

## Mortality rates decrease, chronic disease rates increase among HIV+ ICU patients

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The expanded use of antiretrovirals, potent drugs used to treat retroviral infections such as human immunodeficiency virus (HIV), has been linked to significant decreases in hospital mortality rates among severely ill HIV-positive(HIV+) patients nationwide, primarily due to a decrease in opportunistic infections, according to a new study by researchers at Stanford University. Despite these encouraging data, the study also revealed that in this population, chronic diseases and bloodstream infections are on the rise.

The study results will be presented at the ATS 2012 International Conference in San Francisco.

"The national expansion of antiretroviral programs has appeared to yield benefits well beyond the outpatient setting," said study lead author Monica Bhargava, MD, MS, adjunct [clinical instructor](#) in Stanford University's Division of Pulmonary and [Critical Care Medicine](#). "In the 1980s, HIV+ [patients](#) were often declined ICU admission because their prognosis was deemed far too grave. Our work shows that this has changed substantially since the advent of the antiretroviral era. The broader use of such medications is having a wide-ranging impact."

Although previous studies have shown that the initiation in the mid-1990s of antiretroviral therapy (ART) for the treatment of HIV has led to sharp reductions in mortality across the United States, Dr. Bhargava said that until now, the effect on critically ill HIV+ patients had not been assessed with a nationally-representative sample.

"We wanted to examine the impact of the ART era on in-hospital mortality among critically ill HIV+ patients, particularly those requiring mechanical ventilation, using a nationwide sample," she said. "We also wanted to evaluate hospital length of stay (LOS), [hospital charges](#) and the prevalence of selected diseases among these patients."

For their study, the researchers used data spanning the 16-year period from 1993 to 2008, culled from the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), a database of hospital inpatient stays used by researchers and policymakers to identify, track and analyze national trends in health care. For each year, statistical analyses were performed to isolate the effect of HIV+ status on mortality, controlling for socioeconomic, demographic and hospital characteristics.

"We found that, although nationally, the number of HIV+ requiring mechanical ventilation rose from 7,632 in 1993 to 10,775 in 2008, mortality in that population declined from over 63 percent in 1993 to 41.4 percent in 2008, with the sharpest decline occurring in 1996-1997, the beginning of the ART era," Dr. Bhargava said.

This decrease is most likely due to the concomitant decline in the occurrence of opportunistic infections, which are less likely in those on antiretroviral drugs, Dr. Bhargava said. In this study, Dr. Bhargava looked at one such infection commonly associated with patients on mechanical ventilation, *Pneumocystis carinii* pneumonia (PCP), and found that among HIV+ patients who received [mechanical ventilation](#), the rates of PCP infection nearly halved, from 29.2 percent in 1993 to 15.2 percent in 2008.

"It appears that the wider use of antiretroviral therapy has both decreased the percentage of patients with PCP and reduced mortality in those patients who develop it," Dr. Bhargava said. "That is quite

encouraging."

The researchers also found that median length of hospital stay declined in the HIV+ population during the study period, and this population also experienced a slower rate of growth in hospital charges relative to the general population. Black race remained the strongest independent predictor of in-hospital death.

"Our study confirms that major gains in in-hospital survival have occurred among HIV+ patients with respiratory failure, though there is still much more progress that needs to be made," Dr. Bhargava said. "In addition, there has been a notable increase in the diagnoses of sepsis, chronic obstructive airway disease, liver disease and coronary artery disease.

"Our work shows that our national efforts should focus more on managing [chronic diseases](#) and sepsis in this population," she added. "Future studies should help clarify the reasons behind the surge in sepsis and why ICU survival remains poorer among HIV+ ethnic minorities."

**More information:** "HIV In The ICU: National Outcomes Of Patients In The ART Era" (Session D102, Wednesday, May 23, Room 131, Moscone Center; Abstract 31769)

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