

# Environmental Bacterial contamination of Babylon Marternal & children Hospital

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Abstract :

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The present study , performed to investigate the Environmental Bacterial contamination in medicine department of Hospital Maternity and Children in Babylon provinc, operation Theater, Delivery Theater ,children & prematurity wards.

During The period from January 2004 to October 2004 (1133) swabs were collected on MacConky agar and Blood agar base then pure colonies was processed for identified by using classical & specific processed for biochemical tests .

The study showed that the most common bacterial isolates was *Klebsiella pneumoniae* a among gram negative bacteria.

## الخلاصة

تضمنت الدراسة البحث عن الملوثات البكتيرية في مستشفى بابل للنسائية والاطفال جمعت (1133) مسحة من الاقسام الرئيسية وهي صالة العمليات وصالة الولادة وردهات الاطفال والخدج للفترة من شهر كانون ثاني 2004 ولغاية تشرين اول 2004 ونميت على اوساط زراعيه بكتريه (الماكونكي ووسط اجار الدم). اتبعت الطرق والاختبارات القياسية وتم عزل المستعمرات البكتيرية لغرض التشخيص وتحديد نوع العزلة البكتيرية . اظهرت النتائج ان اغلب العزلات البكتيرية كانت من النوع الكبسيلا الرنويه السالبة لصبغه كرام .

**Introduction :**

Historically , the control of wound infection depended on antiseptic & aseptic techniques at coping with the infecting microorganisms in the 19 th Century & the early part of the 20 th century. Wound infections had devastating consequences and measurable mortality .

Even 1960 s, before the correct use of antibiotics and the advent of modern preoperative and postoperative care as much as one quarter of surgical ward might have been occupied by patients with wound complication has a result wound management in itself become an important component of ward care and of medical education (1)

The role of *K. pneumoniae* and *P. aeruginosa* and *E coli* in various human disease were well documented (2,3,4,5,6).The importance of *P. aeruginosa*

*E. coli* & *K. pneumonia* in hospital infection has gained interest of many investigators(2,3, 7,8).

Important bacterial pathogens can be transmitted by air borne ,droplet and by direct contact with contaminated surfaces also the patients, the equipment and operation team, gowns ,gloves with holes and contaminated tools, (1,9)

Environment as local factors influencing the development of surgical wounds because they affect the size of bacterial inoculum that is required to produce an infection. (1,9)

That is profitable to match the possible presence of nosocomial infection microorganisms.

The aim of this study is to investigate the prevalence of Environmental Bacterial contamination in main departments at Babylone Marternal & Children Hospital.

**Materials and Methods :**

**I-Samples Collection:**

All Samples in this study were collected from Medical wards Operation theater, Delivery theater, Emergency ward, Prematurity wards and Children wards. Samples were collected from instruments Environmental floor, walls, bedding , carriages , by using sterilized cotton swabs according to method suggested by Thomas et al 1972(10)

The one thousand one hundred and thirty three swab were collected from January 2004 to October 2004.

**II Sample Cultivation:**

Samples were cultivated using MacConkey agar & Blood agar base for 24 h at 37 c° then the pure colonies was reash for identification of isolate colonies(11)

**III- Identification of Bacterial colonies :**

The method described by Maccfadin ,2000(11) using single colony pure isolates were identified by classical and specific biochemical tests .

## Results :

*E coli* ,*K. pneumoniae* , *P. aeruginosa* and *S. aureus* were isolated from various Hospital sites including Operation Theater ,Delivery Theater & prematurity wards Children wards,Emergency ward in the Babylon Marternal& Children Hospital at Babylon province ( table .1 ). It seem that *E coli* and *K. pneumoniae* were of higher rates than both *P. aeruginosa* and *S aureus* which was isolated from every sterilized Hospital Environment of operation theater ,prematurity wards & emergency ward & kitchen .

