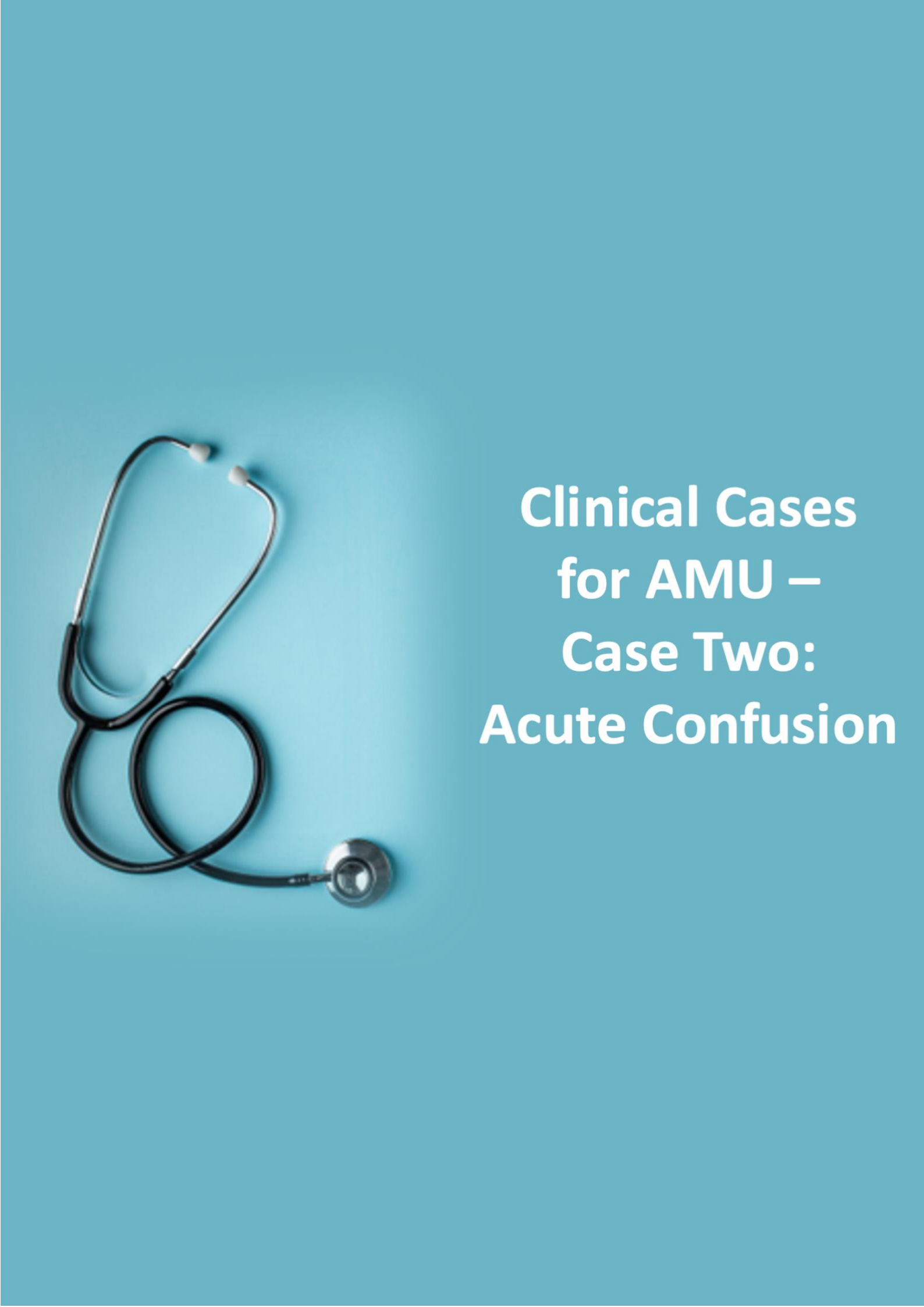


Clinical Cases for AMU – Case Two: Acute Confusion

Introduction

These cases are designed to support your learning during your time in Acute and General Medicine. You can use them when you have free time on the ward. They can be done either alone, or in a small group. They use fictional scenarios to demonstrate learning points from common presentations to the Acute Medical Unit (AMU) and on the General Medical wards. As you work through the cases, you will find a mixture of case discussions, practical activities, and practice questions to assess your learning.

