Introduction:
Serum procalcitonin (PCT) is a promising biomarker for differentiating bacterial infections from other inflammatory states. Moreover, including serial PCT measurements in the management of acute respiratory infection reduces the duration of antibiotic therapy without increasing the mortality. However, limited real-world information is available regarding the use of PCT in intensive care units (ICUs).

Methods:
We extracted and analysed data from January 1 to December 31, 2018 from all the orders and results of PCT measurements in the ICU (26 beds) at Hiroshima University Hospital.

Results:
A total of 1,252 PCT measurements from 409 ICU patients were included. In 170 patients, PCT was tested ≥3 times during a single ICU stay. Serial PCT measurements showed a fade-out pattern (76 [45%] patients), a second day-peaked decrease pattern (35 [21%] patients), and a series of negative patterns (30 [18%] patients). Compared to patients who demonstrated the fade-out pattern, those who demonstrated the second day-peaked decrease pattern had higher mortality rates (3% vs. 20%, p < 0.01).

Conclusion:
Approximately one-third patients in the ICU who had decreasing serial PCT values demonstrated the second day-peaked decrease pattern. Since this group of patients had poorer survival, further studies are needed to clarify the association between a late rise in PCT levels and delayed therapeutic intervention.