

Surveillance-Related decrease of hospital infections and derived mortality in intensive care environment

Sommella L., Magrini P., Cerquetani F., Batticiocca D., Nicastrì E.

Objective:

The aim of the study is to describe Infection Control Committee's (ICC) work and results obtained through a laboratory surveillance program, repeated prevalence studies and a surveillance program, active for three years in Intensive Care Units (ICUs), aimed at reduction of the most severe infections.

Methods:

Starting on 2002 May 15th, Medical Direction Infection Control Nurses (ICN) have detected HI in hospital ICUs daily, according to NNIS and CDC protocols. ICUs beds are distributed as follows: 10 in Resuscitation Unit and 19 in Post Operative Intensive Care Units (Heart Surgery, Neurosurgery, Chest Surgery and Vascular Surgery). In the meantime educational programs for ICUs' doctors and nurses have been developed, including revision of medical and nursing protocols elaborated by a multi-professional working team and then approved and revised by ICC.

Results:

After 3 1/2 years of surveillance, a marked reduction of HI was registered: incidence density dropped from 55.7 HI per 1000 days of hospital stay (dhs) in the first three months (May 15th – August 15th 2002) of the study period to 18.2 HI per 1000 dhs (1st July – 31st December 2005), that is a 67% incidence reduction. Comparing two six-months periods (July - December 2002 vs. July - December 2005), mortality in ICUs infected patients in respect of all ICUs patients dropped from 3.3 % to 1.1 %, a 66.7% reduction. Also mortality in infected patients in respect of all infected patients in ICUs dropped from 34.1% in 2002 to 20.5 % in 2005, that is a reduction of 39.9%. On the contrary, mortality in non infected patients increased in the same period from 11.2 % to 12.1% (+ 8%).

HI attributable mortality, according to clinical criteria, decreased from 22.9 % in 2002 to 8.4 % in 2005, ie. a 66.7% reduction. In the same period, mean duration of hospital stay of infected ICUs patients increased from 30.5 days in 2002 to 38.1 days in 2005, a 24.9% increase. This figure is lower than that registered in non-infected ICUs patients (3.0 days in 2002 vs. 4.1 days in 2005, a 36.7% increase). In both cases, difference in mean duration of stay between infected and non-infected patients is impressive.

Conclusions:

Our results demonstrate efficacy of active surveillance in lowering HI incidence. Long duration of stay in ICUs is not attributable to the number and severity of infections, which are both decreased. Progress in quality of care is demonstrated by the impressive reduction in mortality of infected patients, which is more significant in the light of an increased complexity of care, as suggested by uninfected patients' data.

In our opinion, highly specialized hospitals need to make investments in HI surveillance programs, to be run with dedicated personnel, educational initiatives and adequate devices, in order to improve quality of care. Especially in the ICU environment, these investments give important results in terms of lives spared. Infection control can achieve important measurable results in patient safety through more effective health care practices and better efficiency in resource employment.