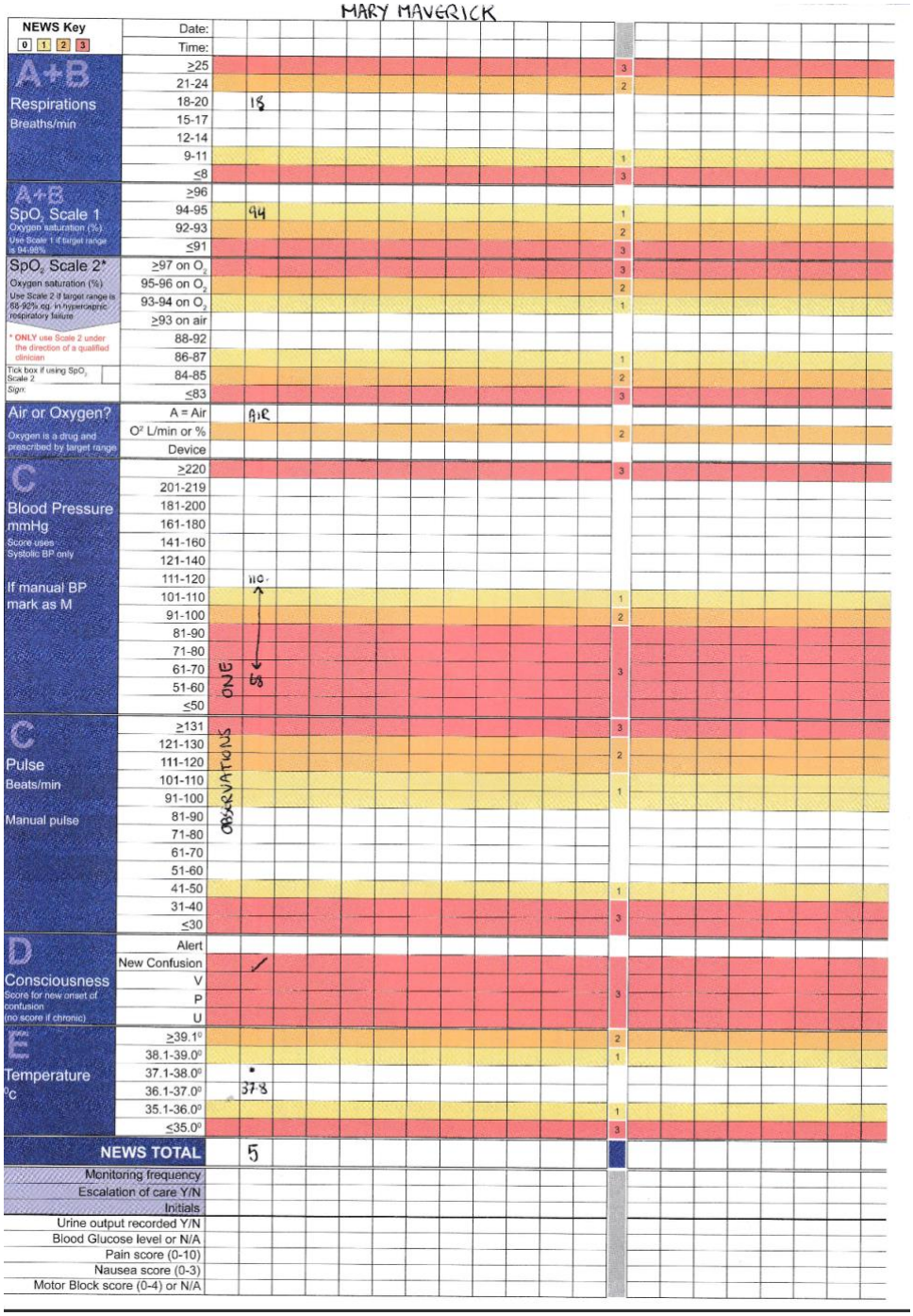
If there is a knowledge check or interpretation exercise, the answer can be found at the end of the section.

Case History

An 87-year-old female called Mary is referred to the acute medical team after being found on the floor by her neighbour. She was last seen four days ago. When you try to take a history from Mary you find that she is quite drowsy and confused. She thinks that she is a teacher at a school in 1978 and it is time for her and the children to go home. She is quite distressed as she believes you are preventing her from going home.

