

## Mastering your Fellowship

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The series, "Mastering your Fellowship", provides examples of the question format encountered in the written and clinical examinations, Final Part A of the FCFP(SA) examination. The series is aimed at helping 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); short answer question (SAQ), questions based on the critical reading of a journal (evidence-based medicine) and an example of an objectively structured clinical examination (OSCE) question. 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 1 (critically reviewing new evidence and applying the evidence in practice), unit standard 2 (evaluate and manage a patient according to the bio-psycho-social approach) and unit standard 5 (conducting all aspects of health care in an ethical and professional manner). The theme for this edition is anaesthesia.

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:  
[https://www.cmsa.co.za/view\\_exam.aspx?QualificationID=9](https://www.cmsa.co.za/view_exam.aspx?QualificationID=9)

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. MCQ (multiple choice question: single best answer)

The professional nurse asks you to assess a patient post caesarean delivery. The spinal anaesthetic wore off within one hour and the patient complains of pain which you assess as 8/10. Her BP =

140/80 PR = 110/min, SPO2 = 98%, RR = 24/min. You exclude a secondary cause for the pain. The most appropriate option for this patient is:

- Diclofenac IMI
- Morphine IMI 4 hourly
- Morphine IMI 4 hourly plus diclofenac IMI
- Pethidine IMI 4 hourly
- Pethidine IMI 4 hourly plus diclofenac IMI

#### Answer:

- namely morphine and diclofenac.

Patients' experience of pain in the postoperative setting is affected by a variety of factors which include:

- The site, type, and duration of the surgical procedure.
- The extent of the incision and degree of surgical trauma encountered. This may be related to the experience and skill of the surgeon.
- The physical and psychological state of the patient including the patient's subjective pain thresholds.
- The pre-operative mental and pharmacological preparation of the patient.
- The type of anaesthesia being administered.
- The approach to pain management before, during and after the procedure.
- The degree to which tissue was manipulated intraoperatively and the incidence of complications.
- The quality of postoperative management.

When diagnosing postoperative pain, it is important to take a reasonably detailed focussed history and perform the necessary physical examinations to exclude other problems that may be causing the pain. The visual analogue scale is often the method used for assessing pain along a continuum between 0 and 10. A review of the anaesthetic and surgical notes is vitally important in understanding the context. The patient's experience of empathetic postoperative medical and nursing care is more

likely to improve the illness experience. Post caesarean delivery pain is usually a combination of nociceptive and neuropathic pain.

Various methods of administering analgesia in the postoperative period are available, the most popular being patient controlled analgesia. However, in resource limited settings, the intramuscular injectable routes are preferred in patients who are not expected to take medication orally.

Paracetamol alone or in combination has proven to be an excellent choice for mild to moderate pain. It can be administered orally, rectally and intravenously. A patient who presents with severe postoperative pain who is unable to take medication orally should be offered opiate analgesia. The efficacy of pethidine and morphine are comparable and both drugs have a similar profile in causing nausea, vomiting and respiratory depression. However, pethidine has many side effects, hence caution needs to be exercised if used for prolonged periods of time. It is relatively short acting but tends to gradually accumulate in the body as it is metabolised to norpethidine, which is neurotoxic and can provoke seizures. Pethidine should not be used during lactation for prolonged periods as it has been associated with neurobehavioural problems in infants. Morphine has ten times the potency of pethidine and is used at a dose of 0.1 mg/kg as compared to pethidine (1 mg/kg/dose).

Nonsteroidal anti-inflammatory drugs (NSAIDs) augment the effects of opioids and tend to reduce the opioid dose required, hence using a NSAID in severe postoperative pain is recommended. The IV formulation such as ketorolac is preferred but is usually not available in resource limited settings. NSAIDs provide sustained pain relief and should be used routinely in major surgical procedures unless contraindications exist. Some of the contraindications include asthma, ischaemic heart disease, hypertensive heart disease, renal disease, significant hepatic disease, peptic ulcer disease and patients on concomitant anticoagulation therapy. The newer cyclo-oxygenase inhibitors (coxibs) are preferred but are usually not available in the public sector. A stat dose of diclofenac has been reported to prolong analgesia and enhance opioid efficacy.

#### Further reading:

- Málek J, Ševčík P, Bejšovec D. Postoperative pain management. Mlada fronta: Prague; 2017.
- South African Department of Health. Hospital Level Standard Treatment Guidelines and Essential Medicines List. Pretoria: National Department of Health; 2015.  
EML App available from: <https://play.google.com/store/apps/details?id=omp.guidance.phc&hl=af>  
<https://itunes.apple.com/za/app/eml-clinical-guide/id990809414?mt=8>  
Also available on EMguidance App: <https://emguidance.com/>
- Additional resources on essential pain management:
- PainSA (South African Chapter of the International Association for the Study of Pain) - <https://www.painsa.co.za/default.asp>
- International Association for the Study of Pain - <http://www.iasp-pain.org/>.

