MBChB Year 2 Clinical contact in GP – Body defence

Context for the session

The Intended Learning Outcomes are:

- Be able to open a consultation and demonstrate strategies that help build rapport with patients
- Describe the elements of gathering a history in a patient presenting with an infection.
- Discuss how common infections present in clinical practice
- Define infection "red flags" including the presentation of sepsis
- Know how to approach the clinical examination
- Be able to assess vital signs including pulse, respiratory rate oxygen saturations, temperature and blood pressure
- Describe how to use an otoscope to look in the ears and throat, and examine the head and neck for lymphadenopathy

Students will have covered the following in the two-week body defence block:

In **Case-Based Learning** they have will considered and compared the cases of an 18-year-old woman who develops a severe allergic reaction and an older man with tongue swelling. Students will consider the role of immunoglobulins, mast cells and histamines; types of hypersensitivity reactions and angioedema; and how adrenaline, chlorphenamine, and steroids work.

In **lectures, workshops and practical** they will learn about:

- Inflammation, healing and repair
- Types of immunity
- Microorganisms
- When things go wrong: Allergies and hypersensitivity, immunodeficiency and autoimmunity
- Handwashing and patient and staff safety
- Pandemics and impact on health economics, global and public health

In their **Effective Consulting** lab session, they will learn how to:

- Describe the stages involved in formulating a differential diagnosis and problem list
- Describe common cognitive biases that can impact on clinical reasoning, and describe how medical error can arise from inadequate gathering of information
- Discuss how to manage a communication challenge; the talkative patient

Specifics for Body Defence in GP clinical contact

Session structure and format

Please refer to the:

- GP Clinical contact handbook, for generic information and advice on how to structure and deliver each session.
- accompanying "session plan", as a guide on how to use your time with your group

Specifically for this session, start by:

- Briefly meet each student 1:1, to identify any individual issues that you need to be aware of
- Getting the group to introduce themselves – do not assume they know each other (but we try to avoid "orphan" students)
- Establishing group rules and agree how to work together as a group, e.g. punctuality, keeping each other confidence's, etc.

During the session:

- Use the below information on history and examination, given to students for this session, to support interactions with patients and small group discussion.
- Demonstrate/observe history taking, summarising, and clinical skills including those relevant to someone with an infection: measuring pulse, BP, temperature; and using a pulse oximeter and otoscope.

(Expert) patients

Ideal patients for the block are some who has had:

- previous serious or recurrent infection(s)
- an allergic (including anaphylactic) reaction

Scene setting

You are not expected to give a tutorial on immunity and infection. The students have had teaching on this, so start by getting them to tell you what they have learnt. Brainstorm their thoughts on a flipchart or whiteboard (see figure) and/or use these prompts:

