutombo family for the past five years. Jean-Pierre (25 years) and his wife Ruth (22 years) are South African by birth. Ruth is 6 weeks pregnant. Jean-Pierre's parents reside in the countryside of the Democratic Republic of the Congo (DRC). Ruth and Jean-Pierre have booked a flight to the DRC, leaving in a week's time and will be staying there for a week. It will their first visit to the country. They come to you for advice regarding the trip.

- 2.1. Discuss the precautionary measures the family should observe regarding endemic infections in that country. (6)
- 2.2. List three fatal infectious diseases they may encounter while on this visit. (3)
- 2.3. What advice would you give the family regarding vaccination? (2)
- 2.4. Discuss with reasons the advice you would give to Mrs Mutombo (7)
- 2.5. Ruth insists on travelling on the planned trip. What is your responsibility regarding compulsory vaccination for her? (2)

TOTAL: [20]

Answers:

- 2.1. Discuss the precautionary measures the family should observe regarding endemic infections in that country. (6)
- Ensure safe drinking water (bottled). Since they will be in the countryside, they need to boil the water for drinking.
 - Optimize protection against mosquitoes and ticks by using mosquito nets, and wearing long-sleeved tops, long pants, and socks.
 - Treat clothing with permethrin or purchase pre-treated clothing.
 - Apply lotion, liquid, or spray repellent to exposed skin.
 - Be aware that yellow fever and Zika vector mosquitoes bite mainly from dawn to dusk, while malaria vector mosquitoes bite mainly from dusk to dawn.
 - For ticks, check oneself daily (one's entire body) and remove attached ticks promptly.

- 2.2. List three fatal infectious diseases they may encounter while on this visit. (3)
- a. Malaria
 - b. Yellow fever
 - c. Tick bite fever.

- 2.3. What advice would you give the family regarding vaccination? (2)

It is compulsory for them to receive the Yellow Fever vaccine.

- 2.4. Discuss with reasons the advice you would give to Mrs Mutombo. (7)

Ruth is at risk for malaria, yellow fever and Zika viral infections. (1)

Regarding malaria infection, pregnant women usually have more severe symptoms and outcomes, with higher rates of miscarriage, intrauterine demise, premature delivery, low-birth-weight neonates, and neonatal death. They are also at a higher risk for severe anaemia and maternal death. She should avoid travelling until the baby is born or delay the travel until after 20 weeks' gestation when she can advisably use insecticide-treated bed nets (ITN) at her destination and be offered intermittent presumptive treatment (IPT) with antimalarial medications (chemoprophylaxis with Sulfadoxine/pyrimethamine). (2)

Regarding yellow fever, nonimmune women should generally postpone vaccination and travel to endemic/epidemic areas during pregnancy. If travel and/or exposure is unavoidable, vaccination is preferable after the first trimester. (2)

Pregnant women should not travel to the Democratic Republic of the Congo because of the risk of Zika infection which can cause serious birth defects. The Zika virus is primarily spread through infected mosquitoes. There is vertical transmission from the pregnant woman to her foetus. Currently there is no vaccine to prevent or medicine to treat the infection. (2)

- 2.5. Ruth insists on travelling on the planned trip. What is your responsibility regarding the compulsory vaccination for her?

Give her a letter of exemption/waiver. It is advisable that she carries a physician's waiver along with documentation of the waiver (CDC). (2)

TOTAL: [20]

Further reading:

1. Schantz-Dunn J and Nour NM. Malaria and Pregnancy: A Global Health Perspective. *Rev Obstet Gynecol.* 2009;2(3):186-92.
2. Peters PJ, Thigpen MC, Parise ME, Newman RD. Review Safety and toxicity of sulfadoxine/pyrimethamine: implications for malaria prevention in pregnancy using intermittent preventive treatment. *Drug Saf.* 2007;30(6):481-501.
3. Centers for Disease Control and Prevention (CDC). National Center for Infectious Diseases Traveler's Health. Pregnancy, breast-feeding, and travel: factors affecting the decision to travel. Available from: <http://www.cdc.gov/travel/pregnant.htm>.

3. Critical appraisal of research

Please answer the questions related to the following article:

Moodley J, Venkatachalam S, Songca P, Firth J. Misoprostol for cervical ripening at and near term – a comparative study. *South African Medical Journal.* 2003;9(5):371-4

Available from <https://pdfs.semanticscholar.org/87e1/82b5a4e3c48674e408f79760c527a4ad612e.pdf>

TOTAL: [30]

- 3.1. What was the study design? (1)
- 3.2. What are the advantages of this study design? (3)
- 3.3. What are some of the challenges associated with conducting a study using this study design? (3)
- 3.4. What is your understanding of blinding? In what ways did blinding occur/not occur in this study? (4)
- 3.5. Critically appraise the number of groups included in the design versus the analysis. What are the implications of this for the power of the study? (3)
- 3.6. Please mention four important issues with regards to definitions and assessment(s) of trial outcomes. (4)
- 3.7. Demographic details and indications for labour are presented in Table 1. Highlight four (4) inconsistencies in Table 1. (4)
- 3.8. Can the findings of this study support the conclusions about vaginal versus oral misoprostol? (2)
- 3.9. Use a structured approach (e.g. READER) to illustrate what issues arise from this paper when you consider deciding if this study is likely to change your practice. (6)

Answers:

3.1. What was the study design? (1)

This was a randomised controlled trial.