- Physiotherapists with specific interests in pain management - <https://pmpg.co.za/>.
- Train Pain Academy for courses - <http://trainpainacademy.co.za/>.
- Essential Pain Management App: <https://play.google.com/store/apps/details?id=com.rat.essentialpainmanagement&hl=en>

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

You are the family physician providing anaesthesia on an elective caesarean section list at the district hospital. Mrs MP, a 30-year-old G2P1 is next on the list. She is booked for an elective caesarean section at 39/40 for a previous caesarean section, and cephalopelvic disproportion (CPD). Her first pregnancy resulted in an emergency caesarean section with no complications under spinal anaesthesia. She is otherwise well and has had an uneventful pregnancy. You immediately note that she is 1.4 m tall, appears overweight, has large breasts and a short neck.

- 2.1 You are seeing Mrs MP for the first time outside the theatre pre-operatively. List the steps that you would follow to formulate a comprehensive anaesthetic plan for this patient, including the pre-, intra- and postoperative assessment and plan. (10 marks)
- 2.2 In the morning before starting a theatre list, routine emergency drugs are prepared and made readily available. List five important drugs, specifically what anaesthetic emergency each is used for, and the dose that you would use. (5 marks)
- 2.3 The patient is now in the theatre and the surgery is about to begin. Prior to skin incision you test the spinal block which appears to be at the T4 level. During the operation the surgeon notes a lot of adhesions. The patient is tachycardic and is groaning with pain. The surgeon has not yet gone through the sheath. The patient cannot move her feet, but insists the pain is intolerable and not just due to pressure. How would you proceed? What factors would you consider in deciding on your modified intraoperative plan? (5 marks)

**Total: 20 marks**

### Model answers

- 2.1 **You are seeing Mrs MP for the first time outside the theatre pre-operatively. List the steps that you would follow to formulate a comprehensive anaesthetic plan for this patient, including the pre-, intra- and postoperative assessment and plan. (10 marks)**

The anaesthetic plan allows you to individualise and plan each step of care for the patient during the anaesthetic process. It is used to plan appropriately as well as be prepared for and anticipate any problems. The mode of anaesthesia is a decision made in conjunction with the patient, with the preferred and safest choice being spinal anaesthesia. The anaesthetic plan should include:

- a. Pre-operative preparation

- b. Intraoperative management
- c. Postoperative requirements.

#### For this patient:

##### a. Pre-operative preparation

- Informed consent signed
- Fasting guidelines – NPO 8 hours (raised intra-abdominal pressure during pregnancy poses a risk of aspiration). See Tables 1 and 2 (included here as additional information, not part of model answer).

**Table 1.** Fasting guidelines

Ingested material	Minimum fast (hours)
Clear fluids	2
Breast milk	4
Infant formula	4 – 6
Non-human milk	6
Light meal	6
Meal with high fat or meat content	8 or more

**Table 2.** Causes of delayed gastric emptying

<b>Metabolic causes</b>	Diabetes mellitus, renal failure
<b>Decreased gastric motility</b>	Head injury, trauma
<b>Bowel obstruction</b>	
<b>Raised intra-abdominal pressure</b>	Pregnancy, obesity
<b>Drugs</b>	Opioids
<b>Severe trauma and pain</b>	
<b>Gastro-oesophageal reflux</b>	May be associated

Routine pre-op investigations – haemoglobin, rhesus

- Anaesthetic risk assessment – functional status/exercise tolerance and ASA classification.

#### Functional status or exercise tolerance

- Perhaps the single most useful risk index.
- Commonly measured in metabolic equivalents (**METS**).
- One MET is the energy consumed by the body at rest.
- The capacity to climb a flight of stairs corresponds to a moderate exercise capacity and is equivalent to 4 METS.
- This is easily measured and is a sensitive cardiovascular risk index.
- Patients with an exercise capability of 4 METS or greater present with a lower risk of cardiovascular morbidity.

#### ASA physical status classification

- Unfortunately, underlying disease is only one of many factors that contribute to peri-operative complications, therefore the ASA classification is not a reliable rating.
- However, many anaesthetists still use this rating – see Table 3.

Airway assessment – on history the patient had an uncomplicated previous caesarean section under spinal anaesthesia. Enquire about any previous general anaesthesia (GA) and airway complications, or any medical conditions that may make intubation difficult. On examination note she is obese, has a short neck, and large breasts - considered red flags and may be a concern for a possible difficult intubation

**Table 3.** Pre-operative physical status classification of patients according to the ASA\*

Class	Definition
1	A normal healthy patient.
2	A patient with mild systemic disease and no functional limitations.
3	A patient with moderate to severe systemic that results in functional limitation.
4	A patient with severe systemic disease that is a constant threat to life and functionally incapacitating.
5	A moribund patient who is not expected to survive 24 hours with or without surgery.
6	A brain-dead patient whose organs are being harvested.
E	If the procedure is an emergency, the physical status is followed by "E".