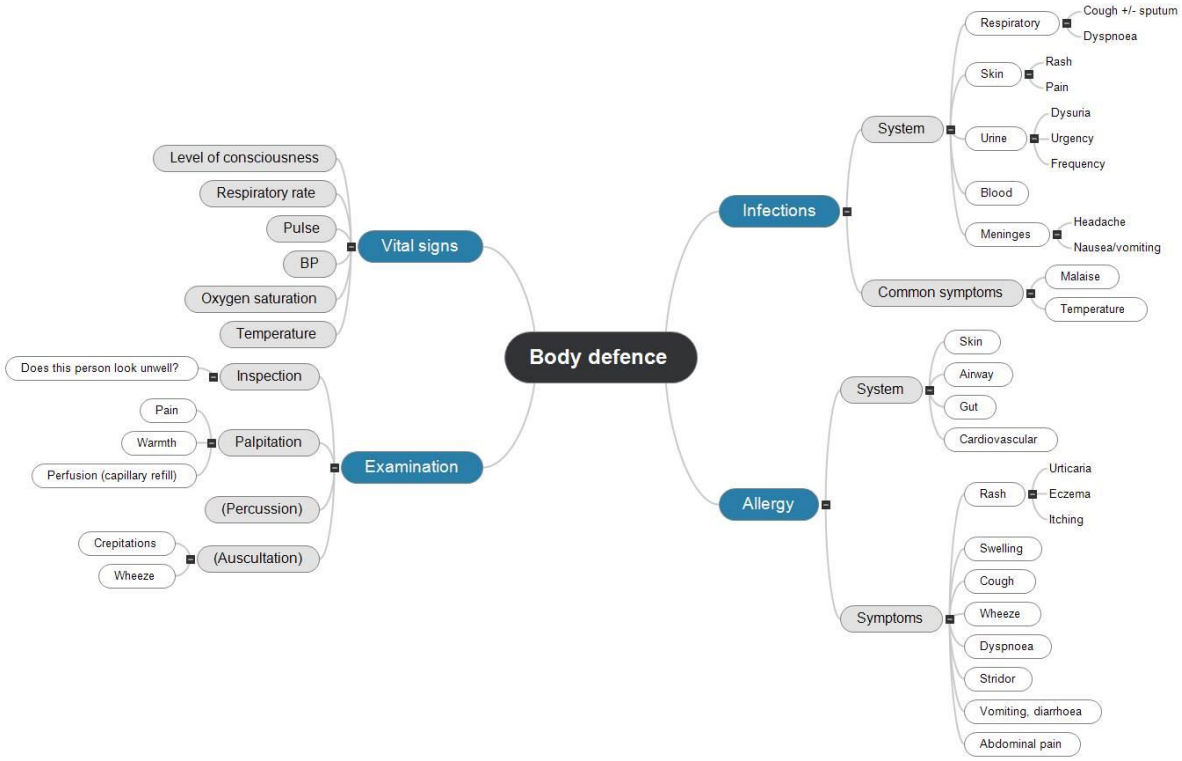
- What common skin infections or allergies do you see in your clinical practice?
- How do patients with infections or allergies present?
- What is the difference between an allergic reaction, infection and sepsis? (See below definitions)
- If you are asked to assess someone presenting with an infection/allergy, how do you prepare? What do you look at in the notes before you speak to them?
- When someone presents with a possible infection or allergy, what do you want to find out about? How do you go about differentiating them?
- What are the most important things you want to cover in the medical history and why? What are "red flags" in a patient presenting with an infection/allergy? i.e. how do you know when they are seriously unwell and need hospital admission?

Definitions

- Allergy: an immune-mediated hypersensitivity reaction to food.

- Anaphylaxis: a serious systemic hypersensitivity reaction that is usually rapid in onset and may cause death. Severe anaphylaxis is characterized by potentially life-threatening compromise in airway, breathing and/or the circulation.
- Infection: the state produced by the establishment of one or more pathogenic agents (such as a bacteria, protozoans, or viruses) in or on the body of a suitable host.
- Sepsis: a life-threatening organ dysfunction due to a dysregulated host response to infection.

Figure: Example infection/allergy systems, symptoms and signs “brainstorm”



Student information

History

Screen for situations that make a serious infection more likely:

- age (the very young and older patients)
- immunocompromise including malnutrition
- medication (some suppress the immune system)
- recreational drug use (can elevate temperature) and IV drug use (increased risk of infection

Ask about possible sources of infection:

- contacts with known infections or animals/insects
- breach in skin e.g. bite/scratch
- recent foreign travel

Check vaccination history (if appropriate)

Systems review:

- While the source of infection may appear clear, a systems review can help make sure you have not overlooked something and identify the source when it is not so obvious.
- It reminds you to ask about aspects the patient may not have told you such as joint pain and swelling.
- Bear in mind that a child or older person may present with fever and vomiting and have a urinary tract infection that has made them systemically unwell but no or few urinary symptoms. A urinalysis is often useful in the patient with an unexplained fever.

Systemic features of serious infection include:

- feverish/rigors
- altered mental state
- breathlessness
- feeling faint or collapse
- severe headache
- not passing urine
- a feeling of "impending doom".
- mottled skin or non-blanching rash

Examination

General appearance and level of consciousness, AVPU:

- Alert
- responsive to Verbal commands
- responsive to Pain
- Unresponsive.

Vital signs

If you think that a person has an infection or presents with an allergy it is important to assess their vital signs. You can do a rapid assessment of:

- A (Is patient maintaining their Airway — voice and breath sounds)
- B (Breathing —Respiratory Rate, Chest wall movement, percussion & auscultation, oxygen saturation 97-100%)
- C (Circulation—skin colour/sweating, capillary refill time <2 seconds, pulse 60-100 bpm, blood pressure systolic 100-140 mmHg)
- D (Disability—AVPU, pupillary light reflexes, limb movements, blood glucose)
- E (Exposure—temperature and expose skin).

