

EFFECT OF STANDARDIZED SURVEILLANCE OF INTENSIVE CARE UNIT-ACQUIRED INFECTIONS ON VENTILATOR-ASSOCIATED PNEUMONIA INCIDENCET. BÉnet¹, R. Ecochard², N. Voirin¹, A. Machut³, A. Lepape⁴, A. Savey³, P. Vanhems¹¹Edouard Herriot Hospital, Infection Control and Epidemiology Unit, Lyon, France ; ²Hospices Civils de Lyon, Department of Biostatistics, Lyon, France ;³C.Clin Sud-Est, Centre de Coordination de la Lutte contre les Infections Nosocomiales Sud-Est, Saint-Genis Laval, France ; ⁴Lyon-Sud Hospital, Intensive Care Unit, Pierre-Bénite, France

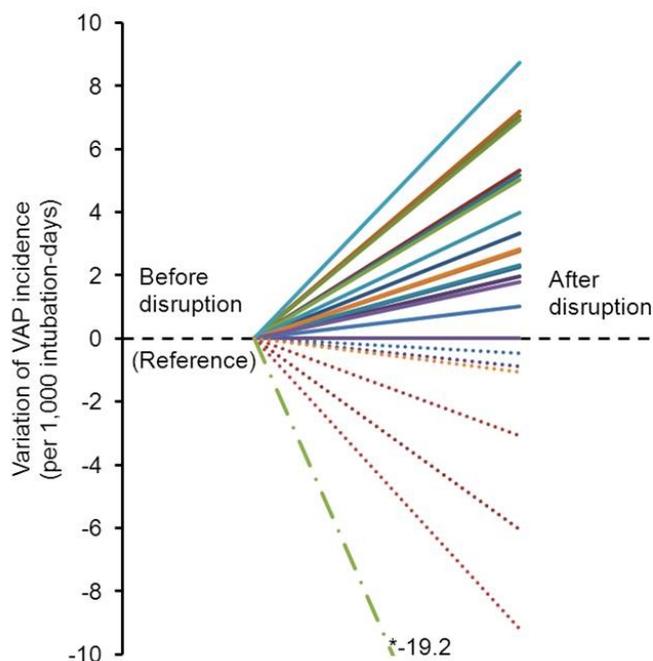
Objectives: The relationship between intensive care unit (ICU)-acquired infection surveillance and ventilator-associated pneumonia (VAP) incidence reduction is unclear. The objective was to assess the effect of standardized continuous and interrupted surveillance of ICU-acquired infections on VAP incidence.

Methods: A multicentre, quasi-experimental study included 46 adult ICUs participating in the national surveillance network of ICU-acquired infections in south-east France between 2001 and 2011. A total of 43,351 patients from 22 ICUs with continuous surveillance and 6,701 patients from 24 ICUs (year before and year after disruption) with 1-year interrupted surveillance were analyzed by multivariate mixed effect Poisson regression, adjusted for gender, patient age, SAPSII, patient origin, diagnosis category, trauma, immunodepression, and antibiotics at admission. The main outcome was VAP occurrence, validated by infection control practitioners and intensivists according to standardized criteria. The incidence was the number of VAPs per 1,000 intubation-days.

Results: Overall, 6,089 patients had VAP. In ICUs with continuous surveillance, VAP incidence was 14.7‰ (95% CI 13.5-16.0) in 2001, and 12.6‰ (95% CI 11.5-13.8) in 2011. Crude VAP incidence decreased by -1.7% per year (95% CI -2.4% to -0.9%; $P < 0.001$), adjusted VAP incidence decreased by -1.0% per year (95% CI -1.8% to -0.2%; $P = 0.02$) over the study period. In ICUs with interrupted surveillance, VAP incidence before disruption was 12.2‰ (95% CI 11.0-13.5), and 14.0‰ (95% CI 12.7-15.4) after disruption. Crude VAP incidence increased by +15.6% (95% CI +0.3% to +33.3%; $P = 0.04$) after compared to before surveillance disruption, adjusted VAP incidence rose by +16.1% per year (95% CI +0.5% to +34.1%; $P = 0.04$) after compared to before surveillance disruption. Similar trends were found for VAP caused by *S. aureus*.

Conclusion: VAP incidence was decreased in ICUs with continuous surveillance, but increased after ICU-infection surveillance disruption. This finding suggests a preventive effect of HAI surveillance on VAP and reinforces the utility of surveillance systems completed by other preventive measures, such as training or audits. Continuous HAI surveillance should be considered as a mechanism facilitating infection control and as a standard of care in HAI prevention in ICUs.

Figure. Variations of VAP incidence in 24 ICUs with 1-year surveillance disruption, REA Sud-Est surveillance network, 2001-2011 (n=6,701)



Definition of abbreviation: VAP = ventilator-associated pneumonia.
NOTE : Each colored line represents variation of VAP incidence the year after surveillance disruption compared to the year before disruption (Reference) in 1 ICU. Continuous lines represent ICUs with increased incidence (n=17; 71%), dashed lines represent ICUs with decreased incidence (n=7; 29%). The asterisk indicates the outlier.