Gram Negative bacteria ( *Klebsiella spp*) presence in large numbers in 5 : 191 ( 2.62% ) in Delivery Theater & 9: 251 ( 3. 58% ) in prematurity wards & 4: 110 ( 3.63% ) in Emergency ward .the apparent with decrease in isolation of the two microorganisums the *P. aeruginosa* and *S. aureus* in 1: 191 ( 0.52% ) in Delivery Theater &1:251 ( 0.39%) In prematurity wards .

## Discussion :.

Gram negative rods were the major obtainable nosocomial pathogen in the operation theater , wards and the main department (table -1) sach finding were in agreement with study of Ali , 2001(12) also found that these gram negative rods represent (74 %) from bacterial isolated while gram positive bacteria responsible for (26%) from operation theater and hospital wards Environmental bacterial contamination in Hospital .

Grame negative rodes have characteristic able them to capable of prolonged survival on environmental surface of main department of Hospital ( 13, 14 )

The *K. pneumoniae* on various site is not the only reason to indicate contamination but chances of causing disease in disabled patient should not be over looked, also its prescience is considered highly significant due to the involvement of these bacteria in causing various human diseases (15)

Hambraeus 1995 (16) mention that gram negative rods have characteristic able them to be more resistant for unfavorable environmental condition.

De Sa LA et al, 1984(17) mention that *S. aureus* growth in hospital and that causes to high rate of contamination due to the characteristic of *S aureus* that resistance to unfavorable hardness condition such as high concentration of salty.

However *S aureus* remains the single most frequently isolated species and the pathogens that infect surgical wounds can be acquired from patient, the hospital environment or medical staff personel (18,19). involvement of these micro –organisums causing postoperative wound infection is of in value since investigator's whom they drew the attention of the relationship between such microorganisum and wounds infections (18,19,20,21)

so I suggested that the reservoirs in hospital from which bacterial cultured include contaminated environment of hospital also some patients might have been carrier with bacteria from their previous environments either at home or at work or during hospitalization else where

Thus on summing up the result of present worke one may conclude :  
The effective stratiges to prevent nosocomial sepsis must include continuous monitoring and surveillane of environmental contamination and distribution of bacterial pathogen.

1. Nosocomial bacterial potential pathogens were both of gram negative & gram positive .
  2. The gram negative bacterial pathogens were dominating that of gram positive .
  3. *K. pneumoniae* were the major rate among other gram negative bacterial species .
  4. *Staphylococcus aureus* was the sole potential nosocomial pathogen .
- Such finding might stay as an alert to public health works especially those involved in hospital infection

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**Tabel.(1) Microorganisms isolated in Hospital Environmental Contamination.**

<b>Organism</b>	<b>Operation Theater</b>	<b>Delivery Theater</b>	<b>Prematurity wardes</b>	<b>Child wardes</b>	<b>Emergency Ward</b>	<b>Kitchen</b>
<b>E coli</b> ( 29 )	<b>11 : 423</b> ( 2.6% )	<b>4:191</b> (2.09%)	<b>5 : 251</b> ( 1.99% )	<b>4:55</b> (7.27 %)	<b>1:110</b> ( 0.909%)	<b>4 : 103</b> ( 3.88%)
<b>K. Pneumonia</b> ( 29 )	<b>7:423</b> ( 1.65) (1.65 %)	<b>5 : 191</b> ( 2.61% )	<b>9: 251</b> (3.58%)	<b>3:55</b> ( 5.45% )	<b>4:110</b> (3.63 %)	<b>1:103</b> ( 0.97% )
<b>ps. aeruginosa</b> ( 12 )	<b>8: 423</b> ( 1.89% )	<b>1:191</b> (0.52%)	<b>3:251</b> ( 1.19% )	-	-	-
<b>Stap aureus</b> (4)	<b>3 : 423</b> ( 0.71% )	-	<b>1: 251</b> ( 0.39% )	-	-	-