

First time usage of aerial disinfection with hydrogen peroxide to eradicate *Acinetobacter baumannii* endemic epidemic in the intensive care unit of Bologhine hospital - Algiers (Algeria) 2016

Authors : W. Amhis^{1,3}, R. Aouameur², M. Benredouane¹, S. Nouar¹, H. Tirchi³, M. Cherifi¹

1/ Microbiology Unit, Central Laboratory of Biology 2/ Intensive Care Unit 3/ Hospital Hygiene Unit

Background

Multidrug resistant *Acinetobacter baumannii* reached the endemic epidemic state in the intensive care unit (6 beds) in our hospital (225 beds) from 2014.

The hospital hygiene unit regularly reported *Acinetobacter baumannii* HCAI prevalently in the form of pneumonia. The different cleaning and disinfecting methods deployed to eliminate this bacterium remained unsuccessful.

In October 2015, we used for the first time aerosolized hydrogen peroxide associated to silver ions disinfection, which is known to be efficient on the treatment of the environment contaminated by multidrug-resistant bacteria.

Methods / Material

After a discussion with the representatives of the companies, ANETTE, NEWTECH Algérie and 99T, we planned a cleaning and disinfection operation of the ICU from 6th to 8th of October 2015. The day after execution of cleaning operations by an external cleaning team, we used the 99 MAS system (manufactured by 99 Technologies / 99T S.A. Lugano, Switzerland) which is made up by the 99 MA Modulator Micro-Nebulizer and the ready to use 99S proprietary disinfectant solution (active principle stabilized hydrogen peroxide). This aerial disinfection operation of the intensive care unit was implemented with the support of an advisor from 99T. All the ICU areas were treated.



ICU set up

One large room
One isolation room

Total of 6 beds

Total surface ICU : 200 m²
Total volume ICU : 550 m³

Biocleaning

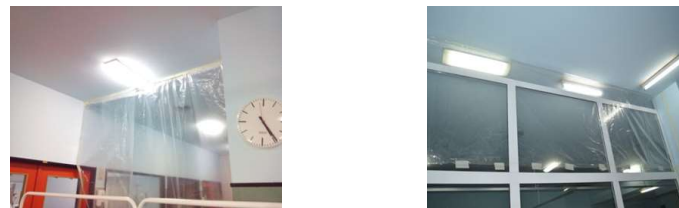
Study, supervision and control by HITEC Environnement with support from NEWTECH Algérie, ANETTE & 99T

Cleaning carried out by an external cleaning team October 6th and 7th 2015



Disinfection executed with the advisory support of 99T October 7th to 8th 2015

1/Separation between the treated zones (large room and corridor)

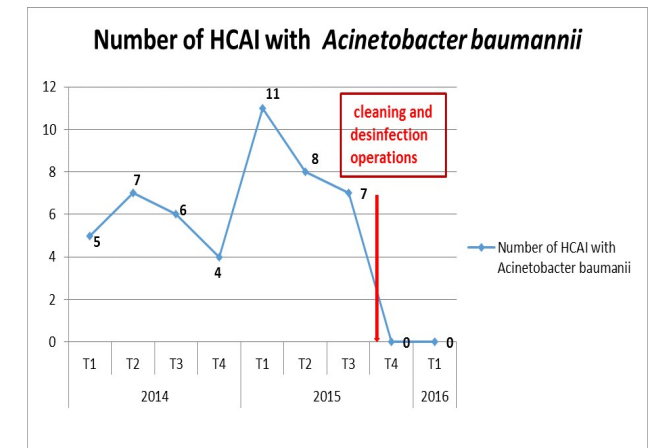


2/Disinfection with 99TTM system (99MA Modulator Micro-Nebulizer and the 99S proprietary disinfectant solution (active principle stabilized hydrogen peroxide).



Results

After this cleaning and disinfection operations, and for the first time since 2014, no case of a healthcare associated infection with a susceptible or a multidrug resistant *Acinetobacter baumannii* was reported by the hospital hygiene unit in the intensive care unit.



Conclusion

Hydrogen peroxide aerial disinfection executed with the 99TTM system proved to be greatly efficacious in eradicating multidrug-resistant *Acinetobacter baumannii* which reached an endemic scale in our intensive care unit.

The fact that this molecule breaks down into water and oxygen, and that the rooms treated are quickly available after treatment has greatly increased our interest for the use of this technology in the ICU unit.