\* ASA - American Society of Anesthesiology

if GA is required. Examine the head and neck and do a Mallampati classification.

- Incisor gap
  - Less than 2 finger breaths (patient's own fingers) i.e. ~3 cm is associated with difficult intubation.
- Position of mandible
  - Patient who is unable to protrude lower incisors anterior to upper incisors may have a difficult intubation.
  - Receding chin may be difficult.
- Mallampati test
  - Sit in front of sitting patient whose head is in a neutral position.
  - Ask patient to open mouth maximally and protrude tongue without phonating.
  - Note which of the following structures are visible (see Table 4).
  - When used in *isolation* the Mallampati test correctly identifies 50% of difficult intubations.

**Table 4.** Mallampati classification

Class	Visible structures	Ease of intubation
1	Faucial pillars (palatoglossal and palatopharyngeal folds) Soft palate Uvula	Should be easy
2	Faucial pillars Soft palate Uvula masked by base of tongue	Should be easy
3	Only soft palate visible	Associated with difficulty
4	Soft palate not visible	Associated with difficulty

- Flexion/extension of the cranio-cervical junction
  - Reduced movement is associated with difficult intubation.
- Thyromental (Patil's test)
  - Distance from tip of thyroid cartilage to tip of the mandible, with neck fully extended.
  - There should be greater than 6.5 cm (3 fingers).
  - Estimates potential space into which tongue can be displaced on laryngoscopy.

- 6 cm is associated with difficult intubation.
- Predicts 75% of difficult intubation.
- Sternomental distance
  - Distance from upper border of manubrium to the tip of the mandible with the neck fully extended.
  - A distance of less than 12.5 cm is associated with a difficult intubation in adults.
- Full history current and past of all systems (current state of health/coughs or colds, past surgical history, and any risk factors) and medications/allergies.
- Full examination – especially vitals, general, head and neck/airway, CVS, respiratory, neurological, abdominal, foetal condition and back, spinal site, and extremities.
- Drugs used for pre-medication – sodium citrate for acid reduction, and prophylactic antibiotic dose pre-op, e.g., cefazolin 1 g IVI stat (according to SAASP guidelines).
- Effective IVI access and pre-op fluids to mitigate cardiovascular effects of spinal anaesthesia, i.e., pre-load/co-load with 10–20 ml/kg IVI fluids – warmed crystalloid usually most appropriate choice.
- Position patient optimally – sitting or left lateral lie, for left uterine displacement, and prevention of aortocaval compression.

#### b. Intraoperative management

- Follow the steps of the modified World Health Organization surgical safety checklist for safe caesarean delivery.
- Type of anaesthesia chosen for this procedure: regional anaesthesia safest unless contra-indicated – spinal anaesthesia (using 0.5% heavy bupivacaine with/without fentanyl, e.g., 8 mg bupivacaine and 10 µg fentanyl, considering her height).
- Always be prepared for GA if spinal fails.
- Monitoring anaesthesia: Monitoring – vitals, e.g., every 1 minute before baby is out, then every 2.5 minutes.
  - Fluid management – crystalloids/colloids. Supplemental O<sub>2</sub> if needed.
  - Positioning – left lateral tilt until baby born, avoid head down (high spinal).
  - Oxytocin once foetus delivered and uterus evacuated.
  - Keep patient warm – warm fluids, bear hugger.

#### c. Postoperative requirements

- Postoperative analgesia, and antiemetics.
- Haemodynamic monitoring – vitals, contracted uterus, monitor urine catheter, exclude active bleeding.
- Baby friendly principles – early skin to skin and breastfeeding.

#### 2.2 In the morning before starting a theatre list, routine emergency drugs are prepared and made readily available. List five important drugs, specifically what anaesthetic emergency each is used for, and the dose that you would use. (5 marks)

- Phenylephedrine: 50–100 µg/dose, sympathomimetic. To be given if patient is tachycardic and hypotensive. The tachycardia is usually the first thing to become evident on the monitors. The BP drop may only become evident on the next BP reading which may only be done 1 minute later. This would result in a delayed

response in providing treatment, and therefore onset of a tachycardia should alert you to the problem. It is mainly used for haemodynamic support with spinal/epidurals, (especially in obstetrics due to its beneficial effect on placental flow) but can be used whenever haemodynamic support is needed temporarily. (1 amp of 10 mg phenylephedrine in 200 ml NaCl i.e. 50 µg/ml)

- Ephedrine: 5–10 mg/dose, direct and indirect sympathomimetic, given if the patient has a normal to low pulse and hypotension. (50 mg ephedrine/amp, mix to 10 ml – 5 mg/ml)
- Adrenaline: 1 mg in 200 ml bag of normal saline, 5 µg/ml, give 5 µg boluses if there is a significant drop in BP and pulse (in practice, this is usually seen as a rapid drop in SBP to < 60 mmHg associated with a bradycardia). Can be given in peripheral line. Used for inotropic support in pre-cardiac arrest states where ephedrine may not be as effective.
- Atropine: 0.4–0.6 mg stat. Used for bradycardia with a pulse less than 40 or if the patient is symptomatic. (1 mg atropine mixed in 10 ml syringe, i.e., 0.1 mg/ml)
- Propofol: 2–2.5 mg/kg, and suxamethonium: 1 mg/kg. Keep on standby in case of need to convert to general anaesthesia.

