Introduction:
Procalcitonin (PCT) is used in the ICU as an inflammatory marker to monitor bacterial infections and guide antibiotic therapy. Whether PCT can predict bacteremia and therefore could prevent expenses attached to bloodcultures is unknown. We investigated whether PCT can predict the outcome of blood cultures in the ICU and reduce expences.

Methods:
A single centre observational cohort study was performed in a Dutch community teaching hospital. Adult patients who were staying in the ICU and were suspected of bacteremia were included. Simultaneously with drawing of blood cultures, samples for PCT measurement were obtained. Expences for PCT measurement and bloodcultures were calculated.

Results:
In the study period of one year, a total of 120 patients were included. Three patients were excluded because of incomplete data. Out of the 117 included patients, ten patients had positive blood cultures. There was a significant difference in PCT levels between patients who had positive bloodcultures versus patients with negative bloodcultures (8.01 ng/ml vs 0.71ng/ml). The negative predictive value for negative blood cultures is 97% when PCT is below 2ng/ml. There was no difference in CRP levels between the two groups (148mg/l vs 179mg/l, p= 0.83).A set of negative blood cultures in our centre costs 35 euros. Positive blood cultures however costs significantly more depending on the micro-organisms found. PCT only costs 8.50 euros per measurement. So when blood cultures are omitted when the PCT level is below 2ng/ml, a cost reduction of 38% can be achieved.

Conclusion:
A PCT value below 2ng/ml is a good predictor of a negative blood cultures in ICU patients suspected of bacteremia. PCT guided bloodculture management in these patients could lead to a significant cost reduction.