Year 3 Case-based Learning 2024-25

Case 2 Part 1 Facilitator Guide

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Case overview: Unresponsive patient

Part 1:	Emergency department admission
Part 2:	Discharge from Acute Medical Unit

Student timeline

This timeline outlines when the Case materials will be released on the portal. Your CBL sessions may not coordinate exactly with this timeline as these details will be decided by each LIC site, but students should have the relevant session content available on the portal for each session.

2/9/24:	Y3 LIC1 begins
18/10/24:	Part 1 information released on portal
From 21/10/24:	Part 1 Independent Session 1
From 28/10/24:	Part 1 Facilitated Session 2
15/11/24:	Part 2 information released on portal
From 18/11/24:	Part 2 Independent Session 1
From 25/11/24:	Part 2 Facilitated Session 2

Part 1 presentation

A 23-year-old male found unresponsive in the street is admitted to the Emergency Department (ED) as a standby call.

Summary

Students first met the character James in Year 1 and 2 CBL. He was involved in a serious road traffic accident due to his alcohol addiction and these events led to a diagnosis of epilepsy. James has come back again three years later in this case. His personal situation has changed - he has dropped out of university and has separated from his long term girlfriend, who recently gave birth to their first child. He is found unresponsive by a passerby on the street and is admitted to ED via Northern Ireland Ambulance Service (NIAS) as a Standby Call. There were no signs of trauma but he was

surrounded by empty paracetamol and diazepam containers. He is assessed and treated for a paracetamol overdose in ED and requires a period of HDU support as his GCS remains 9/15.

Learning outcomes

Essential

Note that not all of these will be able to be covered in every session, but students should consider:

- How should you acutely assess an unconscious patient, both in hospital and outside hospital?
- How does this assessment differ if drug overdose is suspected?
- Can you give me a differential diagnosis for an unconscious patient?
- Describe the toxicological assessment and management of deliberate & accidental poisonings
- What is the mode of action of paracetamol and diazepam
- How would you interpret his investigation results?
- What are the treatments for paracetamol and diazepam overdose?
    a. Have you seen TOXBASE or the SNAP guidelines for paracetamol overdose?
- What other common overdose drugs might you need to know how to manage?
- How does recreational drug use differ from intentional drug overdose? How do differences including types of drugs, gender, socioeconomic groups and age come into play?
- Have you heard of potential complications of flumazenil?
    a. (If students are unsure) What about for people living with epilepsy?
- What do you understand of the role of the High Dependency and Intensive Care Units (HDU and ICU) in cases like these? How is place of care decided?

Desirable

- How aware are you of the role of the Northern Ireland Ambulance Service (NIAS)?
- How might you balance risk and benefit when considering:
    - naloxone as a test in an unconscious patient?
    - the licensed use of flumazenil as a benzodiazepine reversal agent?
- How might such a presentation impact on carers, dependents and wider family networks?
- What is the purpose of Unocini guidance? (Understanding the Needs of Children in Northern Ireland)
- Can you see any links between mental health, addictions and risk of self-harm?

- The treatment of paracetamol overdose has changed recently. Do any of you know about the evidence behind this?
- Can you see how clinical care can require integration across different teams in this case?
- What structural forces (economic, socio-political, physical) may help or impede how clinicians can treat people with addictions?
- What attitudes might you have towards people with addictions, and how might that influence clinical care?

Student guidance

There are two types of sessions – *independent* and *facilitated*. Students have been provided with a case guide and supporting materials, which includes medical documents and investigations. They should have met prior to the facilitated session and worked through the patient materials as a group, using the framework provided in the general guide to write learning outcomes. These should reflect the cognitive processes underlying the case. Students should also consider any additions they would make to the assessment and why, interpret the investigation results available, formulate a differential diagnosis, and suggest a management plan. They should have agreed how to present their learning to each other and their facilitator ahead of the facilitated session.

Key areas for discussion

The main topics for discussion during this session are:

- Pre-hospital care by NIAS
- Assessment of an unconscious patient
- Treatment of paracetamol and diazepam overdose
- The role of HDU and the correct place of care
- The impact on the partner and family, including child protection

Facilitator guidance

The general guide outlines expectations about how both independent and facilitated sessions should be conducted. Students should present their learning from the independent session at the start of the facilitated session. You have been provided with a copy of the student materials, and additional materials to share as the case progresses.

In your facilitated session, there are a number of learning areas to be highlighted. The materials have intentional gaps which should be explored. Students should explore these in their discussions, facilitated by their Chair, however, we have *suggested some prompts* to stimulate discussion if required.

