Introduction

You have access to this bonus material because you completed the course. Use this material wisely and practise it enough so that you can personalise it according to your style and feel confident in your performance. Remember, you don't need much information about every possible scenario, you just need to follow the invincible framework that you've learnt in this course to pass the exam. Perform a quick and thorough interview and objective assessment, choose a small number of outcome measures strictly related to the goals, implement a basic treatment to improve those impairments. Stick to the plan and you'll pass.

The aim of this bonus material is to add specific information related to the neurological assessment, not to replace the framework you've learnt in the modules of the course! The details below often repeat the concepts outlined in the APC modules, so please implement this information wisely to suit your own framework so that you can apply it to the neurological exam.

Subjective

The main aim of the subjective assessment is to confirm all the information you read in the clinical notes with the patient. Also, you want to ask information that you need and wasn't mentioned in the notes. All the time you'll be summarizing the information you have speaking to the patient and looking for confirmation, using structures such as: "So, you fell on that day, right?" Ask yes or no questions for the information you don't have. Always get down to the patient's level, whether they're sitting or lying down, as it's not polite to be towering down on them while standing up.

Consider that in the neurological scenario it's more likely to encounter dementia, speech impairments or yellow flags, so you might want to decide to change your communication style to be more directive, or calmer, depending on the situation. However, you still need to finish the interview in the time limit.

Use the cheat sheet guide explained on the course and modify it considering the additional information given in this bonus material; therefore, remember to plan the 4 pause moments, to use the vocabulary of the performance indicators, to write the additional words in the cheat sheet... All those tips are still essential!

INTRO

"Hello, how are you doing?" Wait for answer.

"My name is Carmelo and I'll be your physiotherapist. I read your file and I understand in general your situation. I would like to see what you can do and what

things you might need assistance with. I'll explain things as we go, but please ask me if you don't understand me at any time so I can explain."

"These are my examiners, and they will be observing the sessions today. Is that alright with you?"

"Can you see me and hear me clearly? Can you confirm your name? Is the volume of my voice alright?"

If acute, check orientation (time of day and place)

MOI/HISTORY

Talking about a life changing episode like a stroke can be incredibly challenging. Hopefully you get all the information about the patient's history in your file, so that you just need to confirm it with a closed-ended question. Otherwise, you can just quickly get some information about it, with maximum discretion. If the patient gets angry or emotional, definitely skip these questions. Remember: you need to finish in time and these questions are not fundamental, they just make your interview look complete.

1. Event, how it occurred, falls/unconsciousness/speech, ability to get up after fall.
2. Previous episodes; if present, state of independence and recovery before current episode.
3. What can patient do now in comparison to before the event?

MAIN CONCERN

WOCSNOR might not be that relevant in a neurological case, but still ask about their pain. You know you'll spend much more time on the FATMAT.

"So, you've spent some time in hospital now and you've been getting some treatment, right?"

1. Type of exercises done so far (walking/balance/sitting)
2. Transfers: moving in bed, sitting up, sit to stand, balance standing.
3. Walk: assistance, aids, distance, discomfort/pain.
4. ADL: drying hair, toilet, cleaning, dressing (assistance/independent).

PAST MED HOUSE WORK SOCIAL

While asking for social life, try to cover:

- Independence at home, alone at home or not, stairs at the front/back/inside the house, rails, services (Meals on wheels or personal care)

- You can start mentioning occupational therapy, psychology and social services if relevant.
- Hobbies/enjoyments they want to get back to, restrictions due to leg/hand problems.

SPECIAL QUESTIONS

In addition to the red flags described in the APC modules, also consider the following information.

1. Stroke: speech, swallowing, memory, posture/subluxation
2. MS: fatigue, dizziness, hot/cold, gloves/stocking, vision
3. GBS: gloves/stocking, fatigue, onset, respiratory complications
4. Parkinson: freezing, medication, time since diagnosis, speech and swallowing, bed mobility due to stiffness, thoracic rotation ROM
5. TBI: amnesia, seizures
6. SCI: LL jerky movements

SHORT – "What would you like to work on today?"

LONG – "So, you'd like to go back to these activities, right? To achieve this future goal, I can help …"

Objective

The aim of your neurological exam is to assess functional tasks, find which ones are impaired, find which ones relate to your patient's and the doctor's goals, implement a safe and effective treatment plan to improve them.

This is a complete assessment for a neurological scenario, it doesn't consider the level of function of your patient and it would take a long time to perform in its entirety. Depending on the condition of the patient, you must jump through sections according to the level of function of your patient and their goals. Write all the sections described below on your cheat sheet, and remember to use only the relevant ones.

