

## Commentary

# Open the intensive care unit doors to HIV-infected patients with sepsis

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See related research by Mrus *et al.* in this issue [<http://ccforum.com/content/9/6/R623>]

## Abstract

Severe sepsis is more and more frequent, especially because of an increased rate of immunocompromised patients. Despite the improvement in the overall prognosis of HIV/AIDS patients and the improvement of global ICU care, the prognosis of HIV/AIDS patients hospitalized in ICU with severe sepsis remained poor. This situation is partly due to the increased proportion of HIV/AIDS patients with limited access to health care and to a reluctance of ICU physicians in admitting HIV infected patients. However, medical literature suggests that ICU prognosis of immunocompromised (especially cancer) patients should be largely improved by early ICU admission and by an early institution of supportive techniques. This strategy should be used in HIV/AIDS patients with severe sepsis.

In recent years, several papers have noted important modifications in the epidemiology of sepsis and septic shock [1,2]. In the USA, the annual incidence of sepsis increased 8.7% [2], with sepsis more frequent among non-white people and men. Possible reasons for the real increase in the incidence of sepsis include the increased number of immunocompromised patients; HIV infected patients represent more than 10% of patients hospitalized in teaching hospitals with severe sepsis and 6% of patients hospitalized with septic shock [1].

In industrialized countries, the introduction of highly active antiretroviral therapy (HAART) has significantly reduced the morbidity and mortality associated with HIV infection [3,4]. The combination of a stable rate of new HIV cases with the longer survival of HIV-infected patients has increased the prevalence of HIV/AIDS [5]. Although the rate of hospital admissions has decreased in the HIV-infected population, the proportion of hospitalized patients admitted to intensive care units (ICUs) did not change [6] or increased [7,8].

Between 1990 and 1996 (the beginning of HAART therapy), in-ICU mortality [6-9] improved moderately or did not change,

but the three-month [7] and long-term outcome [10] of HIV/AIDS patients admitted to the ICU improved dramatically. For example, in the Claude-Bernard Bichat experience, in-ICU mortality was 20.6% in 1990 to 1992, 27% in 1995 to 1996 and 25% in 1998 to 2000 [7,9]. In contrast, six-month mortality was 49% in 1990 to 1992, 38% in 1995 to 1996 and 30% in 1998 to 2000 [9,10]. Similar results were found in Switzerland [11] and the USA [6].

The unmodified ICU prognosis is obviously not related to the absence of improvements in ICU care, but is largely due to modifications in the case-mix and attitudes toward the use of ICU care [12]. Compared to the pre-HAART period, two distinct categories of HIV/AIDS patients are now admitted. The most common of these is a particular subgroup of patients with problems in HIV screening, access to healthcare and compliance with the treatment. These patients are more frequently women, intravenous drug abusers, or foreigners with undiagnosed HIV infection at ICU admission and are more likely to be admitted through the emergency room [7]. The second and less common group comprises patients with a known HIV infection who are admitted with frequent non-AIDS associated admission diagnoses [6,8,10], such as cardiac (myocardial infarction) and gastro-intestinal (bleeding, cirrhosis) disorders, and drug overdose as well as complications of HAART therapy.

In this issue of *Critical Care*, Mrus *et al.* [13] studied the epidemiology and cost of severe sepsis in HIV infected patients. In a very large cohort of patients hospitalized in six US states in 1999, they found that patients with HIV/AIDS had a greater mortality and a lower rate of ICU admission compared to other patients with severe sepsis.

The major limitation of the study is the use of administrative data to define severe sepsis. The method used has been

validated without using individual data and its accuracy could be largely questioned [14]. The use of ICD-9 codes to diagnose infection and organ dysfunction is not sufficiently accurate. Moreover, although the definitions of severe sepsis combined infection with organ dysfunction within the same admission, a causal link between organ dysfunction and infection could only be speculated at as no time frames between infection and organ dysfunction were defined.

Furthermore, confounding factors could have biased the final results. In the Mrus *et al.* study [13], admission for surgery was less frequent in the HIV/AIDS patients. Admission for surgery has also been associated with reduced ICU admission refusal [15]. Admission for surgery could, therefore, act as a confounder in the relationship between ICU non-admission and HIV/AIDS status. Similarly, admission type has been associated with hospital mortality of ICU patients [16] (scheduled surgery has a better hospital prognosis than patients admitted for a medical problem or after an emergency surgery), but was not taken into account in estimating the relationship between HIV/AIDS status and hospital mortality.

The study was based on a very large database, however, and, if its findings are confirmed, suggests that ICU admission of HIV/AIDS patients is delayed or not accepted and is associated with a poorer prognosis. This would raise important questions about triage policies and/or access to care for HIV-infected patients, even after the dramatic improvement in the prognosis of HIV disease resulting from HAART therapy.

For a patient to be admitted to the ICU, where they should benefit from aggressive therapy, they must be referred to and then accepted by the ICU team. The preferred use of palliative care in HIV infected patients seems unlikely, however, except in cases of HAART failure and multiresistant viruses, and ICU physicians might still be reluctant to admit HIV infected patients to the ICU. ICU prognosis of immunocompromised, especially cancer patients, improves, however, if patients are admitted early and if supportive techniques such as non-invasive ventilation are begun quickly [17]. As access to care becomes more and more difficult for HIV/AIDS patients, referrals for ICU admission might be delayed, which would subsequently explain the absence of improvement in the ICU outcome.

The outcome for septic HIV/AIDS patients should, therefore, be improved in two different ways: the screening of HIV infection in populations who find access to care difficult should be facilitated; and ICU admission of non-palliative care patients should be encompassing and should not be delayed.

## Competing interests

The author(s) declare that they have no competing interests.

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