Her initial observations can be found in the enclosed NEWS chart. They are marked 'observations one'

On examination Mary is lying in bed wearing a dirty pink nightie. She does not have much muscle mass and you notice multiple bruises on her arms. There is a strong odour of urine.
Her respiratory rate is 18 and she is saturating well on room air. Auscultation of her chest is challenging due to poor compliance, but there are no focal crepitations. Mary's hands are cool to touch, and her capillary refill time (CRT) is 4 seconds. Radial pulse is 90bpm and is irregularly irregular. Oral mucosae are very dry, and her tongue is coated. She has an ejection systolic murmur which radiates to the carotids. Mary's abdomen is swollen suprapubically, and she reports pain on palpation here. There are no external signs of head injury. On mental state examination you note that Mary is sleepy, dropping off several times during your conversation with her. She is not orientated to time, nor place. She cannot tell you her age nor her date of birth. As previous, she believes it is 1978. When you ask, she starts to recite the months of the year backwards but gets distracted by the time she reaches September. She is becoming more agitated as the assessment progresses.



<u>Knowledge Check One</u>

What quick bedside test should you request or perform for any patient presenting with a reduced GCS?

<u>Activity One</u>

Time to get stuck in!

Have a chat to the ward nursing and medical teams and see if any patients need venepuncture.

Knowledge Check One – Answer

Bedside glucose testing is a quick and easy test that should be performed on initial assessment for any patient with a reduced GCS.

Mary's blood glucose is 4.7. You are happy that hypoglycaemia is not the cause of her presentation, and you encourage her to eat a biscuit to keep her blood sugars up.

You proceed to order some initial investigations including bloods and blood cultures, CXR, urinalysis, bladder scan, & an ECG. You prescribe Mary an initial 250ml IV fluid bolus and some paracetamol. 15 minutes later the nurses report that her BP has improved to 119/78 mmHg

You suspect that Mary has delirium.

Knowledge Check Two

Delirium is a common presentation to the acute medical unit and studies suggest a prevalence of up to 44% of hospital inpatients.

1. How may you differentiate between delirium and chronic cognitive impairment?
2. You do not think that Mary currently has the capacity to consent to further medical investigation and management. Before you proceed further, what legal document would you want to complete and sign?

Collateral history One

For all patients where it is not possible to obtain a comprehensive and accurate history from the patient themselves, or when the account of events is unclear or questionable, a collateral history must be gained. This usually involves calling a close friend or family member for further information.

You decide to phone Mary's daughter (Jean) for a collateral history.

Activity Two

We often need to get a collateral history from patients' friends or family during their hospital admission, and this job is usually generated during the ward round. Ask the medical or nursing staff if there is anyone you can take a collateral history for.

Collateral history Two

Jean has unfortunately been on holiday for the past week and so cannot give you much more information about events immediately preceding admission. She reports that Mary has lived alone for the last 5 years since the death of her husband. She normally supports Mary, by buying her shopping, helping with cleaning, and doing some meal preparation. Mary also has a twice daily POC to help her out of bed in the morning, help her shower and dress and get her back to bed in the evening. She tells you that Mary is not normally confused.

This information allows you to complete the 4AT – an important screening tool for delirium.

Interpretation One

From the information you have read, what would Mary score on the 4AT?

The tool to calculate the 4AT can be found enclosed within this pack.

4AT

Assessment test for delirium & cognitive impairment

(label)

Patient name:

Date of birth:

Patient number:

Date: **Time:**

Tester:

[1] ALERTNESS

This includes patients who may be markedly drowsy (eg. difficult to rouse and/or obviously sleepy during assessment) or agitated/hyperactive. Observe the patient. If asleep, attempt to wake with speech or gentle touch on shoulder. Ask the patient to state their name and address to assist rating.

	CIRCLE
Normal (fully alert, but not agitated, throughout assessment)	**0**
Mild sleepiness for <10 seconds after waking, then normal	**0**
Clearly abnormal	**4**

[2] AMT4

Age, date of birth, place (name of the hospital or building), current year.

No mistakes	**0**
1 mistake	**1**
2 or more mistakes/untestable	**2**

[3] ATTENTION

Ask the patient: "Please tell me the months of the year in backwards order, starting at December." To assist initial understanding one prompt of "what is the month before December?" is permitted.

