

The importance of hand hygiene (Bacterial ecology of the UMC service)

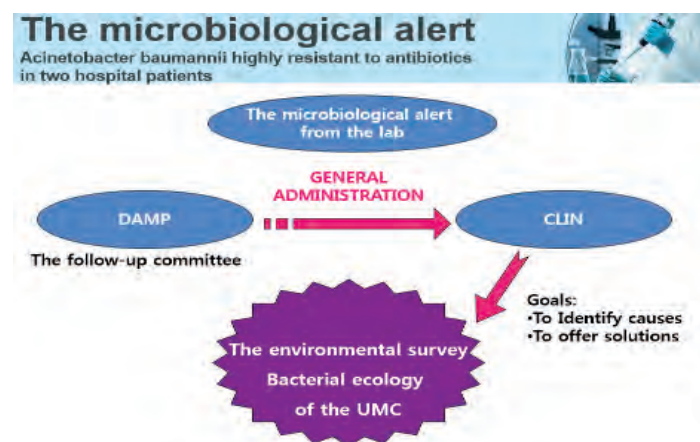
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I. MICROBIOLOGICAL ALERT: *Acinetobacter baumannii* highly resistant to antibiotics in two hospital patients.

A. The CLIN extraordinary meeting

Following a microbiological alert launched by the central laboratory of biology, the administration of the University Hospital of Blida Algeria asked the Directorate of Medical and Paramedical Activities to hold an extraordinary meeting of the Committee Against Nosocomial Infection (CLIN). Both patients had operative site infection (bone and neurological).

CLIN has established a follow-up committee to investigate the source of this contamination (Fig1).



B. The follow-up committee and its goal

The goal of the follow-up committee charged by CLIN was to identify the causes of infection of patients with these highly resistant germs and the emergency solutions needed to prevent the spread of these germs, which are both resistant and dangerous. The 2 patients infected with *Acinetobacter baumannii* highly resistant to antibiotics came from the medical and surgical emergency department (UMC) of Frantz Fanon Blida University Hospital.

The first step taken by this working group was to ask the Central Biology Laboratory to conduct an environmental survey at the UMC service level. This survey was conducted in collaboration between microbiology, epidemiology and the CLIN follow-up committee.

II. THE ENVIRONMENTAL SURVEY

A. Methodology

The multipurpose resuscitation room of the UMC department had 9 functional beds and was occupied by patients requiring intensive care.

The laboratory carried out 25 surface samples and 8 samples from the surface of the hands of the caregivers (Tables 1 and 2). The sites concerned by the 25 surface samples are presented in Table 3.

B. Results

1. Nature of the areas sampled, UMC service, June 7th 2015

Area	N	%
Respirator	3	12
bubbler	6	24
Jar	3	12
Tracheostomy tube	1	4
Glass	1	4
Total	25	100

Other surfaces: beds, treatment table, treatment tray, bench, water points.

2. Potentially pathogenic germs isolated from the sampled surfaces, UMC service, June 7th 2015.

A total of 49 potentially pathogenic germs were isolated from 23 surfaces sampled. No culture was performed on 2 samples: the first concerned a bubbler and the second a surface. The most frequently isolated germs were

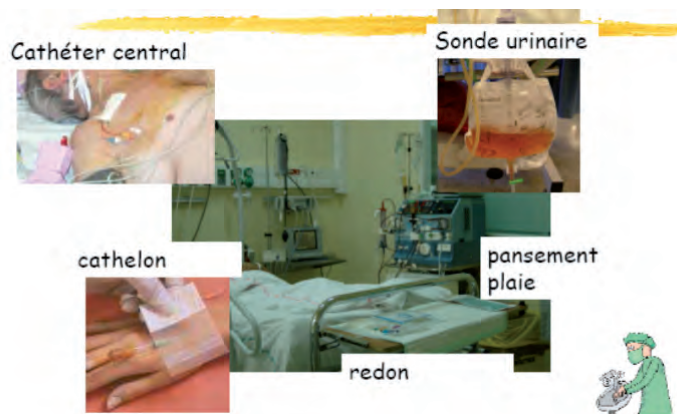
Germs	N	%
<i>Acinetobacter baumannii</i>	13	26.5
<i>Pseudomonas aeruginosa</i>	8	16,3
Enterobacteria (<i>Klebsiella pneumoniae</i> , <i>Serratiamarcescens</i> , <i>Escherichia coli</i> , <i>Enterobacter sp.</i> . .)	16	32.7
<i>Enterococcus faecalis</i>	12	24.5
Total	49	100

Enterobacteria, which accounted for nearly 4 out of 10 isolated germs. Commensal sprouts not reported: *Staphcn*, *bacillus*, *micrococcus*, *corynobacteria*.