Spasticity and reflexes testing, for example, can be skipped in most simulation scenarios, as it won't give you any functional finding and will not change as a result of your treatment.

To save time, if the patient is already sitting down and the scenario allows it, do the tests from sitting position, making sure environment is safe first (wheelchair/bed breaks, bed height, posture).

Vision

Ask the patient if they wear glasses or just ask if they can see you well.

When relevant, you can decide to conduct a complete vision assessment.

Move one finger from left to right and back to check eye movements.

Ask to look at your nose. Move one finger from the outside of the patient's visual field towards the inside and ask when they can start seeing it.

Place hands at the end of the visual field both sides, then move one finger at the time and then both together. Ask which one is moving to check for neglect.

Hearing

Ask if they usually use hearing aids or just ask if they can hear you well.

When relevant, you can decide to conduct a complete auditory assessment.

Place your hands one close to the patient's ears, one on the left and one on the right. Rub your fingers between each other, with each hand respectively and then together. Ask which one they can hear to check for hearing impairment.

Upper limb

For each item, check both sides. You'll mostly refer to the occupational therapist for upper limb impairments, as the patient's goals will always be more related to mobility and independence.

Use CLPRRSSS (coordination, length, proprioception, reflex, rom, sensation, strength, spasticity) on your cheat sheet.

- ROM

Ask for shoulder F and EXT, elbow F and EXT, fingers EXT, fist clench and thumb EXT, all with resistance if relevant. Then try all passively to look for ROM restrictions, adding shoulder ER and wrist movements.

- Sensation (light touch)

Ask patient to close their eyes. Rub with a folded tissue over different spots to cover all dermatomes and compare with contralateral, asking the patient to describe location and quality.

- Proprioception (joint positioning)

Ask patient to close their eyes. Grab index finger firmly from the first phalange. Quickly flex and extend 1st IP joint and stop either in extended or flexed position, then ask the patient if they think it's straight or bent. Repeat 5 times, record the score and compare with contralateral. If compromised, can test elbow.

- Muscle length

Biceps

- Spasticity

Compare difference in resistance between quick and slow passive elbow extension.

- Reflexes

Biceps

- Coordination

Finger to nose

Lower limb

For each item, check both sides.

Use CLPRRSSS (coordination, length, proprioception, reflex, rom, sensation, strength, spasticity) on your cheat sheet.

- ROM

Ask for hip F, EXT, ABD and ADD (with bent knee, asking for control), knee F and EXT, ankle F and EXT and 1st toe EXT, all with resistance if relevant. Then try all passively to look for ROM restrictions.

- Sensation (light touch)

Ask patient to close their eyes. Rub with a folded tissue over different spots to cover all dermatomes and compare with contralateral, asking the patient to describe location and quality.

- Proprioception (joint positioning)

Ask patient to close their eyes. Grab 1st metatarsal bone firmly. Quickly flex and extend 1st MTP joint and stop either in extended or flexed position, then ask the patient if they think it's straight or bent. Repeat 5 times, record the score and compare with contralateral. If compromised, can test knee or ankle?

- Muscle length

Calf.

- Spasticity

Compare difference in resistance between quick and slow passive knee extension, then flexion, then look for clonus with quick ankle ext.

- Reflexes

Babinski and patellar reflex.

- Coordination

Heel to shin test.

Bed mobility

From this part of the assessment onwards, you must follow assist the patient as required by the scenario (supervision only, 1 assist, 2 assist), choosing a position that is safe for yourself and the patient (and the examiner who's acting as assistant).

Ask to perform a bridge and to roll to side laying on each side; rolling will require:

- Neck ROT and F
- Hip and knee F
- Shoulder F and protraction
- Trunk ROT

Then ask to sit up on the side of the bed, checking the height of the bed first.

Sitting balance and coordination

Ask to keep sitting position and to shift the weight from one side to the other.

Check head and trunk movements, turning head and trunk to look over the shoulder and looking up at the ceiling. Check reaching actions (with paretic arm towards non-paretic side first) placing your hand beyond arm reach and asking to touch it.

Try to notice symmetry, base, posture, use of hip extension in sit to stand and control during the movement.

To test coordination, ask to touch their nose with each finger alternatively, your finger with their finger alternatively, and to quickly tap hands or feet.

Standing

Confirm that the patient is barefoot or wearing appropriate footwear.