Months of the year backwards	Achieves 7 months or more correctly	**0**
	Starts but scores <7 months / refuses to start	**1**
	Untestable (cannot start because unwell, drowsy, inattentive)	**2**

[4] ACUTE CHANGE OR FLUCTUATING COURSE

Evidence of significant change or fluctuation in: alertness, cognition, other mental function (eg. paranoia, hallucinations) arising over the last 2 weeks and still evident in last 24hrs

No	**0**
Yes	**4**

4 or above: possible delirium +/- cognitive impairment
1-3: possible cognitive impairment
0: delirium or severe cognitive impairment unlikely (but delirium still possible if [4] information incomplete)

4AT SCORE ☐

Knowledge Check Two – Answer

1. The 4AT is a useful tool to differentiate between delirium and dementia. A collateral history to understand the cognitive baseline of the patient is very important – what is normal for them in terms of cognition? Has there an acute change and fluctuating course?
2. Doctors and other authorised healthcare professionals should complete the Adults With Incapacity section 47 certificate in order to provide non-emergency treatment to an adult who lacks capacity to give or refuse consent. The AWI form must be completed by a fully registered doctor, i.e. an FY2 or above. A copy of the AWI is enclosed.

1. Delirium	**Cognitive impairment**
Acute change/rapid onset (hours to days)	Usually insidious onset (months to years), though can be variable
Fluctuation during the course of the day	Stable
Altered consciousness – both hypoactive and hyperactive states are recognised, and patients may exhibit features of both	Normal consciousness
Inattention, disorganised thought, changes in thinking and perception, including paranoia, hallucinations	Multiple domains often impaired e.g. memory + apraxia, agnosia, disturbance in executive function. Inattention is less common
Disturbed sleep / reversal of sleep-wake cycle	
Reversible	Persistent

Interpretation One – Answer

ALERTNESS – 4. Mary is falling asleep whilst you talk to her, therefore scores 4 for alertness
AMT4 – 2. Mary cannot correctly recall her age, DOB, place, nor year. She believes that she is in a school and that it is 1978.
ATTENTION – 1. Mary starts but scores <7 months
ACUTE CHANGE OR FLCUTUATING COURSE – 4. Mary's daughter Jean confirms that this cognitive impairment is new.
Mary's total score is 11, suggestive of delirium +/- cognitive impairment.

Knowledge Check Three

What other cognitive tests are you aware of?

Activity Three

Delirium and chronic cognitive impairment are common in hospital inpatients, with studies estimating a prevalence of up to 40%. Perform a cognitive assessment for an inpatient for whom the MDT (multi-disciplinary team) recommend formal assessment. This could be done using a MOCA.

Knowledge Check Four

Treatment of delirium should be focused on identifying and treating the precipitant cause(s). List the common causes of delirium in the elderly

Many of these risk factors may be relevant to Mary's case and should be considered in turn.

Drug history

Mary's daughter Jean is able to accurately recall what medications Mary is taking. Mary's prescription is as follows:

Medicine	**Dose**	**Frequency**
Bisoprolol 1.25 mg tablets	1.25 mg	Once a day
Apixaban 2.5 mg tablets	2.5 mg	Twice a day
Tolterodine 2 mg tablets	2 mg	Twice a day
Aspirin 75 mg tablets	75 mg	Once a day
Atorvastatin 20 mg tablets	20 mg	Once a day
Amlodipine 10 mg tablets	10 mg	Once a day
Zopiclone 3.75 mg tablets	3.75 mg	At night

You consider that Mary is taking anticoagulants (apixaban 2.5mg BD), is newly confused and that she has had a fall with possible head injury.

Knowledge Check Five

1. What further investigation would you now consider requesting?
2. From the list above, what medications may be contributing to Mary's delirium?

Knowledge Check Three – Answer

There are many tests of cognition available including, but not limited to, the Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment (MOCA), and Addenbrooke's Cognitive Examination (ACE-III). These tools can be used to monitor for improvement or deterioration in a patient's cognitive function over time.

