# Sepsis in adults

## *Executive summary*

## Introduction

Sepsis is a life-threatening syndrome which must be rapidly recognized and treated. It is a response of the body’s immune system that results in organ dysfunction or failure. Evidence shows that the patient’s chances of survival are directly related to the speed at which treatment is started.

## Target users

* Nurses
* Doctors

## Target area of use

* Outpatient department
* Ward

## Key areas of focus / New additions / Changes

This guideline outlines the rapid recognition and response required to treat sepsis. It summarises the empirical antibiotics appropriate in our setting.

## Limitations

We do not have access to HDU level care.

## Presenting symptoms and signs

Sepsis can present in many different ways depending on where the infection is. Immunocompromised patients may not mount the same response as other patients.

Common symptoms are:

* Fever, with or without shaking chills (Temperature > 38ºC or < 36 ºC)
* Cough
* Pain (abdominal, joint, headache)
* Hypotension
* Impaired mental status
* Increased respiratory rate (>20breaths/min)
* Signs of end organ perfusion (Warm flushed skin, oligura, ileus or absent bowel signs)

## Examination findings

## Depend on the type of sepsis.

Patients should undergo a full examination including:

* Cardiovascular
* Respiratory
* Abdominal
* Ear, nose and throat
* General; look for any joint swellings, skin rashes , abscess
* Neurological; any signs of meningism

It is very important to look for signs of immunosuppression.

### Differential diagnosis

The list is endless! Heart failure, asthma, severe COPD, hypoglycaemia, tuberculosis can all present like sepsis.

## Management

If you think of sepsis, admit to the ward and use the sepsis cards to prioritise care.

In OPD, you can calculate a qSOFA score. Score 1 for each of:

* Systolic blood pressure (<100mmHg)
* Tachypnoea (RR >22 per minute)
* Altered mental state

A score of 2 or more indicates that a doctor should consider sepsis and intervene rapidly.

### Investigations

* FBC, U+E, LFTs, glucose
* Take 2 x 10mls for blood culture
* Chest x-ray
* Urine dip
* HIV test if status unknown
* Lumbar puncture if meningitis suspected and no focal neurological deficit
* Abdomino-pelvic USS is an intra-abdominal abscess is suspected.

### Management

*The Golden Hour*: all patients who are septic should have IV fluids, oxygen (if required) and IV antibiotics within the first hour of admission.

* IV access
* Bloods (as above)
* Assess fluid status – if hypotensive, which may be severe in sepsis, requires rapid, large volume infusions of IVF (30 mL/kg) are indicated as initial therapy for severe sepsis or septic shock, unless there is convincing evidence of significant pulmonary oedema.

Fluid therapy should be administered in well-defined (eg, 500 mL), rapidly infused boluses. The clinical and hemodynamic response and the presence or absence of pulmonary oedema must be assessed before and after each bolus. Intravenous fluid challenges can be repeated until blood pressure and tissue perfusion are acceptable, pulmonary oedema ensues, or fluid fails to augment perfusion.

* IV antibiotics – see below
* At least 1 hourly observations in first few hours of admission
* Urinary catheter to monitor fluid status

The antibiotic given depends on the presumed source of sepsis.

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|  | **IV therapy** | **Oral therapy for step down** |
| **Source unknown** | Ampicillin 1 g 8 hourly + Gentamicin 5-7.5 mg/kg once daily |  |
| **Respiratory** | Benzylpenicillin 1.2 g 6 hourly increased if necessary to 2.4 g in more serious infections + Chloramphenicol 500 mg 6 hourly  If atypical suspected, add azithromycin 500mg OD for 3 days | Amoxicillin 500 mg 8 hourly  OR  Doxycycline 200 mg OD |
| **Urinary** | Ampicillin 1 g 8 hourly + Gentamicin 5-7.5 mg/kg once daily | Nitrofurantoin 50 mg QDS |
| **Soft tissue** | Cloxacillin 1 g QDS (2 g in severe infection )  + Benzypenicillin or Ampicillin if severe | Cloxacillin 500 mg QDS |
| **Meningitis** | Ceftriaxone 2 g 12 hourly for 14 days depending on organism |  |
| **Abdominal sepsis** | Triple therapy; Ampicillin 1 g 8 hourly + Gentamicin 5-7.5 mg/kg OD + Metronidazole 500 mg TDS | Depends on source; e.g.cholecystitis; amoxicillin and metronidazole  Spontaneous bacterial peritonitis; ciprofloxacin and metronidazole |
| **Invasive fungal infections** | Fluconazole (800 mg [12 mg/kg] loading dose, then 400 mg [6 mg/kg] IV daily)  (Lipid formulation amphotericin B (3 to 5 mg/kg IV daily) is an alternative but is not usually available) | Oral therapy (at the same dose) should be given to patients who are able to take oral medications, |

**Notes:**

* Gentamicin – one dose can be given before the renal function is known, but further doses should only be continued if renal function is normal. There are very few circumstances where a course should continue beyond 5 days.
* Ceftriaxone – is often used as a second line option where there seems to be a failure to respond to first line medications. If there is no clear diagnosis, it should usually be stopped after 5 or at most 7 days.
* If not responding – look for a reason and consider changing the antibiotics.
* Blood cultures should be followed up after 48 hours with a phone call to the microbiology lab.
* If after 48 hours, there is no clear diagnosis and the patient is clinically improved and stable consider switching to oral antibiotics.

## Key Issues for Nursing care

* The Golden Hour – Make sure antibiotics and fluids are given within the first hour.
* Monitor patients using the Early Warning Score.

## References

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| **Written by:** | Name: Caitlin Jones | Date: 31 May 2018 |
| **Reviewed by:** | Name: Karen Forrest | Date: 14 June 2018 |
|  | Name: Amie Secka | Date: 06 July 2020 |
| **Version:** | **Change history:** | **Review due date:** |
| 1.0 | New document | 31 July 2020 |
| 1.1 | Executive summary added | 31 July 2020 |
| 2.0 | Reviewed with changes | 01 November 2022 |
| Review Comments (*if applicable)* |  |  |