



STATION 7

DIFFERENTIAL DIAGNOSIS AND INVESTIGATION PLAN

1. STATION SUMMARY

Mark (played by an actor) is a 26 year-old HIV positive man who has been non-compliant with treatment and follow-up since diagnosis.

He presents with a 5 day history of a headache suggestive of an opportunistic CNS infection.

After taking the history, Mark will ask the candidate what tests they plan to do.

2. CANDIDATE INSTRUCTIONS

You are about to see a 26 year-old man named Mark.

You have the following information from his triage sheet:

Presenting complaint: Headache for 5 days

Vitals: HR 80, BP 120/70

SaO₂ RA 97%, RR 16

Temp 37.2°C

GCS 15

Your tasks are to:

- Take a history from Mark
- Discuss your differential diagnosis and plan for investigation with him

You will not have the opportunity to examine him.

This OSCE will assess the following domains:

- Medical Expertise
- Communication

3. ROLE-PLAYER INSTRUCTIONS

Summary

You are a 26 year-old man who is HIV positive. You have come to the ED today because you have had a headache and have been feeling unwell for 5 days.

The doctor who sees you will take a history. All the doctor knows when (s)he approaches you is that you have had a headache for 5 days, and your vital signs. (S)he does not know your HIV status. If (s)he asks you about other health problems, you are to tell her/him you are HIV positive and give more details as asked (see below).

After approximately 5 minutes you will ask her/him what they think the problem is and their plan for further investigation.

The candidate is not expected to perform a physical examination.

Part 1 - History

Details to Answer Candidate's Questions

Presenting complaint - Headache for 5 days, gradually getting worse.

Onset - gradual. If asked what you were doing when it started, you can't really remember, but it was some time over the weekend, so probably "not much". You were asked by a friend to go out partying on Sunday night but you didn't go because you felt "rubbish". You then came home from work early on Monday because you felt unwell.

Nature of headache - you can only really describe it as a bad headache. If asked, you DO NOT feel it's more on one side than the other, it's just "sort of all over". Your neck has felt a bit sore but you can move it ok. The headache is there constantly, throbbing at times. You think it's a bit better when you've had a sleep and you maybe feel better lying down but you still feel terrible even then, and the headache never goes away completely. You don't feel as though the headache is preventing you from sleeping but it is definitely preventing you from going about your normal activities during the day. You don't feel the headache is worse at any particular time of day.

Aura - there was no "aura" (if you are asked this without any clarification about what "aura" means, ask 'what's that?') i.e. there were no changes in your vision (blind spots, flashing lights, zig zags, blurriness) or change in sense of smell or taste prior to the headache starting. You feel your vision has been normal (not blurry, no blind spots) with the headache but you do feel uncomfortable in bright light.

Precipitating and relieving factors - you feel worse trying to get up to do anything, even getting up to go to the bathroom or get a drink. Loud noise and bright lights are particularly uncomfortable. You feel a bit better after you've had a sleep and have been taking paracetamol (1g (2tabs) every 6 hours) and aspirin (900mg (3 tabs) every 8 hours) which initially helped a bit but now seem to make no difference.

You haven't seen your GP with this illness (if asked why not, just shrug and say "dunno really"). You haven't taken any other medications apart from the aspirin and paracetamol (specifically, if asked, no antibiotics).

You're not really a "headachey person" and certainly have never had anything like this before.

Trauma - you haven't had any bumps to the head, falls, fights etc. recently.

Other symptoms - you've been feeling hot and cold "like you've got the flu" at home. You've taken your temperature at home and it has been high, the highest was 38.8 degrees yesterday afternoon. You haven't felt like eating and have felt nauseated. You think you have lost a couple of kilograms in the last week because of this. You vomited once this morning but that's the only time. You haven't noticed any weakness, clumsiness or visual changes. You haven't felt confused. You don't have painful sinuses, an earache or a sore throat or runny nose. No diarrhoea, abdominal pain, pain when passing urine, shortness of breath, or cough. No rash or skin infections.

HIV history - you were diagnosed 2 years ago when a male partner asked you to have a test. You “freaked out” when it came back positive and haven’t sought any follow up since then. An HIV positive acquaintance told you if you saw any more doctors they’d just try and put you on heaps of medications which were all experimental and had awful side effects and were just a way to make the pharmaceutical companies rich. You don’t know what’s happened to that friend. You went to the GP a couple of months later and had another positive test but you’ve had no tests of any kind since and have been taking no medications. You have not ever told your close friends and family about your diagnosis of HIV.

- Better candidates may explain to you that HIV therapies are now very effective at controlling HIV and highlight the importance of you seeing a HIV expert. You will seem a little surprised by this but receptive to the idea.

You aren’t sure how you contracted HIV - you’ve had a number (unsure how many, maybe 50?) partners both male and female. You inject drugs “speed”, every so often “but only for fun”, you’re not “a junkie”.