#### 2.3 The patient is now in the theatre and the surgery is about to begin. Prior to skin incision you test the spinal block which appears to be at the T4 level. During the operation the surgeon notes a lot of adhesions. The patient is tachycardic and is groaning with pain. The surgeon has not yet gone through the sheath. The patient cannot move her feet, but insists the pain is intolerable and not just due to pressure. How would you proceed? What factors would you consider in deciding on your modified intraoperative plan? (5 marks)

Convert to a general anaesthetic.

Action plan:

- **Choose agents** for induction/maintenance/emergence.
- **Pre-oxygenation. Rapid sequence induction (RSI)** with cricoid pressure using, e.g., propofol and suxamethonium.
- **Should anticipate difficult airway** in view of height, weight and large breasts.
  - Can prepare for difficult airway by:
    - Elevating shoulders with towel, and second person to hold down breasts during RSI, to extend neck and get breasts out of way.
    - McCoy laryngoscope – flexible tip laryngoscope for difficult intubation.
    - Size 6 and 7 cuffed oral endotracheal tube (COETT) with introducer in place in a spare tube readily available in case of failure without introducer.
    - Gum elastic bougie for difficult intubation.
  - Can use **100% oxygenation** during GA until baby is out and then reduce flows.
  - **Analgesia** – cannot use opiates until baby is out, e.g., fentanyl/morphine/intravenous paracetamol (peralgan) once baby is delivered. Combined spinal

and GA may increase haemodynamic effects on mother, may therefore elect for shorter acting opioids. Can give ketamine 0.3 µg/kg before baby is out.

- **Muscle relaxant**, e.g., atracurium 20–30 minutes duration, note time and reversal required. Inhalational gas – MAC around 0.8 (allowed awareness in obstetric patients, higher MAC increases bleeding and uterine atony. Sevoflurane may cause uterine atony; isoflurane is best but expensive/not always available).
- **Oxytocin** once baby is out.
- **Extubate awake** – pregnancy has increased risk of aspiration even if starved, reduced lower oesophageal tone.
- **Paediatrician** (or additional skilled medical officer) in theatre.

#### Further reading:

- Chapters 78, 129, 130, 131, 132, 134, 135, 136 and 138. In Mash B, Blitz J, editors. South African Family Practice Manual. 3rd ed. Pretoria: Van Schaik Publishers; 2015.
- Allman K, Wilson I. Section 1. Pre-operative assessment and preparation for anaesthesia. In: Oxford Textbook of Anaesthesia. Print ISBN-13: 9780199642045. Epub 2017 Apr. doi: 10.1093/med/9780199642045.001.0001
- Morgan GE, Mikhail MS. Pre-operative Evaluation of patients. In: Morgan & Mikhail's Clinical Anesthesiology, Sixth Edition; 2018. Print ISBN10 1259834425.
- WITS Department of Anaesthesia, Anaesthetic Notes, 2nd edition. Available from: <https://libguides.wits.ac.za/whsl-anaesthesiology>
- South African Society of Anaesthesiologists (SASA). The management of high spinal anaesthesia in obstetrics: Suggested clinical guideline in the South African context. Southern African Journal of Anaesthesia and Analgesia. 2016;22(1 Supplement 1):S1-5.
- Naidoo M, Moodley J, Gathiram P, Sartorius B. The impact of a modified World Health Organization surgical safety checklist on maternal outcomes in a South African setting: A stratified cluster-randomised controlled trial. South African Medical Journal. 2017;107(3):248-57.

### 3. Critical appraisal of quantitative research

Read the accompanying article carefully and then answer the following questions. As far as possible use your own words. Do not copy out chunks from the article. Be guided by the allocation of marks with respect to the length of your responses.

Nqala MO, Rout CC, Aldous CM. Remote clinical support by telephone for rural district hospital medical officers in the Eastern Cape. South African Family Practice. 2015;57(5):286-90.