3. Potentially pathogenic germs isolated from the hands of the nursing staff, UMC service, June 7th 2015.

Germs	N	%
<i>Acinetobacter baumannii</i>	2	10
<i>Pseudomonas aeruginosa</i>	3	15
Enterobacteria (<i>Klebsiella pneumoniae</i> , <i>Serratiamarcescens</i> , <i>Escherichia coli</i> , <i>Enterobacter sp.</i> . .)	1	55
<i>Enterococcus faecalis</i>	4	20
Total	20	100

The 8 samples that concerned the hands of the caregivers made it possible to isolate a total of 20 potentially pathogenic germs including 55% enterobacteriaceae resulting in faecal contamination of the hands. The antibiogram was not done for isolated germs (Fig2).



C. Comments

1. The bacterial ecology presents a low level of hygiene: presence in large numbers of both usually non- pathogenic environment: Staphylococcus Coagulase Negative (SCN), Corynebacteria, Bacillus and nosocomial pathogenic germs such as : Acinetobacter Baumannii, Pseudomonas aeruginosa .
2. The pathogenic germs are predominant compared to other so-called non-pathogenic germs, this predominance of pathogenic germs constitutes a real danger for the weakened patients.
3. The highlighting of Acinetobacter Baumannii in both blood cultures, in a distal bronchial sample protected in patients and in the hands of the medical staff confirms the transmission of this manuport germ resistant to all ANTI-BIOTICS at the origin of a therapeutic impasse.
4. The presence of the enterococcus faecalis (germ of faecal flora) in the hands of the staff and in several samples (jar and suction pipe, bed surface) including at the site of tracheotomy (tracheotomized) the tracheotomy of the patient shows the low level of the hygiene and confirms the manual transmission of infections in the multi-purpose intensive care room.

RECOMMENDATIONS

A. Actions to be taken on the immediate environment (Fig3)

Given this alarming situation at UMCs and the risk of spreading infection to other services through the

Actions to be taken on the immediate environment



Establish the traceability of the patients by a registry with a progress sheet



Organize information and awareness sessions



Appoint a surface technician to supervise the cleaning staff

1. Establish the traceability of the patients by a registry with a progress sheet
2. Organize information and awareness sessions on hygiene, sterilization, cleaning equipment and the use of hydro-alcoholic solution. Actions to be taken on the
3. Appoint surface technician (a referent) to supervise the cleaning staff and to demand the respect of the hygiene. Quality control of used cleaning products
4. Ensure strict compliance with the cleaning period contained in the contract between the hospital and the cleaning company, without failing to control the quality of service.
5. Provide the UMC department with sufficient hydro-alcoholic solutions using single-use dispensing bottles, warning signage on precautions, disinfection of hands at the entrance and exit of the room and before and after treatment.
6. Be on blouse for all the contacts
7. Better manage DASRI (waste of care activity with infectious risk), all the waste in yellow bag inside the chamber and DAOM (garbage comparable to the household garbage) in black bags.
8. Control the water of UMC once a week by the service of preventive medicine (SEMEP).

B. The case of the incinerator

The CLIN follow-up committee has noted the harmful effects of the incinerator on the environment.

These adverse effects are noted on the location of the incinerator just behind the UMCs. Its functioning as well as its surroundings are totally outside the most basic hygiene conditions and its environment represents a favorable ground for the propagation of germs. Considering the very bad management of wastes of infectious risk care activities (DASRI), the uncontrolled unloading, the disemboweled sachets, the containers, the sharps collectors, the flasks of organic products opened on the ground and this with proximity to UMCs, CLIN requires:

