ICU
MANAGEMENT & PRACTICE

RECUVAP: Consensual Definition of VAP Recurrences and Various Types

Ventilator-associated pneumonia (VAP) is a common healthcare-associated infection in ICUs, linked to increased mortality, longer mechanical ventilation, and extended ICU stays. Diagnostic criteria for the first episode of VAP include clinical suspicion, chest x-ray infiltrates, and positive microbiological cultures from lower respiratory tract specimens. However, there are no validated criteria for VAP recurrences, and various terms and definitions are used depending on the interval between episodes and the pathogen responsible. These inconsistencies complicate comparisons across studies on drug efficacy, interventions, and treatment durations.

A recent study aimed to establish a consensus definition of VAP recurrences, based on timing and pathogen, to standardise clinical practices and study outcomes in future trials.

A multidisciplinary group of 36 European experts, including physicians from critical care, infectious diseases, and microbiology, with a special interest in VAP management, were surveyed using the Delphi methodology.

After four iterations of the Delphi method, 94% of experts agreed that the diagnostic criteria for a first VAP episode could also apply to recurrences, except for the radiological criterion, which was not deemed mandatory by all. Consensus was reached on defining four distinct entities: relapse, persistent VAP, superinfection, and new-pathogen VAP.

The study established that a relapse of VAP is defined as a new episode caused by the same pathogen as the previous one, with 86% expert agreement. For a relapse to be suspected, 94% of experts agreed that there must be partial or complete resolution of initial clinical signs during adequate antibiotic therapy. Additionally, a relapse should not be diagnosed until 2–3 days after completing an effective antibiotic regimen for the previous VAP episode (92% agreement).

Persistent VAP was defined as a VAP episode with no clinical improvement despite adequate antibiotic treatment. Experts agreed that it involves a lack of clinical improvement throughout the full course of appropriate antibiotics, including cases with only transient improvement (81% consensus), regardless of radiological changes. A minimum of five days of properly administered antibiotic therapy is required before diagnosing persistent VAP (72% consensus). Additional diagnostic indicators include a lack of decrease in procalcitonin levels (72% agreement), while changes in leukocyte or C-reactive protein levels were not considered useful. An unchanged or increased bacterial load was deemed relevant but not sufficient for diagnosis, and no consensus was reached on the significance of a bacterial load decrease that remained above diagnostic thresholds.

Superinfection was defined as a VAP episode caused by a different pathogen from the previous episode and occurring during treatment for the initial VAP, with 86% expert agreement. While there was no consensus on whether clinical deterioration is required for suspicion of superinfection, experts agreed (78%) that it can occur between day 5 of adequate antibiotic treatment and up to 2–3 days after the end of treatment for the initial VAP.

Experts reached a consensus (72%) to define new-pathogen VAP as a VAP episode caused by a different pathogen occurring 2–3 days after the end of adequate antibiotic treatment for the previous VAP, replacing the broader use of the term superinfection, which 58% of experts found inappropriate in this context. They also agreed on three timeframes for recurrence classification: (1) no recurrence should be considered before 5 days of antibiotic therapy; (2) between day 5 of treatment and 48–72 hours post-treatment, superinfection or persistent VAP may occur; (3) beyond 48–72 hours post-treatment, relapse or new-pathogen VAP may be diagnosed.

For relapse and persistent VAP, bacteriological findings were the same across episodes, whereas they differed for superinfection and new-

pathogen VAP. The distinction between relapse and persistent VAP, and between superinfection and new-pathogen VAP, was based on the timing of antibiotic treatment and clinical course. Microbiological criteria were proposed to aid in diagnosing persistent VAP.

This study developed the first consensus on the definitions and clinical criteria for four types of VAP recurrences, based on the timing and pathogen involved in the second episode. The study clarified distinctions between persistent VAP and relapse, as well as superinfection and new-pathogen VAP, allowing clinicians to better identify these entities. While radiological criteria were not deemed mandatory for diagnosing recurrences, microbiological findings played a crucial role, especially for persistent VAP. The study also explored the role of antibiotic resistance and bacterial load changes, though these aspects remain areas of ongoing research.

The study offers a significant step toward standardising definitions and diagnostic criteria for VAP recurrences, improving patient management and research consistency.

Source: Intensive Care Medicine

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