CLINICAL CASES IN PARAMEDICINE

EDITED BY
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WILEY Blackwell

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Dedication

This text is being finalised for publication during the COVID-19 global pandemic. Many healthcare workers have lost their lives during this time while looking after those who contracted the SARS-CoV-2 virus. Therefore this text is dedicated to all those healthcare workers and paramedics who continue to look after the sick when faced with adversity and at risk to their own lives.

Also in memory of Brian Mfula, lecturer in mental health nursing at Swansea University, Wales, UK and co-author of Chapter 12, who tragically lost his life to COVID-19.

Clinical Cases in Paramedicine

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Preface

Paramedicine is a fast-paced, ever-changing profession and those who practise as paramedics must be able to keep up to date with changes using the latest evidence and expert opinion where evidence does not exist. Paramedic education precedes clinical practice and therefore high-quality learning materials are essential to prepare student paramedics for employment.

The case studies in this book bring together a diverse range of examples that accurately represent the caseload experienced by contemporary paramedics all in one place. They use a mix of evidence-based cases and expert opinion supplied by leaders in the industry.

Case-based learning (CBL) and problem-based learning (PBL) rely on high-quality, well-written case studies that paramedic educators, students and clinicians can use to aid their understanding of out-of-hospital care. Not only is the content contemporary, but the cases are structured in a manner that reflects a systematic approach to each scene, allowing students to develop a sense of structure to the way they proceed in each case. Each chapter has a range of interactive learning activities that allow students to stop and think about what is going on, and the questions throughout the cases provide students with additional learning opportunities.

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Chapter 1
Respiratory emergencies

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CHAPTER CONTENTS

LEVEL 1 CASE STUDY

Asthma

Information type	Data
Time of origin	17:08
Time of dispatch	17:10
On-scene time	17:20
Day of the week	Friday
Nearest hospital	30 minutes
Nearest backup	15 minutes

Patient details	Name: Betsy Booper DOB:10/09/2002

CASE

You have been called to an outdoor running track for an 18-year-old female with shortness of breath. The caller states she has taken her inhaler to no effect.

Pre-arrival information

The patient is conscious and breathing. You can access the area via the back gate of the sports field and drive right up to the patient, who is sat down on the track.

Windscreen report

The location appears safe. Approx. 10 people around the patient. Environment – warm summer evening and good light.

Entering the location

The sports coach greets you as you get out of the ambulance and informs you that the patient suffers with exercise-induced asthma, but this is worse than normal and her inhaler has been ineffective.

On arrival with the patient

The patient is sat on a bench on the side of the track. She is leaning forward, resting her elbows on her thighs (tripodding). She says hello as you introduce yourself to her.

Patient assessment triangle

General appearance

Alert. Speaking in short sentences. She looks panicked.

Circulation to the skin

Flushed cheeks.

Work of breathing

Breathing appears rapid and shallow. An audible wheeze is noted.

SYSTEMATIC APPROACH

Danger

None at this time.

Response

Alert on the AVPU scale.

Airway

Clear.

Breathing

RR: 28. Regular and shallow. No accessory muscle use. Expiratory wheeze on auscultation.

Circulation

HR: 100. Regular and strong. Capillary refill time <2 seconds. Flushed cheeks and peripherally warm.

Disability

Moving all four limbs.

Pupils equal and reactive to light (PEARL).

Exposure

Bystanders have left. Next of kin are now on scene.

Temperature: warm summer evening – approx. 20 °C.

Vital signs

RR: 28 bpm

HR: 100 bpm

BP: 125/74 mmHg

SpO_2: 93%

Blood glucose: 5.2 mmol/L

Temperature: 36.9 °C

PEF: 300 L/min

GCS: 15/15

4 Lead ECG: sinus tachycardia

TASK

Look through the information provided in this case study and highlight all of the information that might concern you as a paramedic.

Aside from auscultation, which you have already done, what examination techniques should you incorporate into this patient assessment?

Inspection – observe the chest for an abnormalities such as wounds, scars, bruising, asymmetry and recession.

Palpation – feel for any asymmetry, vocal fremitus and tenderness.

