

## Multimedia Appendix 1: Description of the sepsis label in P19

Here, we provide a description of the sepsis label as defined by the organizers of the Physionet 2019 challenge ([29] in the main manuscript).

A binary sepsis label ( $S$ ) was defined by first identifying the time of sepsis onset. This was denoted by  $t_{\text{sepsis}}$ .

To define  $t_{\text{sepsis}}$  the authors of [29] define two additional supporting time points:  $t_{\text{suspicion}}$  and  $t_{\text{SOFA}}$ .

### $t_{\text{suspicion}}$

$t_{\text{suspicion}} = \min(t_{\text{IV}}, t_{\text{BC}})$  iff condition 3 and one of conditions 1 and 2 are satisfied;

- |                |  |                                   |
|----------------|--|-----------------------------------|
| <b>Cond. 1</b> | $t_{\text{IV}} \leq t_{\text{BC}} \leq t_{\text{IV}} + 24$ hours | <i>~ If IV administered first</i> |
| <b>Cond. 2</b> | $t_{\text{BC}} \leq t_{\text{IV}} \leq t_{\text{BC}} + 72$ hours | <i>~ If BC obtained first</i>     |
| <b>Cond. 3</b> | IV administration for 72 consecutive hours                       |                                   |

Where;

$t_{\text{IV}}$  is the time of administration of intravenous antibiotics and,  
 $t_{\text{BC}}$  is the time of acquirement of blood cultures.

### $t_{\text{SOFA}}$

$t_{\text{SOFA}}$  is the time of occurrence of organ failure as defined by a 2-point rise in SOFA score within a 24-hour time period.

### $t_{\text{sepsis}}$

Finally, from the above two definitions,

$t_{\text{sepsis}} = \min(t_{\text{suspicion}}, t_{\text{SOFA}})$  if the following condition is satisfied;

**Cond.**  $t_{\text{suspicion}} - 24$  hours  $\leq t_{\text{SOFA}} \leq t_{\text{suspicion}} + 12$  hours

## Sepsis Label ( $S$ )

Finally, the sepsis label was shifted by 6 hours.

**S = 1** if  $t \geq t_{\text{sepsis}} - 6$  hours and

**S = 0** if  $t < t_{\text{sepsis}} - 6$  hours