You’ve had no hospitalisations since being diagnosed; in fact you haven’t even had a particularly nasty cold. If asked what your viral load, CD4 or white cell count is answer with *‘What’s that? No, as I said, I haven’t had any more tests since my second positive test’*.

Your family and close friends are NOT aware of your HIV status and you don’t want to discuss it with them or go into the reasons why not. If asked why not, answer with *‘because it’s my business, not theirs’*.

Past med hx - mild asthma as a child which you “grew out of”. No history of migraines. No operations. No medications, no allergies that you know of.

Drug and alcohol - injecting drugs as above plus “party pills” most weekends. You smoke about a packet of cigarettes per day but have felt too unwell this week to smoke more than about five cigarettes per day. Your last drug use was a couple of weeks ago, you took pills. You haven’t injected for about a month.

FHx - you don’t think there’s anything significant. You’re an only child, your father died of cancer when you were a teenager and your mother is alive and well although you aren’t close. No family history of headaches or migraines as far as you know.

Social - you work in a coffee shop during the day and do a bit of freelance writing work from home in the evenings - you went to uni but haven’t really found a job “worth showing up for” since finishing your degree in Arts. You have a flatmate who you get on well with but you’re rarely there at the same time and aren’t what you’d call friends. Your mother lives about an hour away, you haven’t seen or spoken to her for “a while”. You aren’t in a relationship and have no regular partner.

Travel - no recent history of overseas travel. You were last overseas 5 years ago, in Bali.

Part 2 - Assessment and Investigation Plan

The purpose is to give the candidate the opportunity to display their knowledge. The aim is to help them do this in 2 minutes by asking prompting questions as required. You may need to move them on if they are providing too much detail/taking too long.

After approximately 5 minutes if the candidate has not already started to explain what they think the cause of your headache is, or how to best to investigate it, you say

1. *‘So what do you think is going on?’*

The candidate should explain that they are concerned about your ongoing 5 day headache and that HIV puts you at increased risk of infections including unusual infections around or in the brain (or types of brain tumour). You may need to ask further questions e.g.

‘What sort of infections?’

The candidate should answer

- meningitis (including unusual infections like yeast or fungal)
- brain abscess (toxoplasmosis + other)
- brain tumour (lymphoma)

Do not let them spend too long talking about this or HIV, they need to explain their investigation plan.

2. *'Are there tests that you need to do?'*

Note: the most important items the examiners are looking for are the head CT and LP (see below). Please do not ask questions about the blood and other tests if these are explained first, to allow the candidate to get onto the CT/LP discussion. If they are spending too long on describing blood tests you should ask them *'Will I need anything else?'*

The candidate should plan to do some blood tests - they may tell you which ones - these may include full blood count, ideally also electrolytes and renal function, blood cultures, liver function tests and repeat HIV test (Note: in Australia a patient's consent is required for an HIV test. In New Zealand it is not. If you are asked if you consent to an HIV test, give your consent).

A urine sample and chest x ray to see if you have a urine infection or pneumonia.

A head CT - this may require IV contrast (special dye that is injected through a drip in your arm.) You may be asked again if you have ever had contrast dye or if you are allergic to contrast, iodine or seafood. Say *'no'* if you're asked this. The candidate may tell you there is a small risk of allergy to the dye but that it's required to get a better look at the brain and be absolutely sure there is no abscess causing your headache and fever, or the small chance of a tumour.

If they do not go on to describe the lumbar puncture, you should then ask *'So what happens if the CT is normal?'*

A lumbar puncture - if the head CT is normal you will need a lumbar puncture. This is sometimes known as a spinal tap and involves inserting a needle through the skin of your back to collect some of the fluid surrounding your spinal cord. This is to see if you have meningitis as a cause of your headache and fever. It's important to do this to see which bugs are causing the infection so that you can be treated with the right antibiotics. It's a low risk procedure which is done under local anaesthetic. If you are really anxious you can have a small dose of something to relax you but usually this isn't necessary. The most likely complication from an LP is a headache, but steps will be taken to avoid this such as using the smallest needle possible to perform the procedure.

If they do not explain, ask them:

- *'What is a lumbar puncture?'*
- *'What are you looking for with that?'*

You are not resistant to the idea once explained.

If there is remaining time and the candidate has adequately explained

- what they are concerned about as the cause of your headache; and
- how they plan to investigate it including CT scan and lumbar puncture,

you may then ask *'How long will I have to be here?'*

You will most likely be admitted to hospital or possibly the short stay unit attached to the ED to wait for results. The candidate then may talk to you about referring you to the HIV service (e.g. Immunology or Infectious diseases clinic) for follow up.

Some better candidates (who have time) may discuss here the importance of trying to engage you with experts in HIV care (e.g. Infectious Diseases Unit) as HIV therapies are now very effective at controlling and minimising the complications of HIV. You should be receptive to this.

4. EXAMINER INSTRUCTIONS

Mark (played by an actor) is a 26 year-old HIV positive man who has been non-compliant with treatment and follow-up since diagnosis.

He presents with a 5 day history of a headache.

Given his history he is at risk for opportunistic CNS infections.