Percussion – hyper- or hypo-resonance.

What adventitious (added) sounds might indicate asthma and why?

Expiratory wheeze. This sound is made when air has a restricted path through the bronchi, due to inflammation and muscle spasm in the airways.

What medicine (pharmacology) is likely to relieve the patient’s symptoms and why?

Nebulised salbutamol – it is a Beta2, adrenergic agonist that relaxes smooth muscle in the bronchi.

Case Progression

You treat the patient with 5 mg of nebulised salbutamol and 6 L of oxygen. The nebuliser finishes and you remove the mask.

Patient assessment triangle

General appearance

The patient is now speaking in full sentences.

Circulation to the skin

Flushed.

Work of breathing

Normal effort of breathing.

SYSTEMATIC APPROACH

Danger

None at this time.

Response

Alert.

Airway

Clear.

Breathing

RR:16. Regular. Normal depth. No accessory muscle use. No wheeze or adventitious sounds.

Circulation

HR: 105. Regular and strong. Capillary refill time <2 seconds. Flushed cheeks and peripherally warm.

Disability

No change.

Exposure

No change.

Vital signs

RR: 16 bpm

HR: 105 bpm

BP: 128/78 mmHg

SpO_2: 97%

Blood glucose: not repeated

Temperature: not repeated

PEF: 380 L/min

GCS: 15/15

4 lead ECG: sinus tachycardia

What kinds of questions would you ask this patient specifically related to asthma as part of the history-taking process?

See Table 1.1.

Table 1.1 History-taking questions

Asthma history
Does this feel like your normal asthma?
Is this the worst it's ever been?
What time did this episode start today?
Do you take your asthma medication regularly?
What were you doing when it started today?
What usually triggers your symptoms?
When was the last time your visited your GP and/or went to hospital with these symptoms?
Have you ever been intubated or been in ICU with these symptoms?
Medication history
What asthma medications do you take?
How frequently do you have to take your medication?
Do you usually have to take your inhaler while exercising?
When was the last time you had a medication review with your GP?
Have you had any recent changes in medication?
Do you take any other medications?
Have you had any coaching on the best way to take your inhaler?
F/SH (family and social history)
Does anyone else in your family experience asthma?
Do you smoke? If so, how frequently?
Do you drink or take any drugs recreationally?
Who do you live with?
What do you do for work?
Do you exercise regularly?
Are you under any particular stress at the moment?
Past medical history (PMH)
Do you have any other medical problems?
Do you have any allergies?
Have you had a cough or cold recently?

The patient is 160 cm tall, what should her predicted peak expiratory flow reading (PEFR) be? Her first reading was 300 – what percentage is that from predicted?

(Hint: you will be required to look this up using the Australian National Asthma Council chart found here: http://www.peakflow.com/pefr_normal_values.pdf or by doing an internet search.)

- 400 L/min.
- 75%.

LEVEL 1 CASE STUDY

Chronic obstructive pulmonary disease (COPD)

Information type	Data
Time of origin	07:09
Time of dispatch	07:12
On-scene time	07:30
Day of the week	Wednesday
Nearest hospital	15 minutes
Nearest backup	40 minutes
Patient details	Name: Dave Beater DOB: 21/09/1954

CASE

You have been called to a residential address for a 66-year-old male with difficulty in breathing. The caller states he has been breathless all night and has had a cough recently. He has seen his GP who prescribed antibiotics and steroids but he feels his breathing has got worse overnight.

Pre-arrival information

The patient is conscious and breathing and is in a first-floor flat/unit.

Windscreen report

The location appears safe. Greeted at the main door by the patient's wife.

Entering the location

Wife escorts you up in the lift to the patient's flat.

On arrival with the patient

Patient is sat in the tripod position and appears distressed. He makes eye contact when you arrive, but does not speak as is so short of breath. He has a productive cough that results in a string of green-looking sputum that he manages to capture in his handkerchief to show you.

Patient assessment triangle

General appearance

Alert, and makes eye contact, but is acutely distressed. Can only speak in single words and is reluctant to talk.