Knowledge Check Four – Answer

Causes of delirium are numerous and there are often multiple contributing factors. Common causes include:

1. Infections e.g., urinary tract infection, pneumonia, viral infections etc.
2. Drugs including benzodiazepines, opioids, anticholinergics, antiparkinsonian medications
3. Drug withdrawal. Abrupt withdrawal of psychoactive medications can increase the risk of delirium
4. Metabolic causes including electrolyte abnormalities (hyponatraemia and hypercalcaemia), hypo/hyperglycaemia, renal impairment
5. Trauma/ head injury
6. Vascular disorders e.g., subdural haemorrhage, cardiac failure or ischaemia, cerebrovascular haemorrhage, or infarct.
7. Surgical e.g., postoperatively
8. Epilepsy, for example post-ictally
9. Urinary retention
10. Constipation
11. Pain
12. Sleep deprivation
13. Environmental change coupled with sensory impairment

Knowledge Check Five – Answer

1. You should request a CT head to look for the possibility of intracranial bleeding/injury.

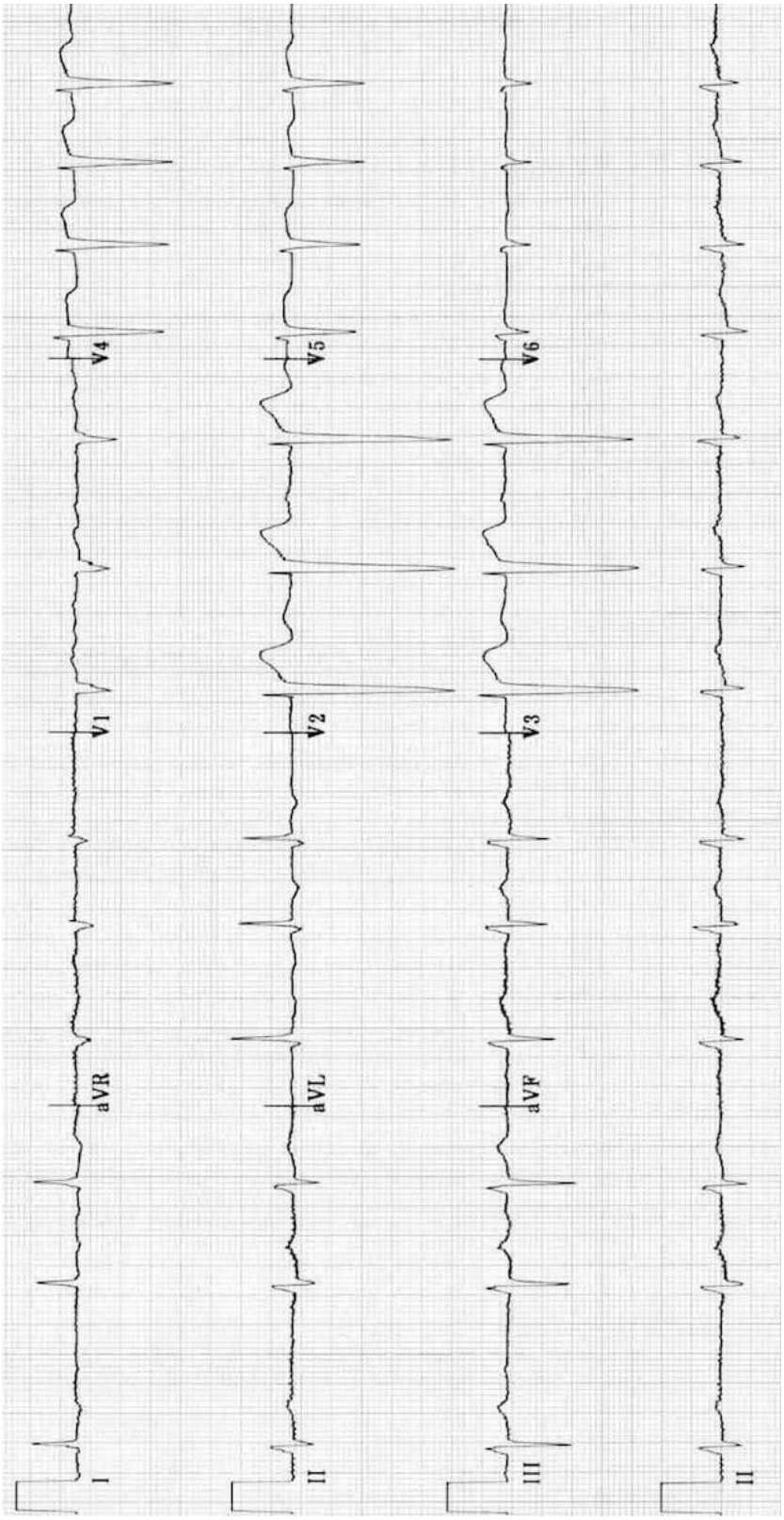
2. Tolterodine is an anticholinergic used to treat symptoms of an overactive bladder. It is associated with a risk of exacerbation of cognitive impairment. For this reason, it is potentially inappropriate in some elderly individuals and prescription in older individuals should be reviewed.

