

ANNEXE 1 – Pneumonia classification

PN: Pneumonia (following the Swiss Prevalence Study)

Radiograph or CT scan of the thorax; showing suspicions of active pneumonia in a patient **AND** at least one of the following criteria satisfied (for patients without a heart condition or pulmonary disease, one radiograph or scan is sufficient):

- Fever > 38°C with no other causes ;
- Leucopenia (<4000 WBC / mm³) or leucocytosis (12000 WBC / mm³) ;

AND at least one of the following criteria satisfied (at least two if the pneumonia is clinical only – PN 4 & PN 5):

- Recent episode of a suppurating expectoration or aspect change of the expectoration (colour, odour, quantity, consistency) ;
- Cough, dyspnoea, or tachypnoea ;
- Auscultation indicating pneumonia (crackling or bronchial wheeze), whistling breathing ;
- Worsening of gas exchanges (e.g., desaturation, increase of oxygen supply, increase of ventilation parameters) ;

AND following the diagnostic method:

a) Bacterial tests :

- Quantitative culture of a low-infected sample of the inferior respiratory system (**PN 1**) :
 - i. Broncho alveolar lavage (BAL) with > 10⁴ UFC² / ml OR ≥ 5% of the BAL cells containing intracellular bacteria with a direct examination ;
 - ii. Protected bronchial brushing with a > 10³ UFC / ml threshold ;
 - iii. Protected distal suction with a > 10³ UFC / ml threshold ;
- Quantitative culture of a possibly infected sample of the inferior respiratory system (**PN 2**) :
 - i. Quantitative culture of a sample of the inferior respiratory system (e.g. endotracheal suction) with ≥ 10⁶ UFC / ml ;

b) Alternative microbiological methods (**PN 3**) :

- Positive blood culture with no links to other infections ;
- Positive pleural inflammation culture for micro-organisms ;
- Positive pulmonary cyst or empyema culture through needle suction ;
- Evidence of pneumonia in a histological examination ;
- Detection of pneumonia caused by a virus or specific germs (*Legionella*, *Aspergillus*, mycobacteria, mycoplasma, *Pneumocystis carinii*) :
 - i. Positive detection of antigens or viral antibodies by respiratory secretions (e.g. EIA, FAMA, shell vial assay, PCR) ;
 - ii. Positive results from direct examination or in a culture of bronchial secretion or tissue ;
 - iii. Seroconversion (e.g. Influenza, *Legionella*, *Chlamydia*);
 - iv. Detection of antigens in urine (e.g. *Legionella*);

c) Others :

- Positive expectoration cultures or non-quantitative positive cultures of a sample of the inferior respiratory system (**PN 4**) ;
- Without microbiology or without positive test (**PN 5**)

Notes:

PN 1 & PN 2 criteria were validated without antimicrobial treatment. However, it does not exclude PN1 & PN 2 in case an antimicrobial treatment is or was in place at the time of infection.

The division in five categories enables the comparison of similar pneumonial incidents in different hospitals. It is essential that all participating centres communicate the PN 4 & PN 5 cases (clinical pneumonia) in order to obtain the best possible comparisons, even if a microbiological examination turned out negative. It is equally advised to return PN1-3 codes if microbiological results are available, especially in intensive care.