European Society of Intensive Care Medicine – Press Release
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Over 10 percent of ICU patients suffer from often-fatal Acute Respiratory Distress Syndrome, reports new global study

Acute Respiratory Distress Syndrome, a condition that continues to have a high mortality rate despite advances in care, affects just over 10 per cent of patients in intensive care units around the world, according to one of the biggest studies ever conducted in critical care.

The LUNG-SAFE (Large observational study to UNderstand the Global impact of Severe Acute respiratory FailurE) study, carried out and funded by the Trials Group of the European Society of Intensive Care Medicine (ESICM), enrolled 29,144 patients admitted to 459 ICUs in 50 countries on five continents in 2014.

This study, published online on 22 February in JAMA, also found that ARDS is under-recognised and under-treated, said Dr. John Laffey, the lead author and chief anesthesiologist at St. Michael's Hospital in Toronto. Results revealed that while 10.4 per cent of those patients developed ARDS – about six patients per ICU bed per year - 40 per cent of all cases were not diagnosed. The number of patients who died in hospital was 34 per cent, 40.3 per cent and 46.1 per cent for mild, moderate and severe ARDS respectively.

Dr Giacomo Bellani, the first author, Chair of ESICM's Acute Respiratory Failure (ARF) Section and an intensivist at the University of Milan-Bicocca, San Gerardo Hospital, Monza, Italy, stated that “We know that 40 per cent of patients with ARDS die, either of this syndrome or their primary illness or injury, so this new, global understanding of this important public health issue and how we are treating it is enormously important for patients and clinicians”.

ARDS occurs in patients with critical illnesses such as severe infections or following severe injuries. An uncontrolled inflammatory response damages the lining of the lungs causing fluid to build up in the tiny, elastic air sacs in the lungs known as alveoli, reducing the amount of oxygen that reaches the bloodstream. Patients with ARDS are unable to breathe on their own and require artificial ventilation.

Dr. Laffey said the reasons for failing to recognise ARDS are likely complex, and include the fact there is no single test for diagnosing a syndrome made up of many symptoms. But making the diagnosis is important because it influences the care delivered. Another finding of the study was that approaches to managing patients with ARDS are inconsistent, indicating perhaps that more research is needed to provide evidence that certain treatments are effective.

For example, less than two-thirds of ARDS patients received “protective” forms of mechanical ventilation known to cause less damage to the lungs. Tidal volumes – the volume of air inhaled or
exhaled at a time – are defined “protective” as being based on a person’s ideal weight rather than his or her actual weight. Lung size is related to ideal weight, which is derived from height, not actual body weight.

The study also found that clinicians used lower-than-expected levels of PEEP, or positive-end expiratory pressure, the amount of pressure applied by the ventilator at the end of an exhalation. This was somewhat surprising, especially for patients with more severe ARDS, Dr. Bellani said, raising concerns that these patients may not have had enough PEEP to prevent parts of their lungs from collapsing.

The study also found geographic differences in the recognition and treatment of ARDS, although not as large as they expected. The highest incidence of ARDS was in Australia and New Zealand, followed by Europe and North America.

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Notes to Editors:

The paper will be published in JAMA on February 22, 2016 (embargoed until 3:15pm EST, Monday 22 February):


Learn more about the results in our icTV interview with the authors here and read an online review of the article.

Additionally, an interactive webinar RECOGNITION AND TREATMENT OF ARDS: THE LUNG-SAFE STUDY hosted by the lead and first authors of the study, Drs. John Laffey and Giacomo Bellani will be held on Friday 11 March from 16:00 - 17:00 CET. For more details, and to register for this session, click here.

The European Society of Intensive Care Medicine (ESICM) supports and promotes the advancement of knowledge in intensive care medicine, in particular the promotion of the highest standards of multidisciplinary care of critically ill patients and their families through education, research and professional development. http://www.esicm.org

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