region designed a randomized trial to compare the safety of interhospital transport of critically ill patients who were escorted by critical care nurses versus physicians. The trial tested the hypothesis that ground transport of selected patients who are escorted by critical care nurses is not inferior to physician-based ground transport.

The trial design excluded patients with a low oxygenation index (P/F ratio <100 mm Hg) that was associated with a positive expiratory pressure >15 cm H_2O; mean arterial pressure <60 mm Hg despite adequate fluid therapy; increased inotrope requirements (noradrenaline >0.35 µg/kg/min or dopamine >15 µg/kg/min); or the need for cardiac resuscitation or defibrillation within the previous 24 hours.

The primary outcome was the number of critical events, comprising:

- Technical events (loss of battery power, device malfunction)
- Increase or decrease in arterial pressure >20 mm Hg for more than 10 minutes
- Decline in O_2 saturation >10% for more than 10 minutes
- Temperature <36°C (96.8° F)

Monitoring equipment was linked to an electronic medical record system to ensure that every critical event was documented automatically.

Investigators randomized 307 patients to nurse or physician escort during interhospital ground transport. The patients were 60 to 65 years of age, women accounted for about 40% of the study population, APACHE II scores were 18 to 19, and the length of intensive care unit (ICU) stay before transport averaged 3 days. Transport distance averaged 17 miles, and transport time averaged 65 minutes.

Overall, 51 critical events occurred during the study—28 in the physician group and 23 in the nurse group. There were no significant differences in the percentages of technical or critical events between the two groups.

Analysis of secondary outcomes showed no significant differences in the average number of events by transport time, adjustments to ventilator settings, or adjustments in inotropic/vasoactive medications. Physicians were more likely to make adjustments to O_2 settings (16% of patients vs 12%; p=0.03) and to administer >1000 ml of fluid (11% vs 5%; p=0.002).

"Ground critical care transport by nurses seems safe," said Prof. van Lieshout. "The level of vasopressor, inotropic, and ventilator support could be tailored to the staffing of transport."

Prof. van Lieshout acknowledged several limitations of the study, including the lack of evaluation of air transport, enrollment of a selected patient population, and no standardization of ICU stabilization. He suggested that future studies should compare physician and nurse performance in the transport of sicker patients and should examine the potential role that telemedicine might play in the transport of critically ill patients.

Chronic Azithromycin Decreases the Frequency of COPD Exacerbations

One year of treatment with azithromycin significantly educed the rate of acute exacerbations of chronic obstructive pulmonary disease (COPD) and improved quality of life (QoL), according to results of a large randomized clinical trial, presented by Richard K. Albert, MD, Denver Health, University of Colorado, Denver, Colorado, USA.

Both the time to first acute exacerbation and the annualized rate of acute exacerbations were significantly lower in the azithromycin group (p<0.0001 and p=0.004, respectively). Scores on a QoL questionnaire that was specific for pulmonary disease showed significant improvement with azithromycin compared with placebo (p<0.006). The incidence of hearing decrement was increased by about 25% with active therapy versus placebo (p=0.002). The findings might help bring some clarity to the role of macrolide antibiotics in the management of COPD.

Although the trial addressed many of the shortcomings of previous studies [Banerjee D et al. *Respir Med* 2005; Suzuki T et al. *Chest* 2001; Seemungal TAR et al. *Am J Respir Crit Care Med* 2008; Yamaya M et al. *J Am Geriatr* Soc 2008; He Z et al. *Respiration* 2010], the impact of azithromycin on macrolide resistance in community bacterial flora remains unknown. Macrolide antibiotics have anti-inflammatory and immunomodulatory effects, in addition to antimicrobial properties. Chronic macrolide use has been shown to reduce the rate of exacerbations of cystic fibrosis and improve the status of patients with other types of airway disease, said Dr. Albert.

To examine the role of macrolides in COPD, investigators designed a randomized, placebo-controlled trial to evaluate azithromycin 250 mg/day, added to patients' existing COPD medications. Treatment and follow-up in the azithromycin and placebo groups continued for 1 year after randomization.

Eligible patients were aged >40 years, had moderate to severe COPD, and at least a 10 pack-year history of

smoking. Current smokers were able participate in the study. Investigators randomized 1142 patients, and the final analysis included 1117 patients, 996 of whom completed the study. Patients also had an increased risk for acute exacerbations of COPD, defined by current need for O_2, receipt of systemic steroids, hospitalization, or a COPD-related emergency department visit [Niewoehner et al. *Ann Intern Med* 2005].

The study's primary endpoint was the time to first acute exacerbation of COPD. An acute exacerbation was defined as an acute increase or new onset of cough, sputum, wheezing, dyspnea, or chest tightness that lasted at least 3 days, requiring systemic steroids and/or antibiotics.

Dr. Albert reported that the median time to a first exacerbation was 266 days in the azithromycin group and 174 days in the placebo group, a difference that translated into a hazard ratio of 0.73 (p<0.0001). The azithromycin group had an acute exacerbation rate of 1.48 per year versus 1.83 for the placebo group (p=0.008).

Azithromycin was associated with a significantly greater decrease in total score on the respiratory questionnaire (-2.8 vs -0.6; p<0.006). Additionally, 42.6% of the azithromycin group had at least a 4-point improvement in the questionnaire, compared with 35.8% of the placebo group (p=0.034).

Adverse events and serious adverse events occurred in a similar proportion of patients in the two groups. Significantly more patients in the azithromycin arm discontinued treatment because of hearing decrements (25% vs 20%; p=0.04).

At enrollment, a similar proportion of patients in the two groups were colonized with selected respiratory pathogens. During the study, 12% of azithromycin patients and 28% of the placebo group who were not colonized with selected respiratory pathogens on enrollment became colonized (p<0.001), but more patients who were treated with azithromycin became colonized with resistant pathogens (81% vs 41%; p<0.0001), but Dr. Albert noted that culture results were available for only 55% to 60% of patients with pathogens.

"The rate of acute exacerbations of COPD was higher in this study than in other recent trials," said Dr. Albert. "That was by intent, however, as we selected patients who were more likely to have acute exacerbations. Of seven previous studies of macrolides in COPD, two showed no benefit and five showed a decrease in acute exacerbations. All of the studies had design concerns, including retrospective and unblinded designs, no concurrent control groups, and small numbers of patients."