



FOR RELEASE

Embargoed until May 16, 2016, 11:15 a.m. PDT

FOR MORE INFORMATION, CONTACT:

Dacia Morris

dmorris@thoracic.org

ATS Office: 212-315-8620 (until May 11)

Cell Phone: 917-561-6545

PRESS CONFERENCE: May 16, 2016, 11:15 a.m., Alcove E, Level 3, West Bldg., MOSCONE CENTER

Session C24: Critical Care: Can ICU Design Improve ICU Care?

Tuesday, May 17, 2016, 9 a.m.

Location: Room 3001 (West Building, Level 3), MOSCONE CENTER

**Greater Collaboration Between ICU Nurses and ICU Physicians
May Minimize VAP Risk**

ATS 2016, SAN FRANCISCO — Greater collaboration between ICU nursing and medicine could help to minimize ventilator-associated pneumonia (VAP), according to a study presented at the ATS 2016 International Conference.

“Our results suggest that the nurse work environment is a significant predictor of VAP while controlling for ICU physician staffing,” said lead study author Deena Kelly Costa, PhD, RN, from the University of Michigan School of Nursing and the Institute for Healthcare Policy and Innovation at the University of Michigan in Ann Arbor, Michigan.

Two ICU characteristics—a better nurse work environment and a closed ICU physician staffing model (where an intensivist leads and manages care of all patients)—have been independently associated with lower mortality, the study authors wrote. However, it has not always been clear how these factors together may influence VAP.

Investigators conducted a secondary unit-level analysis of critical care nurse survey data from 25 ICUs collected in 2005 and 2006. Investigators modeled independent and joint effects of the nurse work environment and ICU physician staffing on VAP using a Poisson multivariable regression model. Investigators also tested an interaction between the nurse work environment and ICU physician staffing on VAP.

From the 25 ICUs, 462 of 866 nurses (53.5%) participated in the study. Twenty-one ICUs (84%) were classified as closed ICUs, the authors wrote. “Surprisingly, in our multivariable analyses, a better nurse work environment was significantly associated with a nearly six-fold increase in VAP

risk,” the authors wrote. Dr. Costa explained that this finding may be due to differences in the roles of the ICU team members.

“Nurses provide preventive VAP care once a patient is intubated, but patients are intubated by physicians. Without taking into consideration the physician staffing model, we are misattributing greater risk to nurses alone when in clinical practice, and as our results suggest, both nursing and medicine have the potential to influence VAP risk. “

Although a closed ICU physician staffing model was not significantly associated with VAP risk in the independent analysis, there was a significant interaction effect between the nurse work environment and ICU physician staffing on VAP.

The significant interaction suggests that better work environments for nurses may minimize VAP risk in open ICUs but actually increase VAP risk in closed ICUs. In the open ICU model, several doctors manage patient care. The number and variety of physicians in open ICUs, in addition to better work environments, may encourage nurses to standardize VAP preventive care to minimize VAP risk. But in closed ICUs with a better work environment, nurses may play a less central role in VAP preventive care since there is more focused management from the ICU physicians.

“These findings highlight a novel view that minimizing VAP depends on cultivating organizational collaboration between ICU nursing and medicine,” the authors concluded.

Contact for study: D.K. Costa, dkcosta@umich.edu

###

Abstract 4665

How the Nurse Work Environment and ICU Physician Staffing Influence Risk of Ventilator-Associated Pneumonia

Type: Scientific Abstract

Category: 15. ICU Management and Administration / Adult / Behavioral/Epidemiology/Health Services / Nursing (NUR)

Authors: D.K. Costa, J. Yang, M. Manojlovich; University of Michigan - Ann Arbor, MI/US

Abstract Body

Rationale: Two characteristics of the intensive care unit (ICU)— a better nurse work environment and a closed ICU physician staffing model – have been independently associated with improved outcomes but we know little about how these factors together may influence ventilator-associated pneumonia (VAP). VAP prevention interventions are delivered by ICU nurses and often require physician involvement and thus understanding how characteristics of nursing and medicine may influence VAP risk could identify potential ways to further minimize VAP. Thus, we sought to examine how the nurse work environment and ICU physician staffing influence VAP.

Methods: We conducted a secondary unit-level analysis of nurse survey data from 25 ICUs in 2005-2006. We modeled the independent and joint effects of the nurse work environment

(Practice Environment Scale-Nurse Work Index) and ICU physician staffing (closed vs. open) on VAP using a Poisson multivariable regression model. We also tested an interaction between the nurse work environment and ICU physician staffing on VAP.

Results: Overall, 462 of 866 nurses (53.3%) nested in 25 ICUs participated in the parent study. Twenty-one ICUs (84%) were classified as closed ICUs. Surprisingly, in our multivariable analyses, a one-unit increase in the nurse work environment was significantly associated with a nearly six-fold increase in VAP risk [adjusted incident rate ratio (aIRR)=5.79 (1.33, 25.17), $p=0.02$]. A closed ICU physician staffing model was not significantly associated with VAP risk [aIRR=0.59 (0.25, 1.38), $p=0.2$]. We did find a significant interaction ($p<0.001$) between the nurse work environment and ICU physician staffing on VAP, such that in closed ICUs, a one-unit increase in the nurse work environment was associated with significantly higher risk of VAP but in open ICUs, a one-unit increase in the nurse work environment was associated with significantly lower risk of VAP.

Conclusions: Our results suggest that the nurse work environment is a significant predictor of VAP while controlling for ICU physician staffing. Moreover, the effect of the nurse work environment on VAP may depend on ICU physician staffing. These findings highlight a novel view that minimizing VAP may depend on fostering organizational collaboration between ICU nursing and medicine. Our data suggest that future work should examine in more detail various aspects of the nurse work environment and ICU physician staffing together, to better understand how the organization of nursing and medicine collectively can minimize risk for VAP.