Available from: <https://safpj.co.za/index.php/safpj/article/view/4235>

- 3.1 Did the study address a clearly focused question/issue? (3 marks)
- 3.2 Is the research method (study design) appropriate for answering the research question? (4 marks)
- 3.3 Critically appraise the method of sampling study participants in this study. (2 marks)

- 3.4 Are the measurements (questionnaires) likely to be valid and reliable? (4 marks)
- 3.5 Critically appraise the questionnaire distribution and response rate of the study. (4 marks)
- 3.6 Critically appraise the authors' reporting in the results section. (5 marks)
- 3.7 Discuss the value of the study findings for your own practice using the READER format. (8 marks)

**Total: 30 marks**

#### Model answers

##### 3.1 Did the study address a clearly focused question/issue? (3 marks)

The authors aimed to determine user perceptions of the utility and effectiveness of a telephonic support system. The system or programme in question consisted of two-week 'in-reach' anaesthesia training courses for inexperienced medical officers in rural district hospitals. These courses were presented during 2010 by the anaesthetic department in the Port Elizabeth (PE) hospital complex. A telephonic clinical support programme formed part of the system, as these rural doctors were then encouraged to consult the urban doctors when necessary (when experiencing challenges related to anaesthesia). In terms of the PICO framework, one may state that, the problem or population refers to rural doctors and their anaesthetic competencies; the intervention refers to the programme offered by the PE anaesthetic department; there was no comparison; and the outcome of interest was how these doctors/users perceived the effectiveness of the intervention. So, it is safe to state that the question was clearly focused.

##### 3.2 Is the research method (study design) appropriate for answering the research question? (4 marks)

The researchers employed a retrospective questionnaire survey design to address their research question. The type of design is determined by the type of question asked. The choice of words is also important in terms of the implications for the study design. Here, the words "to determine" were used, which imply research in a positivist research paradigm (other words from this paradigm include "measure" and "evaluate"). Words such as "explore" or "interpret" imply an interpretivist paradigm (qualitative). Therefore, a quantitative/positivistic design (such as a survey) is suitable for this study question.

One may also address this question by considering the study design from the perspective of programme evaluation. When evaluating a programme, one needs to consider the stage of the programme (developmental, processes, or outcome evaluation), as well as the inferences to be made by the evaluation (do decision makers simply want to know whether the programme goals and expected changes have been achieved, or do they want to establish whether the programme was the cause of the outcomes achieved?). In this study, a process evaluation was performed, as it addressed questions such as whether services are available

and accessible, of a suitable standard or quality and are being used (utilisation), as well as whether the target population is being reached (coverage). The authors stated in the methods section, that they wanted to assess this support programme in terms of quality, accessibility, availability, effectiveness and limitations.

The authors did not aim to infer causal links between their programme and any effects on health outcomes; they merely wanted to know if their programme has made a difference to the attendees. In addition to ascertaining whether an intervention worked (and to measure accurately any difference it made), it may be important to understand why the intervention worked, including characteristics associated with success or failure (limitations). The evaluation methods may thus require both quantitative approaches to measure effects, as well as qualitative approaches to understand why it worked (or not). This study could therefore also have used a mixed-method approach to address different evaluation questions and provide a comprehensive perspective of the programme. One may argue that the open-ended questions in the survey questionnaire helped to gain a qualitative perspective. However, interviews or focus group discussions may have been better suited to gain this perspective, as a survey usually helps to quantify the qualitative findings of an initial exploratory phase.

### **3.3 Critically appraise the method of sampling study participants in this study. (2 marks)**

In surveys, it is often not possible to collect data from the entire study population and a representative sample must be selected, from whom data will be collected. The study population should be described in terms of people (who is included?), place (where are these people?) and, sometimes, time (over what time period?). In this study, the researchers evaluated their programme from two perspectives: the rural doctors who attended the programme and the urban doctors (experienced specialist trainees or consultants), who accepted calls in the defined period (between January 2012 and March 2013, which is presumably about one to two years after the training period in 2010 – it is not clear if the 2-week training sessions were only conducted during 2010, or whether these sessions were conducted on an ongoing basis). The researchers elected to include the entire rural study population in their study, namely all doctors who attended the programme. The urban doctors seemed to have been a small pool and everyone was approached. Therefore, no sampling was performed in this study, even though selection or inclusion criteria were determined for the rural participants: they must have attended the two-week anaesthetic training in PE, be medical officers (including community service doctors [CSMOs]) without extra anaesthetic training other than during internship, were working at a rural district (level 1) hospital, and must have used the telephonic support.

### **3.4 Are the measurements (questionnaires) likely to be valid and reliable? (4 marks)**

The data collection tool or questionnaire should be described and provided in full as an appendix. How the tool

was obtained, adapted, developed and/or piloted should be described. The validity and reliability of the questionnaire should also be addressed. A valid questionnaire measures what it claims to measure. Standardising a measure increases its reliability. Three common types of reliability are inter-rater reliability (similarity between different raters using the same tool), test-retest reliability (similarity between repeated measurements on the same person) and internal consistency (using the Cronbach's alpha statistical test).

In this study, the questionnaire is not provided in full, but rather in sections across the methods and results sections. For rural doctors, the types of questions used seem to include binary (yes/no), scaling (graded response) and open-ended (free text) options. Although not stated, it seems that the urban doctors had a similar selection of question types. However, it is not clear how the questionnaires for each respondent group differ from each other (this affects the reliability of comparing the findings from the two groups' perspectives). No detail is provided on how these questionnaires were developed or piloted. This missing detail makes it difficult for the reader to interpret the measurements made by the questionnaire in terms of validity and reliability.