Standby Call

- Communication: Encourage students to appreciate the benefit of this alert process. All UK EDs have a red phone, used by the ambulance service to pre-alert the ED of the arrival of patients with serious injury or illness. NICE guidelines recommend communication using the ATMISTER format.
- Structural Competency: Structural competency recognises how social, economic and political determinants, biases and medicalisation create health inequities and stigma, before patients enter healthcare. It also considers the impact of these structural forces on clinicians. Providers' implicit attitudes influence care, but awareness of structural competency can increase clinician attentiveness to the social determinants of health for their patients, which can increase empathy for marginalized patients, especially if practitioners integrate advocacy and social justice into their work. In this case, James is unemployed and struggling with addiction. He is marginalised and likely stigmatised by society. Epilepsy is also a stigmatised condition. Students should be encouraged to reflect on their own attitudes and implicit biases towards James, for example they may view him as having thrown away his chance of a good job by dropping out of university, and that may affect their empathy towards him.

NIAS Clinical Record

- Unconscious patient: *How would an ambulance paramedic approach an unconscious patient?* Acutely impaired or deteriorating consciousness is an emergency. These patients need to be assessed urgently, especially the cardiovascular, respiratory and neurological systems. An ABCDE approach should be used. Out of hospital it is essential to assess for trauma or other evidence of the cause of the reduced consciousness. Key assessments will include evidence of head trauma, hypoglycaemia, and sepsis. If drug overdose is suspected, there will be specific differences in acute assessment, such as supportive care and a lower threshold for intubation to protect the airway.

- Glasgow coma scale (GCS): The GCS scoring system is commonly used to grade the severity of impairment of consciousness. Students should revise the approach to GCS assessment and interpretation.
- Management: *What was the rationale for the naloxone?* NIAS staff have suspected an opioid overdose. Signs include small, reactive pupils, hypoventilation, myoclonus, bradycardia, and hypothermia. Patients with opioid overdose need prompt airway, respiratory and circulatory support. Naloxone is an opioid antagonist which can lead to quick and effective opioid reversal, but it is shorter lasting than most opioid drugs so repeated doses or an infusion may be required. The fact that there is no prompt recovery in this case suggests that other management strategies are needed. Students should reflect on the risk verses benefit in this clinical decision.

Emergency Department Clinical Record

- Assessment: Students should discuss the ABCDE approach to an unconscious patient. This should include the need for airway support (types of airways may be explored), haemodynamic stability, a focused neurological examination, and assessment of cause, including injury or drugs. Benzodiazepine overdose is usually determined by the patient's history or by evidence like prescriptions. The key sign is central nervous system depression.
- Differential diagnosis: Seizure, trauma, hypoglycaemia, alcohol intoxication, intra venous drug abuse are all important to consider. The differential diagnosis should include mixed overdose, head injury, intracranial event, and post-ictal sate. Encourage students to evaluate the likelihood of each, applying clinical reasoning.
- Management plan: This is left blank for students to develop. Investigations should include blood work (toxicology screen, FBC, U&E, LFTs, CRP, coagulation and INR), VBG (to detect acidosis), ECG (to check QTc interval), CXR and CT brain (to rule out intracranial event as cause of low GCS). If an intentional overdose is suspected, paracetamol level should always be measured. Urine toxicology screen is often sent but generally not back in time to impact acute management. Regarding initial management interventions, it would be reasonable to trial repeat of naloxone (as opioids have longer action than naloxone). Given the history, N-acetylcysteine should be commenced to cover for paracetamol overdose (discussed further below). It would be reasonable to state target saturations >94% and to start IV fluids for as supportive care. Importantly, given this patient's low GCS, they should be referred to anaesthetics/intensive care for review.
- Investigations:

- Blood work: Students should identify the paracetamol and diazepam levels. In the context of paracetamol overdose, blood tests assess for liver injury, acute kidney injury, acidosis, hypoglycaemia, raised INR and raised lactate.
- ECG: Normal sinus rhythm with no irregularities and normal PR and QTc intervals and axis. In the context of overdose, determining the QTc interval is important. Many drugs can prolong the QTc interval and increase risk of cardiac arrhythmia.
- CXR: Normal CXR; no pneumothorax, no consolidation and no evidence of aspiration (particularly important given low GCS).
- CT brain: No intracranial bleed or abnormality. Normal CT brain.

- Management of mixed overdose: When students have determined the diagnosis, guide them to consider management options. Direct them to TOXBASE, an approved clinical toxicology resource in the UK.
  - Benzodiazepines: Clinical treatment of overdose is often based on symptom management. The patient's airway, ventilation and haemodynamic stability should be maintained while other diagnoses are excluded. Flumazenil is a benzodiazepine antagonist which reverses the effects of benzodiazepines by competitive inhibition at the GABA/benzodiazepine-receptor complex. Flumazenil is not licensed in the UK for the treatment of acute benzodiazepine poisoning as its risks often outweigh the benefits. Its use has been associated with convulsions, particularly in patients who have co-ingested drugs associated with seizures. NICE states that flumazenil must only be used with caution by a clinician who has been explicitly trained in its use for the treatment of benzodiazepine poisoning to reverse impairment of airway or ventilation in patients who meet strict clinical criteria. Its use is therefore inappropriate for most patients presenting to ED with benzodiazepine toxicity.
  - Paracetamol: Students should explore the different types of paracetamol overdose (acute/staggered/therapeutic excess) and identify the key aspects to determine in assessment, such as amount and timing. Serum paracetamol concentration is used to risk-stratify the likelihood of liver injury and determine whether treatment with N-acetylcysteine ('NAC') is needed. A serum paracetamol concentration measured less than 4 hours after ingestion cannot be interpreted. Since neither the amount nor timing can be determined for this patient, NAC should be started empirically. Students should be aware of the criteria to escalate intervention.
- Level of care: *What level of care is required to safely look after this patient?* The patient has a low GCS and is requiring airway support with an adjunct, so he should be referred to a

higher level of care for assessment and observation. The details of this are explored below in the ICU review.

