Introduction:
Easily measurable biomarkers to indicate the state of immune activation in sepsis remain an unmet need. HBP is secreted from neutrophils and it is increased in sepsis. However, its association with the innate immune function is poorly understood.

Methods:
Plasma was isolated on three consecutive days from 30 patients with ventilator-associated pneumonia meeting the Sepsis-3 definitions. Monocytes were also isolated on day 1 and stimulated with lipopolysaccharide (LPS) for the production of tumour necrosis factor-alpha (TNFalpha). HBP, ferritin and TNFalpha were measured by an enzyme immunoassay. Over-time changes of HBP were associated with final outcome.

Results:
A positive association was found between ferritin concentrations and circulating HBP on day 1 (rs: +0.371, p: 0.0002). The median value of HP on day 1 was 177 ng/ml. The stimulated production of TNFalpha in relation to the median HBP level is shown in Figure 1. Among 20 survivors, mean change of HBP from the baseline was -12.2% +/- 20.2%; this was +146.8% +/- 89.4% among 10 non-survivors (p: 0.028). After ROC curve analysis it was found that more than 18% increase of HBP after 48 hours was associated with 81% specificity for 28-day mortality (odds ratio for unfavorable outcome 8.50; p: 0.017).

Conclusion:
HBP seems to indicate patients who rely at the pro-inflammatory arm of sepsis since it correlates positively with ferritin and with the increased stimulated production of TNFα from circulating monocytes. Increases the first 48 hours by more than 18% indicate progression towards unfavorable outcome.