### **3.5 Critically appraise the questionnaire distribution and response rate of the study. (4 marks)**

The method of questionnaire distribution and administration needs to be described in sufficient detail to facilitate critical appraisal. Survey questionnaires can be administered by personal interview (interviewer-administered), by self-administration (where the participant completes the questionnaire unassisted), or by telephone, mail (post), e-mail, cell phones or internet-based tools. Each of these methods have pros and cons in terms of influence on recruitment, reach and researcher effort, which in turn may affect the response rate.

In this study, the researchers collected data from the rural doctors in two ways: self-administered (an emailed questionnaire) and interviewer-administered (telephonic interviews that were transcribed onto the data sheet). Potential pitfalls of the self-administered method include issues around question interpretation, especially as it was not clear how the researchers addressed validity (content, face, construct and criterion) during the development of their questionnaire. Furthermore, inputting the data from an emailed questionnaire may increase the likelihood of error in transcribing responses. Verbally administered surveys (telephonic interviews) have the benefit of administering the questionnaire in a conversation-like manner, as well as allowing the researchers to capture more open-ended detail from respondents. Telephonic interviews are more intensive in terms of researcher time, but reduce the burden experienced by respondents. It is not clear if more than one researcher conducted the telephonic interviews in this study; this is relevant, as a consistent approach is needed to ensure inter-rater reliability. It is also not clear if a neutral research assistant vs a programme presenter conducted these interviews.

The breakdown presented in Figure 1 of the article shows that only 69 of the 133 (52%) of the doctors on the course database were contactable, of which 12 were excluded as they did not attend the course. This raises the concern regarding the accuracy of the course database, as it is unclear how many of the 133 doctors attended the course. Of the 57 who had attended the In-reach Course at Port Elizabeth, 19 confirmed that they had used the telephonic support system and only 17 agreed to participate in the survey. It appears that the true response rate is 17 out of 57 (29%). Although not stated, one may assume that the telephonic interviews were used to boost the response rate of the study: twelve questionnaires were completed over the phone, whereas only five were scanned and e-mailed.

### 3.6 Critically appraise the authors' reporting in the results section. (5 marks)

The results section usually starts with the presentation of descriptive statistics that describe the sample. After this, inferential statistical results can be presented for the key comparisons that have been outlined in the objectives. It is important to stay aligned with the objectives and original intentions when performing the analysis and presenting the results.

In this paper, the results section commences with a rather complicated description of how the authors defined the final sample of rural doctors who met the inclusion criteria for the survey. Only 19 (14%) rural doctors of the total course database (133) participated in the full programme (the inclusion criteria stipulated that the rural doctors should have attended the course and made use of the telephonic support system following the course), of which 17 agreed to complete the questionnaire. Thirty-eight (67%) of the 57 contactable attendees did not make use of the post-course telephonic support aspect of the programme, either because they were not aware of it (18 out of 38, 47%) or had no need of this support system (20 out of 38, 53%). It is important to reflect on why these 20 participants did not make use of the post-course telephonic support system, as their input was not considered in the programme evaluation data (potentially, nonresponse bias); for instance, five (25%) did not need the support of the urban experts, as they had access to experienced colleagues in their own teams; a further 13 (65%) did not need the support "because a situation of need never arose". The remainder of the sample description revolves around the fact that the participants who met the inclusion criteria were mainly foreign medical graduates (FMGs), 82%, with no community service medical officers (CSMOs). It is not clear how this sample's composition compares to that of the study setting's human resources, namely the relative ratios of FMGs and CSMOs to other medical officers and family physicians working in these rural Eastern Cape district hospitals. The training programme intervention was aimed at "inexperienced medical officers in rural district hospitals", but more information is needed on how participants were recruited for the training (who determined which medical officers were seen as inexperienced?).

The findings from the scaling (graded response) type questions completed by the rural doctors' sample are available in Table 1. The majority of the 17 respondents indicated that they had made use of the telephonic support system more than five times, considering that the evaluation was done around one to two years after the training period (there may be some recall bias here, as this is quite a long time interval); as stated above, it is not clear if the 2-week training sessions were only conducted during 2010, or whether these sessions were conducted on an ongoing basis (potentially, this sample may represent a range of time intervals between in-reach training and post-course evaluation). It is interesting to note that all 17 respondents answered "always" to the first two scaling type questions, "Did you follow the advice?" and "Were you satisfied with the advice?". Together with recall bias, this may potentially reflect acquiescence bias or social desirability bias (the tendency of survey respondents to answer questions in a manner that will be viewed favourably by others; would one answer differently if one was not dependant on this service in the future?). It is not clear which of the researchers (the anaesthesiology specialists who conducted the in-reach training programme vs a neutral research assistant) conducted the telephonic interviews with 12 out of the 17 participants (70%).