UNOCINI: Child safeguarding form

- ED is a common place for Child Protection issues to be identified. All staff have safeguarding training, and ED staff are familiar with completing the relevant forms and making appropriate referrals.
- UNOCINI: Understanding the Needs of Children in Northern Ireland (UNOCINI) is a child-centred assessment framework that has been developed to support staff to conduct high quality assessments that clearly identify children's needs, leading to early and effective intervention if required. these needs being met. It has three assessment areas identifying the needs of the child or young person, the capacity of their parents' or carers' to meet these needs, wider family and environmental factors that impact on parental capacity and children's needs.

ICU review

- *What is the difference between HDU/ICU care and ward level care?* Differences in patient requirements include a need for increased monitoring frequency and organ support; differences in systems include staff to patient ratios.
- Clinical decisions: An important learning point is balancing benefit and risk in clinical decisions. The use of flumazenil would reverse the diazepam but could result in status epilepticus (especially given the background of epilepsy). He will need airway support until the diazepam is excreted, which is best provided in HDU/ICU. Furthermore, the close monitoring of fluid input/ output and regular bloods to assess the impact of the NAC for the paracetamol toxicity could be supported by 1-1 nursing in a higher level of care.
- Allocation of resources: *The ICU in the Ulster Hospital is full, so what should the team do next?* It is not uncommon for patients to be transferred to another hospital or Trust to access an ICU bed. Students should consider the art of balancing resource allocation and decisions regarding fitness for ICU.

Additional materials for facilitated session

The students have not seen the additional materials you have been provided with. Share these materials with the students, review them together and hand over to the students to identify what is new for them and how the materials relate to what they have learned so far.

12-hour blood levels

- LFTs, coagulation screen and lactate should be repeated before deciding to stop the NAC. Students should review guidelines to interpret the results and identify that they meet criteria to stop the NAC infusion.

Daily review 24 hours later

- Post-OD care:
- *What are the potential complications following this OD?* Given the period of unconsciousness, regular review should assess for aspiration pneumonia. The potential risk of untreated paracetamol OD is liver failure which would require transfer to King's College Hospital London for transplant.
- *Discuss why there are two protocols for treatment of paracetamol OD (21-hour vs 12 hour)?* The standard 21-hour program has existed since the 1970s with little clinical evidence and often lots of ADRs. The new SNAP 12-hour programme follows on from phase 2, 3 and 4 clinical trials to reduce the amount of ADRs. This is a good opportunity to discuss clinical trials, research and the constant attempts to improve patient outcomes and experiences.
- *What do you think needs to happen next?* Students should appreciate the role of the multidisciplinary team to ensure his safe discharge. He will require a capacity assessment, a suicide risk and mental health assessment, social worker and child support input and liaison with his GP. This is explored in Part 2.

Conclusion

Ask the students to summarise the session and direct them to areas where they should undertake more research. Advise them that the patient will be stepped down to the acute medical ward in preparation for discharge for Part 2.

Useful resources

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Learning opportunities for students

Lectures

Specialities - Acute and chronic pain management

Specialities- Common drug overdoses

Specialties – Neurosciences - epilepsy

Medicine- Acute confusion, coma

Medicine- Acute medical emergencies 1 & 2

Medicine - Neurology

Surgery- Level of care and monitoring

Other opportunities

Specialties – Neurosciences - Epilepsy

Medicine - An introduction to ECG interpretation

Medicine - Clinical decision making

Scientific basis of clinical practice – clinical biochemistry, pathology, haematology

Foundations for Practice

- Fundamentals of Clinical Science: Pharmacology and therapeutics, anatomy, physiology, sociology/psychology, public health
- Neurology: CNS anatomy and pathology, neurophysiology, collapse, epilepsy, neuroradiology, psychology, mental health
- Year 2: Acute, Critical & Emergency Care Course

Previous cases

- Case 18 –‘ Coming to terms with epilepsy.’

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Tom Bourke	Academic Lead T Theme
Helen Reid	Academic Lead T Theme
Diarmuid O'Donovan	Academic Lead G Theme
Vivienne Crawford	Deputy Academic Lead G Theme
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Noleen McCorry	Lecturer in Population Health & Health Care
Laura McGowan	Lecturer in Nutrition and Behaviour Change

Legacy Subject Science Leads