

EVALUATION OF MICROBIOLOGIC QUALITY OF THE AIR LET IN AN INTENSIVE CARE UNIT

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The intensive care unit of a hospital is a true example of a “risk area” where the quality of the air is important to prevent possible hospital infections in the patient, and consequently to protect the patient’s health.

So a plan of environment monitoring allows to define the real risks and to check if preventive and safeguard measures are correctly applied. For this reason the environment monitoring must be regarded as an important phase in the cycle of the Organization Quality, allowing to assure and improve the quality of the services provided by a hospital.

In the intensive care unit of a hospital in Liguria, the microbiologic bacterial and mycotic characteristics of the air both let in through the air conditioning system and present in the centre of the room were evaluated for two years (2002-2003).

The sampling of the air was carried out with the help of a portable SAS Super 100 impactor (PBI international) and Rodac plates with two kinds of medium:

- 1) TSA γ irradiated medium for the total bacterial count;
- 2) 2) Sabouraud medium with CAF (Chloramphenicol) for the total mycotic growth.

The technical features of the instrument allowed to breathe in the air volume at constant speed and time, for volumes equal to 1000 litres for the air conditioning system and 500 litres for the centre of the room. Moreover, a laboratory research was carried out to find pathogenic mycetes through microscopic and macroscopic identification.

The results obtained were correlated to the optimum standards for the quality of the air let in through the air conditioning system provided by the Manual for the credit of Health and Sociomedical Services of Liguria (2003).

A bacterial and mycotic contamination was detected both in the air let in through the air conditioning system and in the air present in the centre of the room (tab. 1)

Tab. 1: average value (CFU/mc) and standard deviation of bacterial charge and mycotic charge.

	BACTERIAL CHARGE			MYCOTIC CHARGE		
	medium value (CFU/mc)	D.S.	Optimum standards provided by the Manual for the credit of Health and Sociomedical Services of Liguria	medium value (CFU/mc)	D.S.	Optimum standards provided by the Manual for the credit of Health and Sociomedical Services of Liguria
air from the air conditioning system	60,5	6,4	<1	12,5	9,2	<1
air in the centre of the room	88,5	54,4	-	17,5	3,5	-

Fig. 1 and fig. 2 show respectively the comparison between bacterial charge and mycotic charge of air from the air conditioning system and the comparison between bacterial charge and mycotic charge of the air in the centre of the room during the two years of sampling.

Figure 1: bacterial charge and mycotic charge (CFU/mc) of the air introduced from the air conditioning system in the two years of sampling.

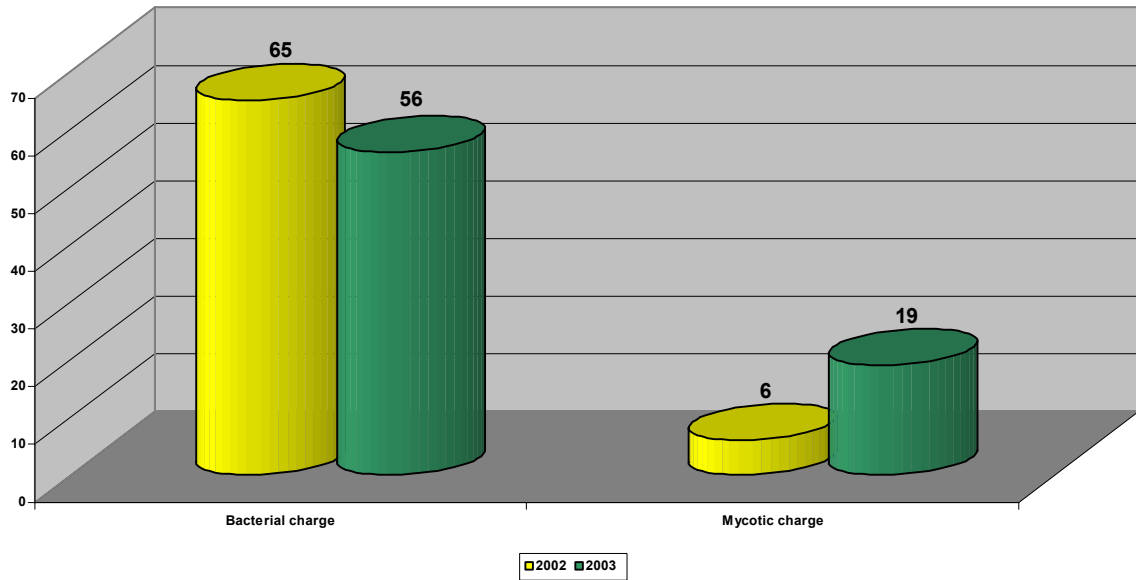
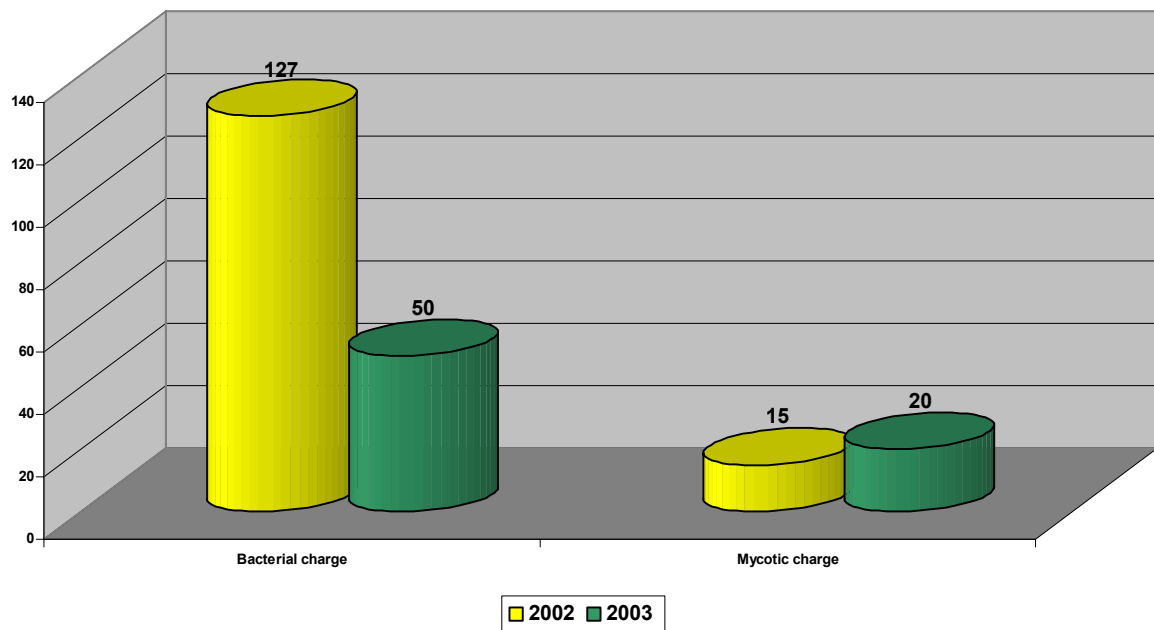


Figure 2: bacterial charge and mycotic charge (CFU/mc) of the air in the centre of the room during the two years of sampling.



The main pathogenic mycetes found in the air introduced are:

Aspergillus niger;

A.flavus;

A.fumigatus.

To conclude, a greater care is necessary in the running and maintenance of the air conditioning systems, in order to improve the environment quality and to reduce the risk for patients.

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