The rural doctors' responses to open-ended questions "were subjected to independent content analysis by the authors". It would have been good to know more detail on the qualitative data analysis method employed by the authors. These qualitative findings are very useful, especially considering the small sample. It appears to be a rich narrative which highlights some of the challenges experienced by the rural doctors.

The results from the urban based anaesthetists' questionnaire should be interpreted with caution, as there were only five respondents. It is not clear what the response rate was for this category of respondents. Again, the qualitative responses may be more useful than the quantitative responses, in view of the small sample size.

In conclusion, one has to review the results section through the lens of the study aim and objectives, namely, to determine user perceptions of the utility and effectiveness of a telephonic support system. The concerns raised above around the potential bias in the quantitative responses should prompt one to rather focus on the qualitative responses.

### 3.7 Discuss the value of the study findings for your own practice using the READER format. (8 marks)

External validity is the validity of applying the conclusions of a scientific study outside the context of that study. In other words, it is the extent to which the results of a study may be generalised to other situations and to other people. External validity is an important property of any study, as the aim is to facilitate making general conclusions of value to the clinicians and patients in similar contexts.

The model answer here would be constructed around the external validity for the family physician working in the district health system. The study setting's workload and rural doctor staffing is described incompletely. However, the authors highlight the fact that their programme of in-reach coupled with telephonic support was well received by the respondents who met the inclusion criteria. The qualitative responses around the limitations of the telephonic support model provided the authors with rich information.

The READER format may be used to answer this question:

- Relevance to family medicine and primary care?
- 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?

The answer may be seen as a subjective response but should be one that demonstrates a critical reflection on the possible implication of the research for the registrar's practice within the South African public health care system. It is acceptable for the registrar to suggest how his/her practice might change, within other scenarios after graduation (e.g. general private practice). The reflection on whether all important outcomes were considered is therefore dependant on the registrar's own perspective (is there other information you would have liked to see?).

A model answer may be written from the perspective of the family physician employed in the district health system:

- *Relevance to family medicine and primary care*

This study is relevant to the African primary care context. The district hospital represents a key employment setting of family physicians and providing safe level anaesthesia (especially obstetric anaesthesia) is of key importance to the discipline. This is especially relevant for the rural context, where access to specialist anaesthetists is very limited, and medical officers and family physicians should be equipped to provide this service.

- *Education – does it challenge existing knowledge or thinking*

This study describes an evaluation of a programme which aimed to educate and support rural district hospital doctors when providing anaesthesia, often within limited support. It is uncertain how representative the study sample is of the target population, and it seems that this programme provides one of many possible ways of improving capacity building and clinical governance in relation to rural district hospital anaesthesia.

- *Applicability – are the results applicable to my practice*

The intended target audience is rural district hospital doctors who have to provide anaesthesia but are lacking experience or senior support; however, the findings are also applicable to urban-based or referral hospital-based specialists from all specialties, who are reviewing their

outreach and support programmes within their drainage area. This may be especially applicable, if my setting is also a district hospital situated in a similarly rural setting as the Eastern Cape Province.

- *Discrimination – is the study scientifically valid enough*

Several limitations are described above, which make the results of this study not generalisable. These limitations range from how the instrument was developed and validated, to the gaps in the programme database which resulted in a small sample with associated risk for bias in the quantitative responses. One wonders whether the authors should have considered changing to a qualitative interview study design when they discovered the gaps in the course database. The discussion section does not comment on the authors' reflection on the study limitations but does speak to some of the alternative ways of supporting rural district hospital doctors who are inexperienced in providing safe anaesthesia. More robust research may be required to evaluate this specific programme; however, the authors concluded correctly, that a programme such as theirs will be more effective if it becomes part of a systemic approach to support doctors and other health professionals.

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

This survey may be useful to the district health system, especially when reviewing the support systems available to rural district hospital doctors. The study has several limitations but highlights the need for effective planning of programme evaluation studies. It may be useful to also evaluate programmes offered by regional and tertiary institutions from the perspective of the rural district hospital. Such programme evaluations should include researchers from both contexts in the research or evaluation team.

- *Reaction – what will I do with the study findings*

I may use this study as a basis for launching a discussion with my regional hospital colleagues who provide outreach and support to my district hospital. The concept of in-reach may be explored for inexperienced doctors or registrars, who need to spend a short focused period at a regional (or tertiary) hospital's specialist department(s) to gain experience and confidence in performing specific skills, tailored to the individual's learning needs. A list of core district hospital skills (such as the list agreed on by the national family medicine discipline) may form the basis for such a skills audit and programme planning.

### Further reading

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#### 4. OSCE scenario: Anaesthesia

##### Objective of station

This station tests the candidate's ability to:

1. Manage a conflict situation.
2. Explain the rationale for converting to general anaesthesia after a high spinal.

##### Type of station

Integrated consultation – clinical management, complex consultation.

##### Equipment list

1. Role player – young adult male in his thirties.
2. Clinical notes.

##### Instructions for candidate

##### History/context

You are the family physician working at a district hospital.