   Zopiclone is closely related to the benzodiazepine group of medications. Zopiclone can cause drowsiness, hallucinations, confusion and a worsening of memory. It is also associated with an increased risk of falls. People over 65 years of age are significantly more likely to experience side effects of zopiclone and use should be reviewed.

Interpretation Two

Mary has an ECG which can be seen below.

What is the rhythm?



Interpretation Two – Answer

The ECG demonstrates atrial fibrillation. The rhythm is irregularly irregular, and P waves are not visible. From reviewing Mary's long-term medications, you surmise that this is likely to be a longstanding arrhythmia. You plan to monitor and gain a more extensive collateral history from Mary's daughter.

Activity Three

Mary was tender suprapubically on abdominal examination, and you wonder whether she may be in urinary retention and/or have a urinary tract infection. A post void bladder scan would be the optimal investigation, but you are not sure whether Mary understood the instructions to pass urine to completely empty her bladder. You go ahead and perform a bladder scan.

Perform a bladder scan on a patient who either needs one or a patient who is stable and happy for you to perform one on them.

Activity Four

You find that Mary has 980ml in her bladder, so you insert a urinary catheter and collect a clean catch specimen for urinalysis and urine MC&S (Microscopy, Culture and Sensitivities).

Check if any patient on the ward needs a urinary catheter inserted and/or urinalysis performed? The nursing and medical teams are happy to supervise you!

Knowledge Check Six

You briefly discuss the case with one of the registrars working alongside you. She advises you to complete a confusion screen. What additional tests would you order as part of a confusion screen?

Knowledge Check Six - Answer

1. In clinical practice, investigations are sometimes grouped together into “sets”, “panels” or “screens” that focus on specific clinical presentations. A standard confusion screen may include:

   Blood tests:

   - Full blood count: may suggest infection, anaemia, malignancy etc
   - U&Es: uraemia, hyponatraemia
   - LFTs: confusion can occur secondary to liver failure (hepatic encephalopathy)
   - CRP: often raised in the context of infection, as well as malignancy
   - Bone profile: hypercalcaemia
   - B12, folate, haematinics: deficiency can cause confusion
   - Thyroid function tests: confusion is more common in hypothyroid states
   - Glucose: hypoglycaemia is a common cause of confusion
   - Coagulation/INR: particularly important for those patients on anticoagulation who may have had an intracranial bleed

   Imaging

   - CXR
   - CT head: if there is concern about intracranial pathology (bleeding, ischaemic stroke, abscess)

   Other

   - Urinalysis +- urine for MC&S: UTI is a common cause of delirium in the elderly. However, in the absence of clinical signs or symptoms, urinalysis alone is insufficient to diagnose a urinary tract infection. There is a high prevalence of asymptomatic bacteriuria in the elderly.

Knowledge Check Seven

1. As you are ordering and reviewing initial investigations you receive phone calls from the nurses in the bay concerned by Mary's persistent wandering, confusion, and disorganised speech. How would you manage this?

Knowledge Check Eight

Complete the following sentences on the topic of haloperidol:

Elderly patients may be particularly susceptible to extrapyramidal side effects with haloperidol. Contraindications to the use of haloperidol therefore include _____ disease and dementia with _____ .

Before initiating treatment, a baseline _____ and correction of _____is recommended.

