

## APPENDIX B - DIAGNOSIS OF INFECTION

The criteria for the diagnosis of infection have been derived from Horan et al.

Infection can be microbiologically or clinically diagnosed. Microbiological diagnosis will be considered superior to clinical diagnosis for outcome recording. "Positive blood culture" for diagnosis in any of these infective conditions is defined as culture of bacteria from blood cultures with no other obvious source.

All patients must meet the SIRS criteria. They must then meet the criteria for the following infections types:

### *PNEUMONIA*

The patients needs to have at least one of the following clinical characteristics:

- (1) tachypnoea (respiratory rate >20)
- (2) cough
- (3) increased sputum production
- (4) crackles/bronchial breathing
- (5) pleural rub

For a clinical diagnosis the patient needs radiographic evidence of pulmonary consolidation (e.g. by chest x-ray, CT scan or ultrasound). For a microbiological diagnosis the patient needs to demonstrate out of the following:

- (1) growth of respiratory pathogens from sputum, lavage or pleural cultures, OR
- (2) culture of bacteria from blood cultures with no other obvious source, OR
- (3) detection of respiratory pathogens by antigen testing or PCR

### *URINARY TRACT INFECTION*

The patients needs to have at least one of the following clinical characteristics:

- (1) increased urinary frequency
- (2) dysuria
- (3) suprapubic pain
- (4) renal angle pain

For a clinical diagnosis the patient needs one of:

- (1) Urinary white cells on urine dipstick or microscopy, OR
- (2) Radiologic (USS/CT/MRI) evidence of perinephric collection

For a microbiological diagnosis there needs to be growth of  $<3$  different organisms at  $>10^5$  CFU/ml.

#### *CHOLANGITIS*

The patient needs to present clinically with abdominal pain. For a clinical diagnosis, the patient must have an elevated bilirubin, AND dilatation of the biliary tree on ultrasound, CT, MRCP or ERCP. For a microbiological diagnosis, the patient must have positive culture of organisms from bile drained percutaneously or surgically, OR culture of bacteria from blood cultures with no other obvious source.

#### *SPONTANEOUS BACTERIAL PERITONITIS*

The patient needs to present clinically with abdominal pain and ascites. For a clinical diagnosis, the patient can have one of the following:

- (1) abdominal pain AND ascites AND SIRS positive, with no other obvious source of infection
- (2) ascitic fluid sample demonstrating  $>250$  neutrophils/mm<sup>3</sup>

For a microbiological diagnosis, the patient can have one of the following:

- (1) bacteria cultured from ascitic fluid sample
- (2) culture of bacteria from blood cultures with no other obvious source

#### *INTRA-ABDOMINAL COLLECTION / ABSCESS*

The patient needs to present clinically with abdominal pain, with peritonism and/or ileus. For a clinical diagnosis, there must be radiographic or surgically identified collection in the abdomen/pelvis. For microbiological diagnosis, there must be culture of organisms from surgically or radiologically obtained material from the abdomen.

#### *CELLULITIS / SOFT-TISSUE INFECTION*

For a clinical diagnosis, the patient must present with local tissue inflammation; this may be accompanied by pus or lymphatic tracking. For microbiological diagnosis the patient can also have one of the following:

- (1) culture of organisms from a swab at the site
- (2) culture of bacteria from blood cultures with no other obvious source

#### *OSTEOMYELITIS*

For a clinical diagnosis, the patient must have radiological diagnosis of bone infection, and at least 2 of the following at the site of the suspected bone infection:

- (1) swelling
- (2) tenderness
- (3) drainage

For a microbiological diagnosis the patient must either have a culture of organisms from bone, or culture of bacteria from blood cultures with no other obvious source.

#### *SEPTIC ARTHRITIS*

The patient needs to present clinically with at least 2 of the following features at a joint site:

- (1) pain
- (2) swelling
- (3) tenderness
- (4) heat
- (5) effusion
- (6) limitation of movement of joint

For a clinical diagnosis the patient must have evidence of infection, rather than of non-infective rheumatological inflammation, by any of the following:

- (1) Radiographic evidence of infection
- (2) Biochemical evidence of infection
- (3) Positive gram stain of aspirated joint fluid

For a microbiological diagnosis the patient must have culture of organisms from the aspirated joint fluid.

#### *DISCITIS*

The patient needs to clinically present with back pain, with pain at the level of the suspected disc infection. For a clinical diagnosis, there must be radiographic evidence (MRI/CT scan) demonstrating disc infection. For a microbiological diagnosis the patient must have culture of organisms from disk space, obtained either from surgical or needle aspirated tissue sample.

### *INTRACRANIAL ABSCESS*

The patient needs to clinically present with at least two of the following symptoms :

- (1) headache
- (2) dizziness
- (3) localising neurological signs
- (4) confusion
- (5) decreased conscious level

For a clinical diagnosis there must be radiological evidence of infection. For a microbiological diagnosis the patient must also have at least one of the following:

- (1) Visualised organisms on gram stain
- (2) Growth of organisms on culture of brain tissue or dura
- (3) Detection of organisms by PCR

### *MENINGITIS*

For a clinical diagnosis, patients must have a cerebrospinal fluid (CSF) sample with  $>100$  white cells per  $\text{mm}^3$  AND one of the following:

- (1) Confusion
- (2) Nuchal rigidity
- (3) Photophobia
- (4) Coma

For a microbiological diagnosis, the patient must also have one of the following:

- (1) Visualised organisms on gram stain
- (2) Growth of organisms on CSF culture
- (3) Detection of organisms by PCR

### *ENDOCARDITIS*

The patient needs to clinically present with two or more of the following criteria, with no other recognised cause:

- (1) new or changing murmur
- (2) embolic phenomena
- (3) skin manifestations (i.e. petechiae, splinter haemorrhages, painful subcutaneous nodules)
- (4) congestive heart failure
- (5) cardiac conduction abnormality

For a clinical diagnosis, the patient must also have evidence of new vegetation on echocardiogram, or identified during surgery. For microbiological confirmation, the patient must also have one of the following:

- (1) Growth of organisms from two or more sets of blood cultures
- (2) Positive culture of vegetation removed surgically

*BLOOD STREAM INFECTION: - NO SOURCE IDENTIFIED*

For a microbiological diagnosis, the patient must have one positive culture of a typical pathogen from bacterial blood culture. Contaminated samples will be identified where there is growth of skin commensals (e.g. *S. epidermidis* / coagulase negative staphylococcus, diphtheroids, corynebacterium) from a single bottle, in the absence of immunosuppression.

*INFECTIVE DIARRHOEA*

For a microbiological diagnosis, the patient must have clinical evidence of diarrhoea (defined as 3 or more loose stools in a 24 hour period), AND also have a stool culture that is positive for diarrhoeal organisms or detection of enteropathogenic toxin.