The community service medical officer (CSMO) had administered a spinal anaesthesia to a lady who needed an elective caesarean section. When her respiratory rate and blood pressure started dropping, you diagnosed a high spinal and successfully converted her to a general anaesthesia. A healthy baby boy was

born by caesarean section and the mother is recovering well and has been extubated.

Please discuss this event with the husband of the patient, who has been anxiously waiting outside theatre.

##### Instructions for the examiner

**Objectives:** This station tests the candidate's ability to:

1. Manage a potentially conflictual situation.
2. Explain the rationale for converting to general anaesthesia after a high spinal.

This station is 15 minutes long. The candidate has 14 minutes, then you have 1 minute between candidates to complete the mark sheet and prepare the station.

This is an integrated consultation station in which the candidate has 14 minutes.

Familiarise yourself with the assessor guidelines which detail the required responses expected from the candidate.

No marks are allocated. In the mark sheet, tick off one of the three responses for each of the competencies listed. Make sure you are clear on what the criteria are for judging a candidate's competence in each area.

If the candidate asks about what the CSMO documented, examiner should answer:

*"All pre-operative checks were done and normal; informed consent was signed; all pre-, intra- and postoperative documentation indicates that all standard protocols were followed."*

Please switch off your cell phone.

Please **do not** prompt the student.

Please ensure that the station remains tidy and is reset between candidates.

##### Reference

- Van Rensburg G, et al. The management of high spinal anaesthesia in Obstetrics: a suggested clinical guideline in the SA context. South African Journal of Anaesthesia and Analgesia. 2016;22(1)(Supplement 1):51-55.

## Marking template for consultation station

Exam number of candidate:			
Competencies (delete what is not applicable)	Candidate's rating		
	Not competent	Competent	Good
<b>1. Establishes and maintains a good doctor-patient relationship</b> Comments:			
<b>2. Gathering information: identifies client concerns and expectations</b> Comments:			
<b>3. Clinical reasoning: identifies clinical and medico-legal risks</b> Comments:			
<b>4. Management: explains the decision and rationale, and ongoing management</b> Comments:			
<b>Overall comments:</b>			
<b>Examiner's name:</b>		<b>Examiner's signature:</b>	

### Guidance for examiner

Competency is defined as the desired outcome of that domain, achieved in a manner that is effective and safe.

#### Some general descriptors of competencies

*Establishes a good doctor-client relationship:*

Competent: establishes and maintains rapport with the patient; is respectful.

Good: establishes rapport that displays empathy, respect, and engages as an equal partner with the patient. Acknowledges the anxiety and possible anger associated with this experience.

*Gathering information:*

Competent: gathers sufficient information from the husband to identify what his fears (baby and mother's outcome) and expectations (best possible care; referral to a higher "more experienced" level of care).

Good: in addition, is able to find out that the husband is considering suing the hospital.

*Clinical reasoning:*

Competent: identifies the key clinical problems: inexperienced medical officer; but had supervision in theatre, and early intervention, with good outcomes.

Good: in addition, identifies that all pre-operative checks were done, that all intraoperative procedures were properly documented, and that the standard protocols were followed throughout – this protects the staff and institution.

*Management:*

Competent: explains, in non-jargon language, the process that was followed in making the decision; the potential outcomes if action was not taken (maternal brain damage or death; foetal HIE or death); the rarity of a high spinal in obstetrics.

Good: in addition, will respond empathically to husband's emotional outbursts (acknowledges, normalises) while gently reminding him of the facts, and that both mother and baby are well, with no long-term sequelae anticipated.

#### Role play – Instructions for actor

You accompanied your wife to theatre for a planned caesarean section with your first child. In theatre, you noticed that the young doctor who inserted the injection into your wife's spine became very worried and called for help.

The senior doctor (the one you are talking to now) came hurriedly, and the nurse asked you to leave the theatre as there was a complication.

You are very worried that something has gone wrong and angry that no-one has spoken with you yet.

**Opening statement:** "Doctor! What's going on? How are my wife and baby?"

If the doctor seems not to be answering this question, ask it again. Only give more information once you hear that both of them are alright.

#### Freely tell the Dr:

- This is your first baby, and your wife's first pregnancy.
- What did the young doctor do wrong? The one moment

everything seemed ok, and the next the nurse was saying there is a problem, and you needed to leave theatre. What happened?

**Only if asked:**

- You spoke with the young doctor before the procedure – signed a document and understood the risks. However, you were told that most people have no problems.
- You are scared that something went wrong with your wife and baby.
- Why could they not just take the baby out after the injection was given?

- Why did they send you out – are they trying to hide a mistake? You won't let them get away with this, if it is the case – you are prepared to sue the hospital.
- You are angry that the nurse ordered you out of theatre without an explanation.

**When the doctor explains the decision, and the process:**

- Accept the explanation.
- You are relieved that your wife and baby are well.

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