You will cover fever and sepsis in Year 4. In Year 2 we would like you to know how to measure:

- Radial pulse: felt at the base of the thumb just lateral to the flexor carpi radialis tendon. Most adults have a resting heart rate of 60-100 beats per minute.
- Respiratory rate: count the number of breaths for 15 seconds and x 4, normal respiration in an adult is 12-20 breaths per minute with the expiration slightly longer than inspiration.
- Temperature
- Transcutaneous monitoring of Oxygen Saturation: a non-invasive way of measuring oxygen saturation in arterial blood, which usually gives pulse rate as well. The probe is usually placed on the fingertip, although toes may be used, and ear probes are available. Use the

corrected size probe – smaller probes are available for children. Leave it on at least 30 seconds.

- Blood pressure (including manual BP)

More on transcutaneous monitoring measurement of Oxygen Saturation:

- Measurement is prone to error, so you still need to put the SpO2 in context and use your clinical judgement.
- Causes for error include: cold peripheries, nail varnish, anaemia, irregular heart beat or tremor, carbon monoxide poisoning (falsely high readings), dirty equipment.
- It works by spectrophotometry. It compares the difference in absorption of red and infrared light by the blood. Two light-emitting diodes on one side of the probe are measured by a light detector on the other side. Oxyhaemaglobin absorbs more infrared light compared to deoxyhaemoglobin.

💡 Never assume! A GP was called informed by a community nurse that despite the patient being distressed and breathless, their oxygen saturation probe was recording pulse 72 and oxygen saturation 98%. When the GP visited, they found the probe was switched off – the patient had been reading the sticky label that came attached to the new device! Their oxygen saturation was actually dangerously low …

Examining the ear (from Macleod)

Explain to the patient what you are going to do/doing!

Inspection: Pinna skin, shape, size, position, scars from previous surgery/trauma, deformity.

Palpation:

- Gently pull on the pinna and push on the tragus to check for pain.
- Gently palpate over the mastoid bone behind the ear to assess for pain or swelling.

Otoscopy

- Use the largest otoscope speculum that will comfortably fit the meatus.
- Hold the otoscope in your right hand for examining the right ear (left hand to examine left ear).
- Rest the ulnar border of your hand against the patient's cheek to enable better control and to avoid trauma if the patient moves
- Gently pull the pinna upwards and backwards to straighten the cartilaginous external auditory canal. Use the left hand to retract the right pinna.
- Inspect the external auditory canal through the speculum, noting wax, foreign bodies or discharge. You should identify the tympanic membrane and the light reflex anteroinferiorly.

Summarising

A mnemonic particularly useful in the acute medical setting:

- S = Situation (a concise statement of the problem)
- B = Background (pertinent and brief information related to the situation)
- A = Assessment (analysis and considerations of options — what you found/think)
- R = Recommendation (action requested/recommended — what you want)

NEWS2

NEWS2 stands for "National Early Warning Score (version 2)". It was developed by the Royal College of Physicians and assigns a score according to five parameters:

1. Respiratory rate
2. Oxygen saturations
3. Temperature
4. Systolic blood pressure
5. Pulse rate
6. Level of consciousness

A score (0-3) is allocated to each physiological parameter, the magnitude of the score reflecting how extreme the parameter varies from what's normal. This score is then aggregated, and uplifted (+2 points) for people requiring oxygen. (See overleaf)

NHS England mandated the use of NEWS2 in acute and ambulance trusts in 2018; but stopped short of recommending its use in primary care because of the lack of validation in this setting.

A high NEWS does not provide a diagnosis; but can help in standardised way to identify a sick patient or someone who is deteriorating and requires urgent clinical review. The RCP recommends that sepsis should be considered in any patient with a NEWS2 score of 5 or more.

National Early Warning Score (NEWS2)

Physiological parameter	Score 3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO_2 Scale 1(%)	≤91	92–93	94–95	≥96			
SpO_2 Scale 2(%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	