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Point-of-care Procalcitonin Guidance to Reduce Antibiotic Use in Critically Ill Patients: A Randomized Controlled Trial.

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Introduction: Antibiotic therapy is of great importance in sepsis but prolonged duration can add to the emergence of antibiotic resistance. We aimed to examine whether point-of-care (POC) procalcitonin (PCT) guidance can safely reduce the duration of antibiotic use in infected critically ill patients. **Materials and Methods:** Eighty adult patients admitted to or acquired sepsis in the intensive care unit (ICU) were enrolled in this randomized controlled trial. Patients were allocated to either POC PCT-guided intervention arm (n=40) or the control arm, in which antibiotic therapy followed local guidelines (n=40). In the PCT-guided arm, antibiotic treatment was discontinued if clinical signs of infection improved and the PCT concentration decreased by >80% of its peak value, or when it reaches a value of <0·5 g/L. **Results:** The mean duration of antibiotic use for PCT arm was 6.4 (SD 2.3) days compared to 9 (SD 4.3) days in the control arm (p=0.004). In the first 30 days after being assigned to a group, the proportion of patients who received a repeated course of systemic antibiotics was 33% in the PCT arm vs 38.1% in the control arm (p=0.757). Mean length of stay in the ICU was 8.4 (SD 5.3) days in the PCT arm vs 10.4 (SD 12.3) days in the control arm (p=0.404). Mortality at 30 days was 22.5% in the PCT-arm vs 25% in the control arm (p<0.0001). **Conclusion:** POC PCT guidance stimulates reduction of duration of antibiotic use in ICU, accompanied by a significant decrease in mortality.