3.2. What are the advantages of this study design? (3)

Advantages of a randomised controlled study:

Convincing evidence for causation

Decreased bias and confounding

Measurements done prospectively

3.3. What are some of the challenges associated with conducting a study using this study design? (3)

Challenges associated with conducting a randomised controlled study:

Not always ethical or feasible.

Loss to follow-up can make comparison of groups difficult.

Unmasking and contamination can lead to bias.

Difficult to ensure that groups are managed as similarly as possible – this is not always possible, particularly when it is obvious who is in which group and there may be perceived benefits from being in the treatment group.

Often, such trials are implemented in academic or other clinical settings in which the investigator has a reasonable degree of control over factors essential to conducting a well-designed RCT. Maximising such control is important to enhancing the internal validity of an RCT. However, in so doing, findings may be less externally valid (i.e., generalisable) to non-academic practice settings.

3.4. What is your understanding of blinding? In what ways did blinding occur/not occur in this study? (4)

Single blind: Subjects do not know group allocation

Double blind: Subjects and investigators do not know group allocation

There was blinding in the selection of who should be in which group – control group or study group (based on opening sequentially numbered opaque envelopes containing cards with computer generated numbers stating the method of induction). However, those involved in giving the medication would not have been blinded as one group was given dinoprostone (a vaginal gel) and the other was given either oral or vaginal tablets.

There does, however, seem to be some bias – either in the selection of the patients or in the way that patients were allocated (systematic error) between vaginal and oral misoprostol – with many more inductions with vaginal and oral misoprostol for gestational hypertension (40 patients vs 26 patients) and many less for postdates (25 patients vs 41 patients).

3.5. Critically appraise the number of groups included in the design versus the analysis. What are the implications of this for the power of the study? (3)

In the study method 2 groups were selected – those receiving dinoprostone (prandin gel) – the control group – and those receiving misoprostol either orally or vaginally (Who decided whether to give it orally or vaginally and does it make a difference whether or not it is given orally or vaginally?) – the study group.

In the analysis there are 3 groups in the study- the misoprostol group, which is further divided into oral and vaginal administration, and the dinoprostone group.

Comparing three groups requires different sample size calculation to comparing two groups.

3.6. Please mention at least four important issues with regard to definitions and assessment(s) of trial outcomes. (4)

No clear definitions of the following secondary outcomes – induction to delivery, MSL (grade, etc.), non-reassuring foetal heart rate.

No clear definition of the Bishops score

Not clear if it was the same person assessing the cervix after treatment.

Not clear if it was the same consultant reviewing “failed” induction or a number of consultants.

Not clear if the consultants were consistent in their recommendations – particularly if it was not the same person. What are “adequate” contractions? What was the definition of labour?

What was the definition of term or near term? 1 x neonatal death was for 850 g (28 weeks) was this considered “near term”?

3.7. Demographic details and indications for labour are presented in Table 1. Highlight four (4) inconsistencies in Table 1. (4)

1. The heading talks about range, but age is given at the top of column as 26 years.

It is not clear whether the numbers given are means or medians or frequencies. Means would usually be presented with a SD. Medians would usually be presented with an IQR. Frequencies would usually be presented with a %. – none of which is presented.

2. Column 1 adds up to 108 patients, but N=103 patients.

3. Column 2 adds up to 110 patients, but N=100 patients.

4. Column 3 add up to 226 patients, but N=193 patients.

5. Total reasons for induction = 444. However, the total number of women involved was 396.

It is not clear if there was more than 1 indication for induction as this is not stated in the article.

3.8. Can the findings of this study support the conclusions about vaginal vs oral misoprostol? (2)

The study conclusions state that: there is higher efficiency of misoprostol after vaginal administration. However, the

study did not set out to study the differences between vaginal and oral misoprostol and it is not clear how the 2 study groups became 3 groups and who was allocated to oral misoprostol and who was allocated to oral and vaginal misoprostol (according to Table 1 – this may be an error, but that is what is reported in the Table).

However, the study clearly had sufficient power to compare efficacy if significant findings were obtained. They also had similar numbers in both misoprostol arms suggesting an intention to make this comparison. However, the methods do not make this clear and there is no sample size calculation. Allocation, is a problem. So the findings should be interpreted cautiously. We would not say they are completely invalid.

In the light of the above comments, the findings about vaginal misoprostol vs. oral misoprostol should be interpreted cautiously.

- 3.9. Use a structured approach (e.g. READER) to illustrate what issues arise from this paper when you consider deciding if this study is likely to change your practice. (6)

Relevance – is it about family medicine?

Education – does it challenge existing knowledge or thinking?

Applicability – are the results applicable to my practice?

Discrimination – is the study scientifically valid enough?

Evaluation – given the above how would I score or evaluate the usefulness of this study to my practice?

Reaction – what will I do with the study findings?

Further reading:

1. Mash B, Ogunbanjo GA. African Primary Care Research: Quantitative analysis and presentation of results. Afr J Prm Health Care Fam Med. 2014;6(1), Art. #646, 5 pages. <http://dx.doi.org/10.4102/phcfm.v6i1.64>

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