After approximately 5 minutes, Mark will ask the candidate what tests they plan to do.

The candidate should plan to perform:

- Blood tests- at least a full blood count, ideally also electrolytes & renal function, blood cultures, liver function tests and repeat HIV test
- A urine culture and chest Xray
- A head CT- initially a non-contrast but explaining to the patient he is likely to need contrast as well to exclude an infective lesion such as a toxoplasmal abscess
- A lumbar puncture if the CT brain is normal (and assuming no critical thrombocytopenia on the FBC) to exclude meningo-encephalitis

The candidate may qualify this by saying *'I'll need to examine you first but I think you'll need.....'* as there are unlikely to be examination findings which will significantly alter this plan of investigation.

A strong candidate will take a thorough history and include all the above tests with an explanation of what they are looking for. See Communication Strengths (below).

This OSCE will assess the following domains:

- Medical Expertise
- Communication

Communication Strengths

- Introduces person and purpose
- Establishes rapport with patient
- Maintains confidentiality and assures patient of this
- Starts with open ended questions and keeps this approach for initial questioning
- Resists interrupting early
- Actively listens to patient
- Responds to non-verbal cues
- Follows leads
- Conveys understanding and empathy
- Logically uses second order questioning to focus on and differentiate presenting problem/s
- Avoids premature closure
- Addresses aspects including past, family, social, allergies
- Repeats parts of history to patient to confirm listening and understanding
- Concludes by invitation for any further information that the patient wishes to convey

Examiner Mark Sheet

CONFIDENTIAL Examiner Rating: OSCE 7



[CANDIDATE barcode]

[EXAMINER 1
barcode]

[EXAMINER 2
barcode]

COMPONENT ASSESSMENT

For each Domain below, select the **ONE** option that best represents the candidate's level of performance. The option **"Minimum level of competency displayed"** represents the level of safe independent practice as a **Junior FACEM** in Australasia.



Please rate **ALL** the following domains:

Medical Expertise	☐	☐	☐	☐	☐	☐	☐
Communication	☐	☐	☐	☐	☐	☐	☐

Detailed assessment criteria

Please use the following criteria to inform your ratings above

Medical Expertise	• Able to take an appropriate headache history including onset, duration, severity, aggravating and relieving factors, associated features, previous similar episodes, treatment thus far, advice sought (thorough history required for pass) • Addresses past history, family history, medications, allergies and social history • Obtains history of HIV from patient • Enquires about how HIV diagnosis was made and any treatment/follow up since diagnosis (e.g. CD4 count/viral load monitoring, antiretroviral treatment) • Obtains sufficient history of non-compliance to establish that this patient is at high risk of opportunistic CNS infection and discusses this differential diagnosis with patient • Recognises and prioritises the need for further investigation of headache including blood tests (FBC and blood cultures minimum), electrolytes, renal function, liver function, HIV serology, urinalysis and CXR. CT brain +/- contrast and lumbar puncture • Establishes need for CT brain and lumbar puncture and discusses the rationale for these investigations with patient • Able to outline an appropriate disposition plan for the patient
Communication	• Obtains comprehensive but structured history from patient using open ended questions, active listening, response to non verbal cues, follows leads and focuses on aspects of history which lead to an appropriate differential diagnosis • Develops appropriate rapport and uses non-judgmental language & assures confidentiality • Elicits the beliefs, wishes, concerns and expectations of the patient with regard to their HIV diagnosis • Explains to patient which tests are indicated and why • Must tell the patient they need a CT brain AND lumbar puncture and explain rationale • Conveys clear information about possible need for contrast with the CT and the risks • Conveys clear information about lumbar puncture including a basic explanation of the procedure • Discusses the importance of engaging with HIV services (e.g. Immunology, HIV clinic) • Provides basic information on the current therapies and prognosis in HIV positive patients with ongoing treatment



Examiner Mark Sheet (cont')

CONFIDENTIAL Examiner Rating: OSCE 7



INFORMATION

Station Summary: Mark (played by an actor) is a 26 year old HIV positive man who has been non-compliant with treatment and follow-up since diagnosis.

He presents with a 5 day history of a headache suggestive of an opportunistic CNS infection

After taking the history, Mark will ask the candidate what tests they plan to do.

EXAMINER NOTES (For examiner reference only)

OSCE 'incident reporting' notes: Please provide details if an issue occurs which may influence this candidate's exam outcome e.g. protocol breach, candidate illness etc.

GLOBAL RATING FOR STANDARD SETTING:

This scale is used in the standard setting process for the OSCE. Please rate the candidate's OVERALL performance in this OSCE. The rating should take into account the entirety of the OSCE, rather than just a sum or average of the individual domain scores. This element MUST be completed for the standard of the examination to be set.

	Well Below Standard	Below Standard	Just at Standard	Above Standard	Well Above Standard
In terms of a safely practising junior emergency physician, select the ONE option that best reflects the candidate's performance in this station:	☐	☐	☐	☐	☐

EXAMINER SIGNATURE:



OSCE 1