Major JAMA study examines cystic fibrosis survival rates and MRSA infections

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A team of researchers led by Elliott Dasenbrook, MD, MHS, Assistant Professor of Medicine and Pediatrics at Case Western Reserve University School of Medicine and Associate Director of the Adult Cystic Fibrosis Program at University Hospitals Case Medical Center's Rainbow Babies & Children's Hospital today published the findings from a major study about cystic fibrosis (CF) survival rates in the June 16 issue of *JAMA*.

Specifically, the study observed patients with CF who had Methicillin-resistant Staphylococcus aureus (MRSA) detected in their respiratory tract. Results show these patients have worse survival, approximately 1.3 times greater risk of death, compared to CF patients without MRSA. Dr. Dasenbrook's team, including co-author Michael Konstan, MD, Chairman of the Department of Pediatrics at University Hospitals Case Medical Center's Rainbow Babies & Children's Hospital and Case Western Reserve University School of Medicine, studied more than 19,000 patients with CF to reach their conclusions.

The most common cause of death in CF is respiratory failure secondary to pulmonary infection. The prevalence of MRSA in the respiratory tract of individuals with CF has increased substantially in the past five years, and is now more than 20 percent (higher in urban areas) according to the article.

"Our study findings may prompt many doctors to reconsider how they care for CF patients," says Dr. Dasenbrook. He adds, "Until now, some

doctors weren't aggressively treating patients with MRSA. Doctors often viewed MRSA to not be as important as other respiratory-tract infections. With our study findings, treatment patterns may change as the risk of death is 1.3 times greater for CF patients with MRSA."

Dr. Konstan elaborates, "Identifying a specific risk factor like MRSA for shortened survival for a disease like CF provides a target for future research and clinical intervention."

The study included 19,833 CF patients (ages 6 to 45 years) who were tracked in the United States' Cystic Fibrosis Foundation Patient Registry between January 1996 and December 2006, with follow-up until December 2008. Various analytic models were used to compare survival between CF patients with and without respiratory tract MRSA.

During the study period, 2,537 patients died and 5,759 individuals had respiratory tract MRSA detected. The mortality rate was 18.3 deaths per 1,000 patient-years for patients without MRSA and 27.7 deaths per 1,000 patient-years for those with MRSA. After adjustment for various factors associated with severity of illness, the risk of death was approximately 1.3 times greater for CF patients when MRSA was detected compared with when MRSA was not detected.

The results of this study, in conjunction with previous data, further establish MRSA as a significant CF pathogen and provide impetus for more aggressive treatment of CF patients who are persistently MRSA positive. Ideally this treatment will be conducted in the context of clinical trials, because optimal therapeutic approaches for MRSA, both persistent and new, are not yet known.

"The findings from our study will drive how treatment of MRSA will be conducted in the future. Optimal approaches now are not yet known and we are currently designing a trial to eradicate MRSA from CF patients

with the ultimate goal of prolonging their life," Dr. Dasenbrook says.

The study results also reinforce the importance of following current CF infection control guidelines to minimize transmission of MRSA, particularly in outpatient clinics with high CF patient volume.

More information: JAMA. 2010;303[23]:2386-2392.

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