Ask sit to stand, if they're able to do it, you can ask to do it 3 times and time it, if you think you want to use it as an outcome measure. Monitor quality of starting position (weight bearing symmetry and BOS), trunk inclination with hip F and hip/knee EXT during the extension phase.

Romberg test (timing each of following):

1. Eyes open + feet apart
2. Eyes open + feet together
3. Eyes closed + feet apart
4. Eyes closed + feet together

Weight shift side to side. Test tandem stance by asking to bring one foot forward and time it, then compare with contralateral.

Ensure hip extension is performed or maintained and balancing movements are occurring in hips and ankles and not only trunk.

(As part of your training, you might want to practise transferring patients from bed to wheelchair.)

Gait

Ask to march on the spot, step sideways and squat slightly. Ask to walk – remember to offer adequate assistance or aid – and verbalise about stride symmetry, presence of limp or Trendelenburg sign or Gower sign, hip F, knee EXT, heel strike and heel to toe pattern.

Outcome measures

The information in the APC neurological complete guide is meant to give you a basic approach to the common impairments that you'll find the neurological scenarios. The treatment information below is not meant to be comprehensive or up-to-date with the latest evidence-based practice. I strongly recommend to consult your neurological physiotherapy manuals to consolidate your preparation about specific pathologies, surgical procedures, equipment and treatments.

Mobility and transfers

Address the movement that your patient didn't perform well during the assessment, break it down in smaller components and teach exercises to improve them.

Gait

In a scenario where you choose gait as outcome measure, use the parallel bars anytime you can, as early as you can during the assessment and treatment: most of the neurological patients will have impaired independence and expect to achieve greater participation as a goal. Walking is fundamental for all this; help your patient improve with exercises (using visual, verbal and tactile cues) that focus on the findings of your assessment.

Muscle activation and active ROM

I would rarely use strengthening exercises in a neurological scenario, so always justify your exercise choices with a functional reasoning and respecting your patient's fatigue level.

Coordination

It is unlikely to find an improvement of the heel-to-shin test or other coordination tests in one session; also, these tests are usually purely diagnostic and not linked to a functional movement. Therefore, I wouldn't reassess these tests at the end of the session.

However, when these tests are positive during your objective assessment, you can mention at the end of your session that the work you've done together also aims at improving your patient's coordination. In fact, any exercise that involves reaching, activation of the left and the right side alternatively, or the repetition of a particular sequence (for example, teaching the heel-to-toe pattern) would be considered a coordination exercise.

Balance and posture

Address the balance issue your found during the assessment and ask your patient to perform exercises under your supervision. Verbal and tactile cues are useful especially when teaching weight shifts (for the pusher syndrome, ask to bear more weight on the pushing side)

Basic balance exercises require to keep the correct posture while performing other actions; for example, head and trunk movements: sitting on a firm surface, hands on their lap, feet and knees approximately 15 cm apart, feet on the floor. 1. Turning head and trunk to look over the shoulder, returning to mid position and repeating to other side. 2. Looking up at the ceiling and returning to upright.

Reaching actions are also useful (with paretic arm towards non-paretic side) placing objects beyond arm reach, either in front of the patient or beside them. When patient achieves a sense of balance, reach with non-paretic arm across body to load the paretic foot.

To test dynamic sitting balance, use objects on floor and different bed heights.

Similarly, you can challenge the standing balance with head and body movements: standing with feet slightly apart, ask to look up at ceiling and return to upright, then to turn head and body mass and look behind, return to mid position, repeat to other side.

Reaching actions are the following step in terms of difficulty. While standing, ask to reach towards an object placed in front, beside or behind the patient.

Single leg support: stepping forward with non-paretic limb to place foot on a step, standing with either foot on step, practise reaching tasks.

Additional outcome measures

- Step test, 10MWT, TUG

Considerations for specific scenarios

SCI

Ask for spasticity in lower limbs and use of Baclofen. Ask for sudden changes in spasticity.

Ask info about eligibility for Mitrofanoff procedure.

Teach transfers and centre of balance recognition, as the main problem is usually about falling forward.

Teach the right positioning for legs and feet.

Refer for weight loss, if applicable.

Stroke

Remember to set outcome measure at the highest functional level.

If STS is one of your outcome measures, try to improve even just one between quality or assistance or bed height. You can use bridge and clam as exercises.

If bed mobility is one of your outcome measures, try reducing assistance in rolling, bridging, leg rolls, weight shifts. You can use bridge and heel slides as exercises.

Multiple sclerosis

Monitor fatigue on a scale from 0 to 10 consistently through the exam, and don't give set amounts of repetitions.