Knowledge Seven - Answer

Definitive management of delirium involves identifying and treating the underlying cause.
Persistent wandering and delirium are not absolute indications for sedation.
General supportive management strategies are key. They include:

- Aiming to keep a regular nursing and medical team
- Provide access to hearing aids, glasses, mobility aids etc
- Support the patient with activities of ADLs, but encourage them to do what they can for themselves
- Ensure there is access to a clock, and other orientation aids for the day, date and time.
- Have familiar objects around
- Invite family, friends, carers in to spend time with the patient and provide reassurance
- Ensure lighting, temperature, background noise is appropriate etc.
- Avoid unnecessary medications when possible

Aim to keep the patient safe by the least restrictive method.
The use of medications, particularly those for sedation can worsen delirium.
If all other non-pharmacological interventions have failed medical management can be considered.
Haloperidol (oral, IV or IM) is usually first-line. In the elderly 0.5mg is a usual initial dose.
If benzodiazepines are to be used, lorazepam is first-line (0.5mg starting dose) due to its rapid onset and short half-life.

Haloperidol - risks when used in elderly patients for the acute treatment of delirium

Elderly patients are at an increased risk of adverse neurological and cardiac effects when being treated with haloperidol for delirium. The lowest possible dose should be used for the shortest possible time, and cardiac and extrapyramidal adverse effects should be closely monitored.

Knowledge Check Eight - Answer

Contraindications to the use of haloperidol include Parkinson's disease and dementia with Lewy bodies due to the risk of severe extrapyramidal symptoms.

Before initiating treatment, a baseline ECG and correction of electrolyte abnormalities is recommended.

Extrapyramidal side effects such as dystonia, tardive dyskinesia, parkinsonism, hypersalivation and dysphagia should be looked for and investigated early.

Haloperidol is also associated with QTc prolongation and ventricular arrhythmias and elderly patients are at an increased risk of suffering adverse cardiac effects. The use of haloperidol is contraindicated in patients with known QTc prolongation, congenital long QTc syndrome and in patients taking other drugs known to prolong the QTc interval

Conclusion

Well done on completing this case. I hope that you have found it informative. If you have any questions, please contact …

Dr Sophie Horrocks, Sophie.horrocks@nhslothian.scot.nhs.uk
Dr Toby Merriman, Andrew.Merriman@nhs.scot

Thank you for completing this long case. As these cases are new intervention, we would really value your feedback.

We would be very grateful if you could complete the feedback form accessed from the QR code below.

References

Life in the Fast Lane (2021). *Atrial Fibrillation.* https://litfl.com/atrial-fibrillation-ecg-library/

ADULTS WITH INCAPACITY
(SCOTLAND) ACT 2000

Certificate of Incapacity under Section 47 of the Adults with Incapacity (Scotland) Act 2000

I _____ (name)

of _____ (address)

*am the medical practitioner primarily responsible for the medical treatment of; or

*am a person who is *a dental practitioner/an ophthalmic optician/a registered nurse and who satisfies such requirements as are prescribed by the Adults with Incapacity (Requirements for Signing Medical Treatment Certificates) (Scotland) Regulations 2007 and who is primarily responsible for treatment of the kind in question of:

_____ (name)

of _____ (address) D D M M Y Y (date of birth)

for whom the *guardian/welfare attorney/person appointed by intervention order/nearest relative/carer

is _____

I have examined the patient named above on D D M M Y Y (date). I am of the opinion that *he/she is incapable within the meaning of the Adults with Incapacity (Scotland) Act 2000 ("the 2000 Act") in relation to a decision about the following medical treatment:

_____

because of (nature of incapacity) _____

_____

_____

This incapacity is likely to continue for _____ months.

*I therefore consider it appropriate for the authority conferred by section 47(2) of the 2000 Act to subsist from:

D D M M Y Y (date of examination) until D D M M Y Y, being a period which does not exceed one year from the *date of the examination on which this certificate is based/date of revocation of the certificate issued previously by me; or

*I am of the opinion that (a) *he/she is suffering from *a severe or profound learning disability/dementia/a severe neurological disorder; and (b) *what he/she is suffering from is unlikely to improve within the meaning of the Adults with Incapacity (Conditions and Circumstances Applicable to Three Year Medical Certificates) (Scotland) Regulations 2007/ Y Y and therefore consider it appropriate for the authority conferred by section 47(2) of the 2000 Act to subsist until:

D D M M Y Y being a period which does not exceed three years from the *date of the examination on which this certificate is based/date of revocation of the certificate issued previously by me.

The authority conferred by section 47(2) of the 2000 Act shall subsist for the period specified above or until such earlier date as this certificate is revoked.

In assessing the capacity of the patient, I have observed the principles set out in section 1 of the 2000 Act.

Signed _____ Date D D M M Y Y

*delete as appropriate