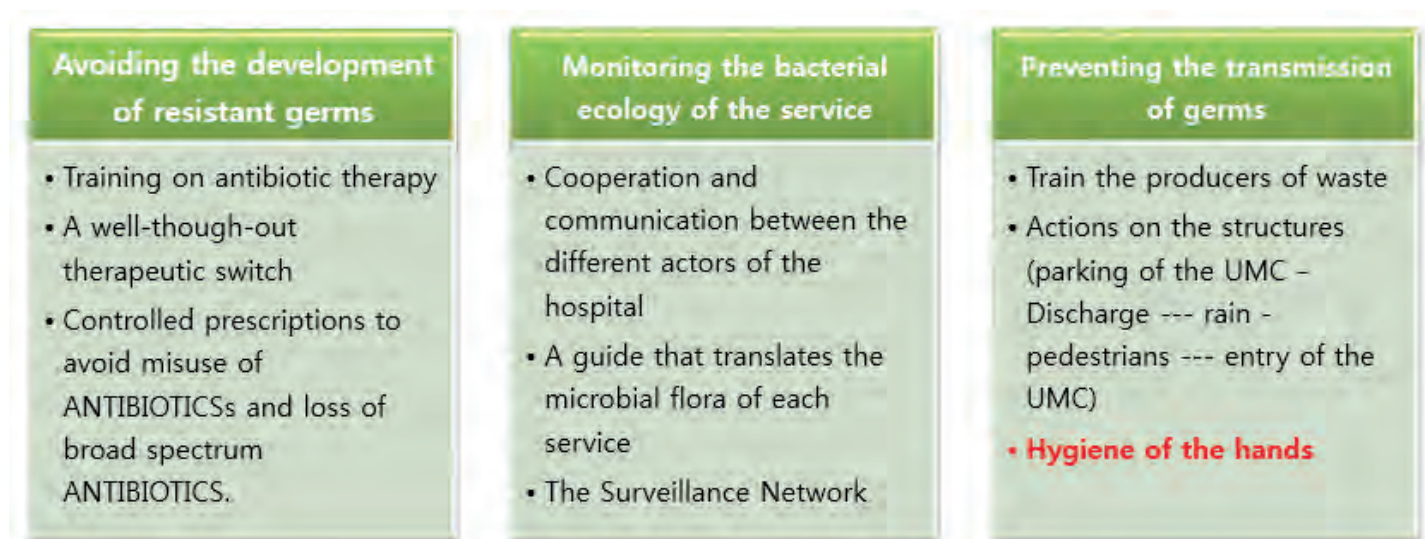
1. not to unload behind UMCs and replace large yellow bags with small ones, large bags do not fit into the incinerator.
 2. recall the obligations of the DASRI waste producing services:
 - a. the bags are worn and not dragged,
 - b. must be 2/3 filled,
 - c. paying attention to the weight,
 - d. closed double knot,
 - e. dated and identified.
 - f. the sharps collector does not throw it into the yellow bag, the containers must be perfectly locked.
- After disinfection and staffing of the resuscitation unit and the application of the above-stated measures the situation and bacterial ecology of the service has improved significantly.

C. Synthesis

This survey is remembering that prevention of infections related to care and to highly and multi-resistant bacteria must be ensured by 3 groups of actions to be undertaken (Fig 4):

1. Avoiding the development of resistant germs

- Training on antibiotic therapy: paramedic, nurses, midwives
- Mastery of ANTI-BIOTICS: risk management and Prescription policy in each service



- A well-thought-out therapeutic switch
- Controlled prescriptions to avoid misuse of ANTIBIOTICSs and loss of broad spectrum ANTIBIOTICS.
- A practical guide for the prescription of ANTIBIOTICS.
- Recommendations every 2 or 3 years on the prescription, and investigation on the 5 criteria of evaluation: indications, dose, association, way, duration.
- A CLIN Annual Report on indicators, Antibiotic Consumption: quantitative and qualitative.
- Do not forget that 70% of ANTIBIOTICS are prescribed in the city!!! Involve private physician's veterinarians at CLIN meetings of hospitals and the population health regional department (DSP): Food and Zoonoses Treatment (consumption of ANTIBIOTICS and modification of intestinal flora)!!!!

2. Monitoring the bacterial ecology of the service

- Cooperation and communication between the different actors of the hospital: doctors, bacteriologists, hygienists, pharmacists.
- A guide that translates the microbial flora of each service, and the monitoring of bacterial resistance to ANTIBIOTICS.
- The Surveillance Network: Epidemiologists and Bacteriologists, at the University Hospital Centre, the EPSP (Public Health Hospitals) CLIN and DSP should ensure vigilance, hygiene, training and reporting to the Ministry of Health and Population/ and the Hospital Reform (MSP/RH).

3. Preventing the transmission of germs:

- Train the producers of waste (waste management and respect initial sorting).

- We cannot improve the hygiene of the service without actions on the structures (parking of the UMC - Discharge - rain - pedestrians - entry of the UMC)
- Hygiene of the hands: hands disinfection at the entrance and exit of the room and before and after treatment.
- At our level these measures have allowed us to avoid the appearance of other cases since May 2005.

IV. CONCLUSION

The lack of hygiene and the probabilistic and empirical use of the antibiotic lead to a modification of the microbial ecology with the emergence of multi-resistant bacteria. The hand that heals and also the hand that carries the germs and contaminates! So at the origin of infection nosocomial!

Finally, where did this Gram-negative bacterium come from?

This germ of the environment responsible for opportunistic infections expensive weakened patients: of the environment of the patient by indirect contact with the UMC Hands, Instruments, Air (the discharge)?

Where does its acquired resistance comes from? From the service of UMC with a misused and abusive antibiotherapy or a resistance acquired in other services and the germ conveyed by the waste and the discharge. We retain that the most likely origin is that this germ was born at UMC's resistance acquired at UMC, because it was not observed other cases of BMR in other services outside these two patients transferred after a stay in intensive care.