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## Does VAE Surveillance Miss VAP Cases?



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A systematic review and meta-analysis of studies reporting consistency between ventilator-associated events and ventilator-associated pneumonia found that VAE surveillance was not accurate at detecting cases of traditional VAP in ICUs. The study is published in *Critical Care*.

The U.S. Centers for Disease Control and Prevention National Healthcare Safety Network replaced ventilator-associated pneumonia (VAP) surveillance with [VAE surveillance](#), a hierarchy of surveillance targets, in 2013.

See Also: [VAP, VAC, IVAC and Ventilator-Associated Events: The Need for Objectivity for Surveillance](#)

In this study, Yunzhou Fan, Department of Nosocomial Infection Management, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, and colleagues analysed 18 studies that included 61,489 patients receiving mechanical ventilation at ICUs in eight countries.

### Results

#### Pooled prevalence rates

- Ventilator-associated conditions (VAC): 13.8%
- Infection-related VAC (IVAC): 6.4%
- Possible VAP: 1.1%
- Probable VAP: 0.9%
- Traditional VAP: 11.9%

Pooled sensitivity and PPV of each VAE type for VAP detection did not exceed 50 %, while pooled specificity and NPV exceeded 80 %. Compared with VAP, pooled ORs of in-hospital death were 1.49 for VAC and 1.76 for IVAC; pooled WMDs of hospital length of stay were -4.27 days for VAC and -5.86 days for IVAC; and pooled WMDs of ventilation duration were -2.79 days for VAC and -2.89 days for IVAC.

See Also: [Controversies in Ventilator-Associated Pneumonia Diagnosis](#)

The authors note that in theory, by excluding non-infectious complications among VAE, IVAC should be more representative of VAP and its prevalence closer to but still higher than VAP. However, the pooled prevalence of IVAC was lower than that of VAP in the meta-analysis, and even in the sensitivity analysis, both VAC and IVAC were lower than VAP after limiting the evaluation to studies that used stricter diagnostic criteria. Only 41.8 % of cases of VAP could be identified by using the VAC criteria.

The study limitations are noted as including variable diagnostic criteria and insufficient sub-group data on type of ICU.

The authors conclude that the population characteristics identified by the two surveillance paradigms differed and that VAE surveillance missed many cases of VAP. VAE surveillance does not accurately detect cases of traditional VAP in ICUs. They recommend that traditional VAP surveillance is not replaced entirely by VAE surveillance, but that both VAE and VAP surveillance are performed according to the specific conditions of each hospital and ICU.

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